IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

The impact of social media on nutrition and dietary choices based on information-seeking behaviors using reliable social media profiles

Dr. K. Jyothirmayee
Assistant Professor, Dept of Journalism and Mass Communication
Acharya Nagarjuna University, Guntur Dt.

Abstract

Social media platforms are expanding globally to facilitate an infinite interchange of diverse content. They can be used as practical, all-purpose information and communication instruments by businesses, scientific communities, patient advocacy groups, and groups with particular interests because of their brief form and accessibility. Due to widespread internet connectivity, people may now obtain nutrition-related information almost anywhere. However, the quality and supplier knowledge of the accessible data varies. It is critical to comprehend how the public seeks information to give practical nutritional recommendations. Although it has been demonstrated that social media and the internet are becoming more popular places to find nutrition-related details, more information must be found about the individuals supplying it. There are also knowledge gaps about the people the public prefers to access online and how they utilize the knowledge they discover. To stay competitive in this quickly changing field, nutrition experts must recognize and comprehend how the information-seeking environment is changing rapidly to deliver current advice that appeals to the public. It is imperative to safeguard against false information and advance nutrition in the digital era by skillfully disseminating public health information supported by evidence. This investigation aims to determine if social media can provide trustworthy information and knowledge regarding dietetics and nutrition. This study uses user-generated content on **Twitter to find themes related to a healthy diet and to ascertain users' opinions on different food styles.** Based on the emotions indicated in the relevant tweets, sentiment assessment was used to categorize the identified tweets into three groups: negative, positive, and neutral. Ultimately, the text mining method is used to identify foods based on the sentiments spoken about in related tweets and extract essential indicators that convey the UGC-based understanding of a balanced diet.

IJFANS International Journal of Food And Nutritional Sciences
Official Publication of International Association of Food and Nutrition Scientists

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

Keywords: Social media, Dietetics and nutrition, Nutritional information, Face Book, Twitter, Instagram, Snap chat, User generated content

1. Introduction

Social media are rapidly expanding global networks that link millions of individuals and facilitate the quick interchange of many types of information. Depending on the idea behind them, they may be used for various reasons because they are brief, simple to use, and readily available **[1].**Food and eating, cooking techniques, and the science of nutrition are hot topics, with countless websites, social media pages, and books devoted to the subject. The public's access to health and food knowledge is supported today by nearly ubiquitous access to the internet, highly developed search engines, and the extensive use of social media, and the general population is increasingly using the Internet as a source of information **[2].**Nevertheless, the internet needs more controls for information quality or authenticity, which allows misconceptions and pseudoscience to spread quickly. Individuals claiming to be "subject experts" who don't follow a professional code of conduct, have official training or have credible credentials can nonetheless be heard. Anybody can write for blogs, social media, and "expert" websites, irrespective of their experience level **[3].**Nutritionists must recognize this and actively compete in this arena if they want to be heard, as they have the power to influence their online following successfully**[4].**Access to nutrition and health information has been made more accessible by the rise of technologies that facilitate communication and involvement with users, such as Web 2.0, which strongly emphasizes social media and content created by users **[5-6].**Media content developed or created by members of the public as opposed to compensated professionals is referred to as user-generated content and is mainly shared online **[7].**The number of individuals obtaining information via user-generated content, like social media, is rising. In 2011, 80% of Americans said they had looked for health-related advice online, and 70% said they got their news from social media **[8].**Social media is an effective means for the general population to obtain information about food and nutrition; it is the second-most prevalent category of science

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

news, after health and medical. People like sharing their experiences, thoughts, and ideas about food, nutrition, and health. These seeming facts sometimes need to be more represented or understood as such, quickly gaining traction and creating trends and fads. The public's task is to effectively sort through the vast amount of information accessible and distinguish between "fact and fad," while nutritionists' task is to communicate their focused messages in a way that will pique the public's interest. A paradigm change in how nutrition is conveyed has occurred from certified nutritionists providing the public with nutritional data that they think is suitable for the people taking control of the information they acquire **[9].**The Food Guide Pyramid was designed to enhance global nutrition and nutritional sustainability, and it served as the foundation for numerous food guidance programs. Bread, cereals, rice, and pasta are at the base of the very first food pyramid because these foods must be consumed in portions ranging from six to eleven each week. The recommended amounts vary for each dietary group. **Figure 1** illustrates how these amounts decrease as one moves up the Food Pyramid.

Figure 1 Food Guide Pyramid

There needs to be more reliance on and confidence in the evidence-based advice provided by government agencies and medical practitioners specializing in nutrition **[10-12].**When looking

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

for medical or health-related data online, consumers frequently go towards their personal experiences, commenting on social media and blogs.Movie and sports personalities, as well as the emerging breed of "health celebrities," who are well-known for their excellent health and dietary advice, are among the celebrities and “uncredentialed” experts commonly favored as reliable providers of information regarding nutrition **[13-14].**Not only do people admire celebrities, but they could also be susceptible to false information spread by them **[15-16].**People must piece together the "truth" or whatever suits their requirements in a complicated world without constraints on whoever can supply online nutrition information **[17-18].**With the public now having more control over their education and an increasing amount of user-generated content on the internet, it is critical to comprehend how individuals behave while seeking out nutrition-related information.The public does not always view tertiary education in nutrition as "expertise" or as a sign that they will be open to learning about nutrition **[19].**Unlike passive, one-way conventional media like print, radio, and TV, social media use enables proactive, two-way, and many-to-many communications **[20],** and this presents possibilities and concerns since it makes it possible for false information to spread quickly, along with messages supported by evidence **[21].**With solid theoretical underpinnings, social media can expand its reach and involvement (browsing, commenting, sharing material, and liking) with health-related information **[22].**The reality that there isn't much research showing how effective it is to use social media to spread information about health to people suggests that consumer involvement may not be operationalized enough.The definition of "success" will take on new meaning when the target audience's demands are comprehended, and the degree of their involvement and retention in social media is assessed **[23].**

2. Literature Review

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

Chronic illnesses, which are mainly brought on by poor diets, sedentary lives, and stress, are beginning to be recognized as worldwide epidemics. These illnesses include cardiovascular pathologies, specific kinds of cancer, overweight, obesity, and diabetes **[24-25].** This explains why people are so interested in wellness consciousness nowadays, which describes how much people care about their health **[26-27].** The social structure has undergone a significant transformation due to the economic boom and the quick advancement of science and technology. For instance, the emergence of social networks has considerably impacted gastronomic culture.The decision of what to eat or cook has gained popularity, as has the impact of dietary choices on society **[28].**Publishing food images and cooking techniques has become more straightforward because of the Internet's instantaneous nature and ease of use. Additionally growing in popularity are websites that share meals and apps that search for food **[29].**Investigators additionally discovered that, due to social networks, there is a link between diet practices and recipes **[30].**Recipe selection is a reflection of personal taste in ingredients and eating habits, and these factors are strongly correlated with several diseases, such as cancer prevalence **[31],** and mortality rate**[32],** metabolic disorders **[33],**and obesity **[34].**Over the past ten years, there has been a noticeable surge in the use of social media on the Internet as a source of information, with social mediaconstituting an integral part of people's daily lives **[35].**Previous research has demonstrated social media's potential in imparting knowledge about nutrition **[36].** Nevertheless, many of those solutions were either assessed using invalidated instruments or relied only on assessments of immediate results. Comparably, more instruments must be used to evaluate social media's efficacy in enhancing public health outcomes despite the platform's widely acknowledged massive potential **[37].** As the term "health education" suggests, this process involves more than just sharing knowledge; it also consists of generating opportunities for learning by empowering people with the drive, know-how, and self-assurance (self-efficacy) needed to take actions to enhance their health. Prior studies have demonstrated that young individuals frequently turn to social media for information on various topics, including fitness, public health, dietary supplements, recipe books, and physical activity **[38-40].**According to numerous research, women are more likely than men to utilize social media

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

to look up nutritional information **[41–42].**These apps are meant to show visual content, such as graphics and audio that could improve the effectiveness and appeal of the information **[43].**As a result, they might offer dietitians and nutritionists a new way to provide nutritional advice and disseminate pertinent information on food and nutrition **[44].** Younger people utilize social media extensively **[45].** Young people are thought to be in a crucial transition stage from adolescence to adulthood, marked by several changes, including fast physical growth and the emergence of new habits and practices, like eating habits dependent on knowledge of nutrition **[46].**Millennials' eating habits change significantly from their parents' and grandparents' **[47].** Social media is increasingly being used as a source of knowledge about recipes and food options, so it may be one of the many elements influencing what they eat and drink **[48–49].**Social media may influence public health in beneficial and harmful ways, according to various domains of expertise related to health issues **[50–51].**Spreading false information via social media has been shown to harm people's health and well-being worldwide, making it one of the biggest problems facing public health systems nowadays **[52-53].**Moreover, a growing body of research has recently been conducted concerning the detrimental effects of social media and identity authenticity **[54].**This covers examining issues about privacy in social media communications and postings, posts that wind up with uninvited individuals, worries about using social media platforms, selecting the correct accounts to follow, and the inauthentic ways in which people present themselves **[55].**Studies on health-related fake news on social media span several platforms, such as Facebook, Twitter, Reddit, and Weibo **[56–58].** This happens in various public health-related domains, such as physical education [59], good eating, and healthy living **[60].** There are no established policies concerning who can share wellness and nutrition-related content on social media. This adds to the confusion and the fact that social media is rife with "user-generated content. Unsubstantiated and unauthorized information appears on social media because individuals share their ideas and personal experiences without professional gatekeeping of social media content **[61–62].**Evaluating the trustworthiness and credibility of nutritional data is a laborious and seemingly unachievable effort due to its extensive and unrestricted nature **[63].** Asocial media profile's ability to be

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

transparent and interactive online has been shown to increase users' perceived credibility of the information shared**[64].** Studies indicate that social media users typically accept nutritional information without questioning the integrity of the source. Still, they are likely to question a nutrition claim without an explanation **[65].** Similarly, an abundance of false nutrition information can breed distrust towards all sources, including reliable ones.Users utilize social media for knowledge and the social support that goes along with it. This is mainly determined by how reliable and accurate they believe online health groups to be **[66].** Investigating the perceived accuracy of nutrition-related content on social media and creating workable ways to elevate nutrition experts' voices is imperative to counteract inaccurate and perhaps dangerous nutrition misinformation.

3. Social Media and Nutrition

Food is essential to every person's everyday existence **[67].** Therefore, it's important to look into people's eating habits and attitudes towards particular foods from health and policy perspectives. A comprehensive understanding of consumer attitudes, experiences, and behaviors about nutritious foods is necessary if national governments establish action programs to encourage healthy eating. Unhealthy food consumption is an issue in numerous nations **[68-69].** Social media analytics is a method of obtaining such data **[70].** Nowadays, a lot of people use social media in everyday life. Users are spending more significant amounts of time on these platforms and, as a result of their conversations with other individuals, are leaving both passive and active digital footprints **[71].**Given that comprehending people's social media communication is crucial to understanding their attitudes, experiences, behaviors, and beliefs, these data have great potential for further research in various fields **[72-73].**Research has previously examined social network data concerning food in the following areas: farmer's markets **[74],** organic food **[75],** dietary decisions made by undergraduate students **[76],** sharing of food **[77],** and security of food **[78].**Numerous studies have demonstrated the impact of social media on consumer behavior, including food preferences and shopping habits. The social media interaction of adolescents with brands of food and beverages was observed by

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

Fleming-Milici et al. **[79].**Information gathered on social networks tends to homogenize consumption and lower customers' understanding of sustainability, as noted by Simeon et al. **[80].**Recipes **[81]** and diet-related information **[82]** can be found on social networks, which can also provide helpful dietary information like food reviews [52] and suggestions for feeding small children **[83].**Social media can, therefore, affect the types of food that people purchase and consume **[84],** and it may also serve as a policy tool to increase food literacy **[85-86],** promote nutritious eating, and promote a healthier way of life in general. According to some research, social media can spread awareness of health-related topics, such as dietary interventions for teens and young people [59] or health-related issues during the Covid-19 pandemic **[87].** Due to the prevalence of social media use, food brands and businesses are utilizing social media to improve their interaction with adolescents and young adults **[88].** Several fast-food companies advertise on social media mainly using unregulated strategies, pushing foods high in calories but low in nutrients and spreading within young adult peer networks **[89].** Influencers on social media have become essential participants in these marketing campaigns **[90].** By exposing details of their lives on several platforms and building emotional bonds with their viewers, they are acknowledged as individuals with persuasive power **[91].**Therefore, to increase sales and customer engagement rates, businesses collaborate with influencers who offer compensated product reviews to their followers. Some influencers only share lifestyle and health-related information, yet many need more formal training and may provide inaccurate, non-evidence-based dietary recommendations **[92].**Nutritionists are experiencing a decline in credibility **[93],** and influencers on social media are more inclined to post health-focused material to be believed than information from the food business or health promotion **[94].** As a result, influencer commentary's sound and adverse effects on consumers' attitudes, beliefs, and behaviors about nutrition are significant. Public health professionals are also interested in social media as a possible venue for health promotion because of its capacity to impact young adult audiences **[95].** Previous research has demonstrated the impact of social media on health knowledge. Specifically, studies have found that young adults benefit from social media by accessing nutritious recipes and exercise

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

regimens **[96].** Recently, comprehensive reviews have found that nutrition treatments offered through social media to young people and adolescents result in notable dietary improvements in their trials. It took time to determine the actual impact of many of the sophisticated initiatives, as social media was sometimes a secondary component **[97].** In a unilateral encounter, young adults favored utilizing social media passively, obtaining information instead of imparting it **[98].**Additionally, young adults expressed discomfort while discussing their weight online, underscoring the necessity for weight-centric narratives to be avoided in health promotion. Social media users interact with lifestyle and food brands more often than with health-related content **[99].** This emphasizes creating more potent social media-delivered health promotion resources to promote healthy habits. Therefore, further research is needed to determine how social media affects eating habits and how persuasive it is.

4. Proposed Methodology

This investigation aims to determine if social media can provide trustworthy information and knowledge regarding dietetics and nutrition. This study uses user-generated content on Twitter to find themes related to a healthy diet and to ascertain users' opinions on different food styles. Based on the emotions indicated in the relevant tweets, sentiment assessment was used to categorize the identified tweets into three groups: negative, positive, and neutral. Ultimately, the text mining method is used to identify foods based on the sentiments spoken about in related tweets and extract essential indicators that convey the UGC-based understanding of a balanced diet. The sample was categorized based on three factors: (i) the frequency with which the words in the dataset are repeated; (ii) the overall weight of the keywords in the dataset as reported by the weighted percentage (WP); and (iii) the removal of terms that weren't contributing significantly to the investigation's goal. **Figure 2** shows the process of data analysis.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

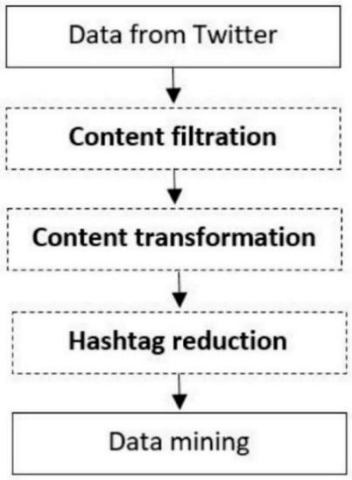

Figure 2 The process of data analysis.

4.1 Twitter and Nutrition

User-generated content on the Internet is referred to as UGC. UGC typically originates from social media or digital channels. Users discuss particular issues and offer their thoughts on this kind of material. UGC typically comprises reviews, comments, suggestions, and user-brand interactions. This investigation examines Twitter user-generated content (UGC) about food and eating well. Conventional approaches that examine how users behave regarding diet and eating habits are sometimes pricy and invasive **[100–101].** Social media platforms present fresh possibilities for a thorough analysis of customer behavior in this regard **[102].** To better understand many elements of healthy eating, user-generated content (UGC) has been regularly employed as a data source **[103].** Maintaining an active lifestyle while eating a balanced diet promotes the development of good habits that enhance long-term health. One of the main places people go for information about eating healthily is Twitter user-generated content (UGC). Twitter postings typically have their content arranged according to themes or topics. These subjects may also be referred to as categories. A prior study has shown that such classes are commonly linked to particular emotions, such as positive, negative, or neutral feelings **[104]** in health information **[105].** Researchers and people in charge of creating health policy can benefit from new research approaches to analyzing user-generated content in social

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

networks **[106].** The first sample comprised n=14731 tweets. The hashtags "#Diet" and "#FoodDiet" were present in the English-language tweets that were gathered. Following a cleaning process that involved removing retweets, repetitive tweets, and tweets with fewer than 80 characters, the final sample consisted of n = 10,591 tweets.

5. Results and Discussions

Our findings show that people generally feel optimistic about eating a healthy diet and use social networks to share their experiences with good eating practices. Found that UGC and its sentiments may impact public health since they may serve as a gauge of public opinion. Public health and public opinion on social media sites like Twitter are related. Consequently, policy makers like the USDA, WHO, and FAO should think about bolstering their strategic goals by putting nutritional advice on social media. Our findings help scholars better comprehend the social media space surrounding healthy diets and concentrate on advancing this area of study. They can also focus on content analysis conducted by users of various social networks to understand users' healthy eating practices better. **Table 1**shows the selected topics in UGC about diets and **Table 2**shows the selected sub-topics in UGC about diets. The topics broken down into nodes, the significant indicators or insights discovered in the sample gathered, and the number of text passages wherein each topic occurred in the dataset are all summarized in **Table 3, Table 4,** and **Table 5.**As a result, discovering important indications or insights involves a preliminary analysis and identification of each node's (X1, X2 and X3) contents depending on the WP and the contents of every topic**[107].**

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

Table 1 Selected topics in UGC about diets.

Name of the Topic	Description of the Topic	Sentiment	Weighted Percentage (WP)
Vegans	Vegetarian and vegan social movements and the conversation around their dietary habits	Neutral	1.69
Bodybuilding	Talk about the health benefits of eating a balanced diet and participating in sports culture.	Positive	2.08
Processed Food	Talk about the harm that processed foods do to your health.	Negative	2.14
Healthy habits	Talk about the advantages of sports and an active lifestyle for health	Positive	2.39
Ketogenic	Comments and recommendations on the ketogenic diet, along with a review of its health benefits	Neutral	2.48
Carbohydrates	Identification of health issues linked to a diet high in carbs	Negative	2.94
Proteins	Remarks and dietary suggestions about the health advantages of proteins	Neutral	3.06
Fruit and vegetables	Talking about fruits and vegetables as the foundation of a balanced diet	Positive	3.14
Sugar	Talk about foods (pastries and industrial items) that include sugar.	Negative	3.19
Healthy food	Assembling wholesome foods into groups and offering illustrations of health-promoting diets	Positive	4.33
Diseases	Diagnosis of illnesses and dementias brought on by poor diet.	Negative	4.48

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

Table 2 Selected sub-topics in UGC about diets.

Name of the sub-topic	Description of the Sub-Topic	Sentiment	Weighted Percentage (WP)
Snacks	Remarks and viewpoints on processed food consumption and inactive lifestyles	Negative	0.22
Spinach	Examining the health advantages of spinach	Positive	0.22
Chicken	Comments and perspectives regarding the health benefits of eating chicken	Positive	0.23
Potatoes	Observations and views regarding potatoes and their use in diets heavy in carbs.	Neutral	0.26
Broccoli	Recipes for healthy cooking with broccoli	Positive	0.26
Pizza	Thoughts and remarks regarding pizza and its correlation with diets heavy in carbs.	Negative	0.29
Bacon	Remarks regarding the health effects of bacon	Negative	0.31
Chocolate	Comments regarding the health effects of chocolate		0.32
Bananas	Eating bananas has health advantages	Positive	0.34
Vitamins	Vitamin identification and vitamin-rich meals	Positive	0.39
Wine	Comments and viewpoints regarding wine's health advantages	Neutral	0.40
Milk	Comments and views on the benefits of milk consumption for health	Neutral	0.42
Salads	Benefits of a salad diet	Positive	0.42
Coffee	Coffee's characteristics and effects on the body.	Neutral	0.43
Apples	Apples are essential for your health and a balanced diet.	Positive	0.60
Eggs	The health advantages of various egg diets	Neutral	0.60
Water	Water's place in a balanced diet	Positive	0.68
Vinegar	Benefits of vinegar for health in a balanced diet	Positive	0.80
Meats	Effects of eating meat on the human body	Negative	1.07
Vegetables	Vegetables and the accompanying advice for vegetarian diets	Positive	1.21
Fruits	Remarks and diets that emphasize fruit-feeding	Positive	1.50

Table 3 Neutral node, vital indicators and count

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

X3	Vital Indicators	Counting
Potatoes	When consumed in moderation, potatoes, which are high in carbs, can support a balanced diet.	79
Chocolate	It reduces blood pressure and is an antioxidant source. Overindulgence in chocolate leads to illnesses like obesity.	93
Wine	Wine helps reduce stress and enhances vision. Additionally, it can support better heart and dental health.	65
Milk	A balanced diet and athletics are associated with milk, which is high in proteins and carbs.	78
Coffee	Coffee assists with fat burning and enhances both mental and physical function.	121
Eggs	One of the finest foods for getting enough protein is eggs. Overindulgence in eggs can lead to obesity-related illnesses and food poisoning.	90
Vegans	Green and organic foods are the foundation of the vegan movement.	132
Ketogenic	A ketogenic diet promotes quick fat-burning.	113
Proteins	One essential element for tissue repair is protein. Consuming proteins is advised following athletic activity.	95

Table 4 Negative node, vital indicators and count

X2	Vital Indicators	Counting
Snacks	Saturated fats and oils can be found in snacks. Snacks are associated with fat and fried meals.	140
Pizza	Due to its high carbohydrate content, pizza can lead to obesity and heart issues.	98
Bacon	Cancer and digestive disorders are associated with bacon consumption. In UGC, Bacon has the most significant most significant detrimental effect.	191
Meats	If one overeats meat, it may be harmful.	206
Processed Food	Processed food diets have been related to obesity, cancer, and cardiac issues.	302

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

Carbohydrates	Diseases including diabetes, depression, and high blood pressure are linked to carbs. Carbohydrate-based diets are associated with obesity and weight increase that impairs mobility.	105
Sugar	Overindulgence in sugar is associated with heart-related illnesses and obesity. Snacking and sweet meals are associated with saturated sugars, which can lead to conditions including high blood pressure and pancreatic cancer.	292
Diseases	Unhealthy dietary choices centered on red meat and related foods like bacon, milk, snacks, and food generally lead to illnesses.	311

Table 5 Positive node, vital indicators and count.

X1	Vital Indicators	Counting
Spinach	Vitamins A and C, as well as magnesium, can be found in spinach.	95
Chicken	One form of protein that supports a balanced diet is chicken flesh. Consuming chicken meat is associated with intense physical activity and gym visits.	102
Broccoli	Broccoli is a good source of dietary fiber that supports healthy bodily functions.	122
Bananas	Bananas are suitable for your skin and heart. Eating bananas is associated with participating in sports.	230
Vitamins	Consuming a balanced diet requires vitamins.	272
Salads	Vitamins A and C can be found in salads. Consuming salads is associated with healthy eating movements (vegans and vegetarians, for example). Salad is a food for health-conscious people.	204
Apples	It is a dish for those who value good health. Consuming apples is associated with a vegan diet.	146
Water	Liquid food is mostly made of water, which is also essential to eating a balanced diet. It has a connection to exercise and good habits.	205
Vinegar	Consuming vinegar aids in illness prevention. Vinegar aids in quickening metabolism.	125

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

Vegetables	Vegetables aid with illness prevention. A healthy diet must consist primarily of vegetables, yet eating too many of them might have the opposite effect.	292
Fruits	Fruits are an essential component of a balanced diet. Fruits, with their water and fibre content, support the maintenance of good habits.	341
Bodybuilding	Bodybuilding and a healthy diet are associated with body culture and physical activities like gym work and running.	215
Healthy habits	The foundation of healthy behaviors is social time with family, exercise, and a nutritious diet.	372
Fruit and vegetables	A balanced diet must include fruits and vegetables rich in vitamins B, C, A, E, and K.	622
Healthy food	A balanced diet is built on wholesome food. Vegetarian and vegan dietary trends and movements are associated with healthy food choices.	683

6. Conclusion

Social media is being widely regarded as an essential tool. Today, there are more than 4.6 billion social media users, and each interacts with others online, leaving a digital trail.The social and cultural dimensions of the subject under observation can be identified with great study potential thanks to these massive data sets. Furthermore, it has been discovered that eating patterns are impacted by social media usage. Therefore, it is crucial to analyze these social networks to comprehend the variables influencing eating behaviors. The current study results show that foods that the user generated content views as most harmful include bacon, snacks, sweets, red meat, and processed foods.On the other hand, respondents were more favorable towards spinach, broccoli, salads, apples, and water. Furthermore, our findings suggest an increased user generated content collective understanding of nutrient-dense foods such as cheese, yogurt, almonds, dry beans, poultry, and fish is needed. The results of this study can be used by the WHO and other organizations engaged in nutritious food studies to improve

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

their strategies for disseminating nutritional product knowledge and preparing balanced meals. If user generated content analytics is combined with surveys or in-depth interviews in future studies, an improved understanding of dietary patterns and opinions of nutritious foods may be generated.

References

1. Kabata, Paweł, DorotaWinniczuk-Kabata, Piotr MaciejKabata, JanuszJaśkiewicz, and Karol Połom. 2022. "Can Social Media Profiles Be a Reliable Source of Information on Nutrition and Dietetics?" Healthcare 10, no. 2: 397.
2. McMullan, M. Patients using the Internet to obtain health information: How this affects the patient–health professional relationship. Patient Educ. Couns. 2006, 63, 24–28.
3. Ramachandran, D.; Kite, J.; Vassallo, A.J.; Chau, J.Y.; Partridge, S.; Freeman, B.; Gill, T. Food Trends and Popular Nutrition Advice Online–Implications for Public Health. Online J. Public Health Inform. 2018, 10, e213.
4. Yiannakoulias, N.; Tooby, R.; Sturrock, S. Celebrity over science? An analysis of Lyme disease video content on YouTube. Soc. Sci. Med. 2017, 191, 57–60.
5. Adams, S.A. Revisiting the online health information reliability debate in the wake of “web 2.0”: An inter-disciplinary literature and website review. Int. J. Med. Inform. 2010, 79, 391–400.
6. Toledano, C.A. Web 2.0: The Origin of the Word That Has Changed the Way We Understand Public Relations; Barcelona International PR Conference: Barcelona, Spain, 2013.
7. Daugherty, T.; Eastin, M.S.; Bright, L. Exploring consumer motivations for creating user-generated content. J. Interact. Advert. 2008, 8, 16–25.
8. Pollard, C.M.; Pulker, C.E.; Meng, X.; Kerr, D.A.; Scott, J.A. Who uses the internet as a source of nutrition and dietary information? An Australian population perspective. J. Med. Internet Res. 2015, 17, e209.
9. Rowe, S.B.; Alexander, N. Communicating Health and Nutrition Information After the Death of Expertise. Nutr. Today 2017, 52, 285–288.
10. Watson, R.; Wyness, L. ‘Don’t tell me what to eat!’–W ays to engage the population in positive behaviour change. Nutr. Bull. 2013, 38, 23–29.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

11. Declercq, J.; Tulkens, S.; Van Leuven, S. The produsing expert consumer: Co-constructing, resisting and accepting health-related claims on social media in response to an infotainment show about food. Health 2018, 26, 602–620.
12. Fassier, P.; Srour, B.; Raynard, B.; Zelek, L.; Cohen, P.; Bachmann, P.; Cottet, V. Fasting and weight-loss restrictive diet practices among 2,700 cancer survivors: Results from the NutriNet-Santé cohort. Int. J. Cancer 2018, 143, 2687–2697.
13. Hoffman, S.J.; Tan, C. Biological, psychological and social processes that explain celebrities' influence on patients' health-related behaviors. Arch Public Health 2015, 73, 3
14. Caulfield, T. From Kim Kardashian to Dr. Oz: The future relevance of popular culture to our health and health policy. Ottawa L. Rev. 2016, 47.
15. McCartney, M. Margaret McCartney: Swapping systematic reviews for celebrity endorsements. BMJ 2017, 356, j228.
16. Myrick, J.; Erlichman, S. How Audience Involvement and Social Norms Foster Vulnerability to Celebrity-Based Dietary Misinformation. Psychol. Pop. Media Cult. 2019.
17. Dodds, A.; Chamberlain, K. The problematic messages of nutritional discourse: A case-based critical media analysis. Appetite 2017, 108, 42–50.
18. Kitchens, B.; Harle, C.A.; Li, S. Quality of health-related online search results. Decis. Support Syst. 2014, 57, 454–462.
19. Ma, T.J.; Atkin, D. User generated content and credibility evaluation of online health information: A meta analytic study. Telemat. Inform. 2017, 34, 472–486.
20. Levac, J.J.; O'Sullivan, T. Social media and its use in health promotion. Interdiscip. J. Health Sci. 2010, 1, 47–53.
21. Chou, W.-Y.S.; Oh, A.; Klein, W.M.P. Addressing Health-Related Misinformation on Social Media. JAMA 2018, 320, 2417–2418.
22. Parker, L.; Brennan, L. Social Marketing and Advertising in the Age of Social Media; Edward Elgar Publishing, Inc.: Northampton, MA, USA, 2020.
23. Barklamb, A.M.; Molenaar, A.; Brennan, L.; Evans, S.; Choong, J.; Herron, E.; Reid, M.; McCaffrey, T.A. Learning the language of social media: A comparison of engagement metrics and social media strategies used by food and nutrition-related social media accounts. Nutrients 2020, 12, 2839.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

24. Cavaliere, A.; De Marchi, E.; Banterle, A. Does consumer health-orientation affect the use of nutrition facts panel and claims? An empirical analysis in Italy. Food Qual. Prefer. 2016, 54, 110–116.
25. Saba, A.; Sinesio, F.; Moneta, E.; Dinnella, C.; Laureati, M.; Torri, L.; Bendini, A. Measuring consumers' attitudes towards health and taste and their association with food-related life-styles and preferences. Food Qual. Prefer. 2019, 73, 25–37.
26. Buhrau, D.; Ozturk, T.C. Motivating healthy eating: The role of presentation format and health consciousness. Food Qual. Prefer. 2018, 64, 167–171.
27. Jeong, J.Y.; Kim, H.C. Korean mothers' food choice behavioral intent for children: An examination of the interaction effects of food type, household income, and healthism. Food Qual. Prefer. 2020, 81, 103835.
28. Sajadmanesh, S.; Jafarzadeh, S.; Ossia, S.A.; Rabiee, H.R.; Haddadi, H.; Mejova, Y.; Musolesi, M.; Cristofaro, E.D.; Stringhini, G. Kissing Cuisines: Exploring Worldwide Culinary Habits on the Web. In Proceedings of the 26th International Conference on World Wide Web Companion, Perth, Australia, 3–7 April 2017.
29. Mejova, Y.; Haddadi, H.; Noulas, A.; Weber, I. # foodporn: Obesity patterns in culinary interactions. In Proceedings of the 5th International Conference on Digital Health, Florence, Italy, 18–20 May 2015.
30. Trattner, C.; Rokicki, M.; Herder, E. On the relations between cooking interests, hobbies and nutritional values of online recipes: Implications for health-aware recipe recommender systems. In Proceedings of the 25th Conference on User Modeling, Adaptation and Personalization, Bratislava, Slovakia, 9–12 July 2017.
31. Armstrong, B.; Doll, R. Environmental factors and cancer incidence and mortality in different countries, with special reference to dietary practices. Int. J. Cancer 1975, 15, 617–631.
32. Keys, A.; Mienotti, A.; Karvonen, M.J.; Aravanis, C.; Blackburn, H.; Buzina, R.; Djordjevic, B.; Dontas, A.; Fidanza, F.; Keys, M.H. The diet and 15-year death rate in the seven countries study. Am. J. Epidemiol. 1986, 124, 903–915.
33. De Lorgeril, M.; Salen, P.; Martin, J.-L.; Monjaud, I.; Delaye, J.; Mamelle, N. Mediterranean diet, traditional risk factors, and the rate of cardiovascular complications after myocardial infarction: Final report of the Lyon Diet Heart Study. Circulation 1999, 99, 779–785.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

34. Kratz, M.; Baars, T.; Guyenet, S. The relationship between high-fat dairy consumption and obesity, cardiovascular, and metabolic disease. Eur. J. Nutr. 2013, 52, 1–24.
35. Zadarko-Domaradzka, M.; Zadarko, E. New Media as a Tool for Health Education and Behaviour Modelling in Modern Society. Eduk. Tech. Inform. 2017, 1, 266–272.
36. Nour, M.; Yeung, S.H.; Partridge, S.; Allman-Farinelli, M. A Narrative Review of Social Media and Game-Based Nutrition Interventions Targeted at Young Adults. J. Acad. Nutr. Diet. 2017, 117, 735–752.
37. Stellefson, M.; Paige, S.R.; Chaney, B.H.; Chaney, J.D. Evolving Role of Social Media in Health Promotion: Updated Responsibilities for Health Education Specialists. Int. J. Environ. Res. Public Health 2020, 17, 1153.
38. 38Goodyear, V.A.; Armour, K.M.; Wood, H. Young People and Their Engagement with Health-Related Social Media: New Perspectives. Sport Educ. Soc. 2018, 24, 673–688.
39. Lupton, D. 'Better Understanding about What's Going on': Young Australians' Use of Digital Technologies for Health and Fitness. Sport Educ. Soc. 2020, 25, 1–13.
40. Wartella, E.; Rideout, V.; Montague, H.; Beaudoin-Ryan, L.; Lauricella, A. Teens, Health and Technology: A National Survey. Media Commun. 2016, 4, 13–23.
41. Pollard, C.M.; Pulker, C.E.; Meng, X.; Kerr, D.A.; Scott, J.A. Who Uses the Internet as a Source of Nutrition and Dietary Information? An Australian Population Perspective. J. Med. Internet Res. 2015, 17, e4548.
42. Fassier, P.; Chhim, A.-S.; Andreeva, V.A.; Hercberg, S.; Latino-Martel, P.; Pouchieu, C.; Touvier, M. Seeking Health-and Nutrition-Related Information on the Internet in a Large Population of French Adults: Results of the NutriNet-Santé Study. Br. J. Nutr. 2016, 115, 2039–2046.
43. Adzharuddin, N.A.; Ramly, N.M. Nourishing Healthcare Information over Facebook. Procedia-Soc. Behav. Sci. 2015, 172, 383–389.
44. Helm, J.; Jones, R.M. Practice Paper of the Academy of Nutrition and Dietetics: Social Media and the Dietetics Practitioner: Opportunities, Challenges, and Best Practices. J. Acad. Nutr. Diet. 2016, 116, 1825–1835.
45. Carrotte, E.R.; Vella, A.M.; Lim, M.S. Predictors of "Liking" Three Types of Health and Fitness-Related Content on Social Media: A Cross-Sectional Study. J. Med. Internet Res. 2015, 17, e4803.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

46. Kalkan, I. The Impact of Nutrition Literacy on the Food Habits among Young Adults in Turkey. Nutr. Res. Pract. 2019, 13, 352–357.
47. Dodds, A.; Chamberlain, K. The Problematic Messages of Nutritional Discourse: A Case-Based Critical Media Analysis. Appetite 2017, 108, 42–50.
48. Nelson, A.M.; Fleming, R. Gender Differences in Diet and Social Media: An Explorative Study. Appetite 2019, 142, 104383.
49. 49Simeone, M.; Scarpato, D. Sustainable Consumption: How Does Social Media Affect Food Choices? J. Clean. Prod. 2020, 277, 124036.
50. Viviani, M.; Pasi, G. Credibility in social media: Opinions, news, and health information—a survey. Wiley Interdiscip. Rev. Data Min. Knowl. Discov. 2017, 7, 1–25.
51. Waszak, P.M.; Kasprzycka-Waszak, W.; Kubanek, A. The spread of medical fake news in social media—The pilot quantitative study. Health Policy Technol. 2018, 7, 115–118.
52. McKee, M.; van Schalkwyk, M.C.I.; Stuckler, D. The second information revolution: Digitalization brings opportunities and concerns for public health. Eur. J. Environ. Public Health 2019, 29, 3–6.
53. Krishna, A.; Thompson, T.L. Misinformation About Health: A Review of Health Communication and Misinformation Scholarship. Am. Behav. Sci. 2019, 0002764219878223.
54. Gurajala, S.; White, J.S.; Hudson, B.; Voter, B.R.; Matthews, J.N. Profile characteristics of fake Twitter accounts. Big Data Soc. 2016, 3, 1–13.
55. Pensa, R.G.; Di Blasi, G.; Bioglio, L. Network-aware privacy risk estimation in online social networks. Soc. Netw. Anal. Min. 2019, 9.
56. Kirner-Ludwig, M. Creation, dissemination and uptake of fake-quotes in lay political discourse on Facebook and Twitter. J. Pragmat. 2020, 157, 101–118.
57. Alsyouf, M.; Stokes, P.; Hur, D.; Amasyali, A.; Ruckle, H.; Hu, B. "Fake News" in urology: Evaluating the accuracy of articles shared on social media in genitourinary malignancies. BJU Int. 2019, 124, 701–706.
58. Jin, Z.; Cao, J.; Zhang, Y.; Zhou, J.; Tian, Q. Novel Visual and Statistical Image Features for Microblogs News Verification. IEEE Trans. Multimed. 2017, 19, 598–608. [CrossRef]
59. Pill, S.; Harvey, S.; Hyndman, B. Novel research approaches to gauge global teacher familiarity with game-based teaching in physical education: An exploratory #Twitter analysis. Asia-Pac. J. Health Sport Phys. Educ. 2017, 8, 161–178.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

60. S.P.; Koehler, M.J. 28 Days Later: Twitter Hashtags as "Just in Time" Teacher Professional Development. TechTrends 2017, 61, 273–281.
61. Rebelo MF. How influencers' credibility on Instagram is perceived by consumers and its impact on purchase intention. 2017. p. 1–92.
62. Meel P, Vishwakarma DK. Fake news, rumor, information pollution in social media and web: A contemporary survey of state-of-the-arts, challenges and opportunities. Expert Syst Appl. 2019; 153:112986.
63. Lombard C, Brennan L, Reid M, et al. Communicating health-optimising young adults' engagement with health messages using social media: study protocol. Nutr Diet. 2018;75(5):509–19.
64. Li R, Suh A. Factors influencing information credibility on social media platforms: evidence from Facebook pages. Procedia Comput Sci. 2015;72:314–28
65. Detenber BH, Boster FJ, Li BJ, et al. Effects of message completeness and source expertise in online health discussion boards. Int J Comm. 2019;13:465–88.
66. Hajli MN, Sims J, Featherman M, Love PED. Credibility of information in online communities. J Strat Mark. 2015;23(3):238–53.
67. 67Abbar, S.; Mejova, Y.; Weber, I. You Tweet What You Eat. In Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems, Seoul, Korea, 18–23 April 2015; pp. 3197–3206.
68. Strickland, J.R.; Eyler, A.A.; Purnell, J.Q.; Kinghorn, A.M.; Herrick, C.; Evanoff, B.A. Enhancing Workplace Wellness Efforts to Reduce Obesity: A Qualitative Study of Low-Wage Workers in St Louis, Missouri, 2013–2014. Prev. Chronic Dis. 2015, 12, 140405.
69. Crovetto, M.; Valladares, M.; Espinoza, V.; Mena, F.; Oñate, G.; Fernandez, M.; Durán-Agüero, S. Effect of healthy and unhealthy habits on obesity: A multicentric study. Nutrition 2018, 54, 7–11.
70. Maynard, D.; Roberts, I.; Greenwood, M.A.; Rout, D.; Bontcheva, K. A framework for real-time semantic social media analysis. J. Web Semant. 2017, 44, 75–88
71. Apuke, O.D. Social and Traditional Mainstream Media of Communication: Synergy and Variance Perspective. Online J. Commun. Media Technol. 2017, 7, 132–140.
72. Zhang, K.; Geng, Y.; Zhao, J.; Liu, J.; Li, W. Sentiment Analysis of Social Media via Multimodal Feature Fusion. Symmetry 2020, 12, 2010.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

73. Pilař, L.; Poláková, J.; Gresham, G.; Rojík, S.; Tichá, I. Why People Use Hashtags When Visiting Farmers' Markets. In Agrarian Perspectives XXVI: Competitiveness of European Agriculture and Food Sectors; CULS: Prague, Czech Republic, 2017.
74. Pilař, L.; Balcarová, T.; Rojík, S.; Tichá, I.; Poláková, J. Customer experience with farmers' markets: What hashtags can reveal. Int. Food Agribus. Manag. Rev. 2018, 21, 755–770.
75. Pilař, L.K.S.L.; Rojík, R.K.S.; Gresham, G. Customer Experience with Organic Food: Global View. Emir. J. Food Agric. 2018.
76. Blundell, K.-L.; Forwood, S. Using a social media app, Instagram, to affect what undergraduate university students choose to eat. Appetite 2021, 157, 104887.
77. Harvey, J.; Smith, A.; Goulding, J.; Illodo, I.B. Food sharing, redistribution, and waste reduction via mobile applications: A social network analysis. Ind. Mark. Manag. 2020, 88, 437–448.
78. Jiren, T.S.; Bergsten, A.; Dorresteijn, I.; Collier, N.F.; Leventon, J.; Fischer, J. Integrating food security and biodiversity governance: A multi-level social network analysis in Ethiopia. Land Use Policy 2018, 78, 420–429.
79. Fleming-Milici, F.; Harris, J.L. Adolescents' engagement with unhealthy food and beverage brands on social media. Appetite 2020, 146, 104501.
80. Simeone, M.; Scarpato, D. Sustainable consumption: How does social media affect food choices? J. Clean. Prod. 2020, 277, 124036.
81. Nelson, A.M.; Fleming, R. Gender differences in diet and social media: An explorative study. Appetite 2019, 142, 104383.
82. Hawks, J.R.; Madanat, H.; Walsh-Buhi, E.R.; Hartman, S.; Nara, A.; Strong, D.; Anderson, C. Narrative review of social media as a research tool for diet and weight loss. Comput. Hum. Behav. 2020, 111, 106426.
83. Sutter, C.; Pham, G.V.; Yun, J.T.; Narang, K.; Sundaram, H.; Fiese, B.H. Food parenting topics in social media posts: Development of a coding system, examination of frequency of food parenting concepts, and comparison across Reddit and Facebook. Appetite 2021, 161, 105137.
84. Choudhary, S.; Nayak, R.; Kumari, S.; Choudhury, H. Analysing acculturation to sustainable food consumption behaviour in the social media through the lens of information diffusion. Technol. Forecast. Soc. Chang. 2019, 145, 481–492.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

85. Steils, N.; Obaidalahe, Z. “Social food”: Food literacy co-construction and distortion on social media. Food Policy 2020, 95, 101932.
86. Zhou, J.; Liu, F.; Zhou, H. Understanding health food messages on Twitter for health literacy promotion. Perspect. Public Health 2018, 138, 173–179.
87. 87Schillinger, D.; Chittamuru, D.; Ramírez, A.S. From “Infodemics” to Health Promotion: A Novel Framework for the Role of Social Media in Public Health. Am. J. Public Health 2020, 110, 1393–1396.
88. 88Freeman B, Kelly B, Vandevijvere S, Baur L. Young adults: beloved by food and drink marketers and forgotten by public health? Health PromotInt 2016 Dec; 31(4):954-961.
89. Howse E, Hankey C, Allman-Farinelli M, Bauman A, Freeman B. 'Buying salad is a lot more expensive than going to McDonalds': young adults' views about what influences their food choices. Nutrients 2018 Jul 30; 10(8):996.
90. Freberg K, Graham K, McGaughey K, Freberg LA. Who are the social media influencers? A study of public perceptions of personality. Public Relat Rev 2011 Mar; 37(1):90-92.
91. Uzunoğlu E, Misci Kip S. Brand communication through digital influencers: leveraging blogger engagement. Int J InfManag 2014 Oct; 34(5):592-602.
92. Easton S, Morton K, Tappy Z, Francis D, Dennison L. Young people's experiences of viewing the fitspiration social media trend: qualitative study. J Med Internet Res 2018 Jun 18;20(6):e219
93. Penders B. Why public dismissal of nutrition science makes sense: post-truth, public accountability and dietary credibility. Br Food J 2018;120(9):1953-1964
94. Klassen KM, Borleis ES, Brennan L, Reid M, McCaffrey TA, Lim MS. What people "Like": analysis of social media strategies used by food industry brands, lifestyle brands, and health promotion organizations on Facebook and Instagram. J Med Internet Res 2018 Jun 14; 20(6):e10227.
95. Moorhead SA, Hazlett DE, Harrison L, Carroll JK, Irwin A, Hoving C. A new dimension of health care: systematic review of the uses, benefits, and limitations of social media for health communication. J Med Internet Res 2013 Apr 23; 15(4):e85.
96. Vaterlaus JM, Patten EV, Roche C, Young JA. #Gettinghealthy: the perceived influence of social media on young adult health behaviors. Comput Human Behav 2015 Apr; 45:151-157.
97. Chau MM, Burgermaster M, Mamykina L. The use of social media in nutrition interventions for adolescents and young adults-a systematic review. Int J Med Inform 2018 Dec;120:77-91

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Nov 2022

98. Klassen KM, Douglass CH, Brennan L, Truby H, Lim MS. Social media use for nutrition outcomes in young adults: a mixed-methods systematic review. Int J BehavNutrPhys Act 2018 Jul 24; 15(1):70.

99. Barklamb AM, Molenaar A, Brennan L, Evans S, Choong J, Herron E, et al. Learning the language of social media: a comparison of engagement metrics and social media strategies used by food and nutrition-related social media accounts. Nutrients 2020 Sep 16; 12(9):2839.

100. Q. Zhou, C. Zhang, Detecting dietary preference of social media users in China via sentiment analysis, Proc. Assoc. Inf. Sci. Technol., 54 (1) (2017), pp. 523-527.

101. M.H. Samuels, R. Schuff, P. Beninato, A. Gorsuch, J. Dursch, S. Egan, ..., T.E. Burdick, Effectiveness and cost of recruiting healthy volunteers for clinical research studies using an electronic patient portal: A randomized study, Journal of Clinical and Translational Science, 1 (6) (2017), pp. 366-372.

102. D. Ghosh, R. Guha, What are we 'tweeting' about obesity? Mapping tweets with topic modeling and Geographic Information System,Cartogr. Geogr. Inf. Sci., 40 (2) (2013), pp. 90-102,

103. A.E. Chung, A.C. Skinner, S.E. Hasty, E.M. Perrin, Tweeting to health: a novel mHealth intervention using Fitbits and Twitter to Foster healthy lifestyles, Clin. Pediatr., 56 (1) (2017), pp. 26-32,

104. J. Saura, P. Palos-Sanchez, A. Blanco-González, The importance of information service offerings of collaborative CRMs on decision-making in B2B marketing,J. Bus. Ind. Mark. (2019),

105. D. Scanfeld, V. Scanfeld, E.L. Larson,Dissemination of health information through social networks: Twitter and antibiotics,Am. J. Infect. Control, 38 (3) (2010), pp. 182-188,

106. E. Närvänen, H. Saarijärvi, O. Simanainen, Understanding consumers' online conversation practices in the context of convenience food Int. J. Consum. Stud., 37 (5) (2013), pp. 569-576.

107. K. Krippendorff, Content Analysis: An Introduction to Its Methodology, (3rd ed.), Sage, Thousand Oaks, CA, USA (2013), pp. 221-250.