

From Likes to Bites: Understanding the Influence of Social Media on Nutrition Choices and Obesity- A Comprehensive Review

Abirami S. P.¹ and N. Prabhavathy Devi^{*2}

¹⁻² Department of Nutrition and Dietetics, Meenakshi Academy of Higher Education and Research, deemed to be University, Chennai, Tamil Nadu, India

Abstract

Social media has become an integral part of adolescents' lives, with over 90% having at least one social media account. This widespread presence has led food and beverage companies to target adolescents through social media advertising, potentially influencing their food choices and contributing to adverse health outcomes such as obesity, hypertension, and type 2 diabetes. This review aims to investigate the impact of social media food and beverage advertisements on college going student's dietary decisions by examining existing literature. Narrative analysis revealed two primary findings: adolescents were more likely to recall unhealthy food products advertised on social media, and celebrity endorsements were frequently used in these advertisements. These findings underscore the active utilization of social media by food and beverage companies to target adolescents and adults, often promoting products that may not align with healthy dietary choices. As such, healthcare professionals should incorporate routine assessments of adolescents' social media usage and dietary habits into their practice. Educating adolescents, parents, and families about the potential health risks associated with exposure to unhealthy food advertisements on social media is imperative. Moreover, implementing regulatory measures and policies to regulate such advertising practices may help mitigate the negative impact on adolescent health.

Key words: Social media, Nutrition, Food vlogger, Influence, Health, Food choice

Social media has seamlessly integrated into our daily lives, exerting a considerable influence on various aspects of our well-being, including health and wellness. It serves as a platform not only for accessing information related to health, wellness, and entertainment but also for staying updated with the latest developments [1]. Social media refers to internet platforms designed mainly to communicate, engage, exchange information and collaborate [2]. Social media are been used by people of all age group from school students to elderly mainly influenced by influencers. Social media influencers are content creators who promote, update and inspire people through social media [3]. Social media platforms include Instagram, Facebook, What's app, Twitter, LinkedIn, Snapchat, TikTok, YouTube etc. People these days follow a lot of influencers on social media for various reasons including health, nutrition insight, fitness, update of information, food, opening of new restaurants, etc. Though there are many advantages of using social media, there is also equal disadvantage [4]. Social media has majorly impacted physical health, psychological health as well as behaviour problem. Health, nutrition, and food rank among the most frequently discussed subjects by influencers on social media, and they are also highly sought after by users [5]. The impact of social media is still not clear; however, the influence of social media has impact in the food choice and over all behaviour of people [6].

Nutrition encompasses the food we consume, directly influencing our growth and development. The advancement of technology has led to a nutritional transition, contributing to significant health issues such as diabetes, hypertension, and cardiovascular diseases. Those who follow influencers on social media has direct impact on their health status, of which obesity is most common [7]. Obesity is on the major health concern in the current world. Screen time has a direct relation to obesity especially in youngsters and adults. Often obesity is linked with higher risk of developing metabolic syndrome and some form of cancers [8].

Definition

The term "Social Media" (SM) made its debut in 1994 within a Tokyo online media platform known as Matisse [9]. During the initial stages of the commercial Internet, the earliest social media platforms were conceived and introduced. Since then, the quantity of social media platforms and active users has surged, solidifying its position as one of the Internet's most vital applications [10]. The launch of many free/low-cost data packages in 2016/2017 has put India on the global map for large-scale consumption of mobile data leading to exponential usage of social media [11]. Social media influencers are individuals who have gained significant popularity and a large following due to their content creation, often leveraging their influence to endorse products and services with the aim of

*Correspondence to: N. Prabhavathy Devi, E-mail: prabhavathy_devi@yahoo.com

inspiring their audience [12]. Dietary pattern, as defined, encompasses the entirety of an individual's diet, including the types, amounts, proportions, and variety of foods and beverages consumed, as well as the frequency with which they are consumed [13]. Nutrition transition refers to the shift in dietary habits from traditional to modern patterns. Popkin was the first to introduce this concept. Various factors such as age, gender, socioeconomic status, literacy level, and social media usage influence nutritional transitions [14]. Social media addiction refers to a form of behavioural addiction characterized by compulsive and excessive use of social media platforms. This addiction can disrupt various aspects of an individual's life, including their interpersonal relationships, performance at work or in studies, and overall physical health [15,16].

Prevalence

According to the Global Digital Overview, there are more than 4.33 billion social networking service (SNS) users globally, with the younger demographic showing the highest attraction to these platforms [17]. Ghaffy reports that 53.6% of the world's population utilizes SNS, spending an average of 2 hours and 25 minutes on these platforms daily [18].

In the realm of social media, the year 2020 held significant importance. Facebook, the world's most popular social networking site, saw a substantial increase in monthly users, from 1.1 billion in 2013 to 2.9 billion by 2022 [19]. Hanley and Watts have outlined the global prevalence of social media users in the table provided below [20,21]. In India, there are 197 million active social media users, constituting approximately 14% of the population. Prevalence of social media users in India are tabulated below as a comparison in (Table 1) [22].

Influence of social media on health

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity [23]. The quantity and quality of social relationships significantly impact mental health, health behavior, physical health, and mortality risk [24]. The Displaced Behavior Theory suggests that excessive engagement in sedentary activities like social media usage may reduce opportunities for in-person social interaction. Both face-to-face interactions and physical activities have been demonstrated to be beneficial for mental well-being [25,26]. Numerous studies globally have shown that children and adolescents spend several hours daily on social media platforms. For instance, an Iranian study found that nearly 80% of children and adolescents use social media for 3-4 hours or more each day [27]. Through these platforms, we frequently encounter information about obesity, which can rapidly circulate worldwide, often facilitated by the use of appropriate hashtags (#) [28]. A study conducted in Bengaluru on the influence of social media on health identified several common physical symptoms among social media addicts. The most prevalent physical symptom observed was eye strain, affecting 38.4% of participants, followed by neck pain, affecting 30.7%. Gastritis was the least reported physical symptom, affecting only 1.9% of participants. In terms of psychological changes, anger was the most common, affecting 25.5% of participants, while sleep disturbance was the most prevalent behavioral change, affecting 26.1% of participants [29].

Impact of social media on health

Social media usage has been connected to eating disorders and a negative perception of body image, particularly among young users [30]. Interactions related to body image on

social media platforms have been linked to heightened negative body image and unhealthy dietary choices among young adults influenced by these platforms [31]. Furthermore, exposure to videos posted by social media influencers across different platforms may contribute to a looming health crisis for the younger generation, potentially affecting their eating habits, meal timing, and sleep patterns in the future [32]. Recent research has predominantly delved into how these networks impact the prevalence of overweight and obesity. It's suggested that an individual's physical and behavioral traits are significantly influenced by the group of individuals they regularly interact with [33]. These social relationships can be both beneficial and harmful to a person's behavior. Moreover, studies have demonstrated that weight-loss interventions yield more favorable outcomes when implemented within group settings [34]. Conversely, being in the company of obese social contacts can impact an individual's perspective on obesity and their lifestyle decisions, including social habits, dietary preferences, and physical activity levels [35].

Influence of social media on eating patterns

Traditional and digital marketing often showcase food and beverage products that are high in fat, sugar, and salt. YouTube, particularly popular among children aged 5 to 15, plays a significant role in shaping their eating habits through the content they view [36,37]. Studies indicate that exposure to food-related content on social media platforms, particularly content created by influencers, has a direct and immediate impact on the food choices and consumption of promoted foods among 9-11-year-old children [38,39]. A compelling qualitative study conducted in the UK focused on children aged 10-11 years, exploring the marketing impact of a product promoted through YouTube. In this study, children were shown a marketing video advertising a sweet product and were told that the study aimed to collect their opinions on YouTubers advertising food and beverages. The findings revealed that YouTubers serve as a significant source of entertainment, information, social validation, and experiences for children. Additionally, the products endorsed by YouTubers were found to be highly desirable among the children involved in the study [40]. Research conducted by American scholars involving 884 male and female adolescents aged 13-17 revealed that food advertisements on Instagram were significantly more appealing to the participants compared to traditional food advertisements. Intriguingly, the Instagram symbol alone generated much greater interest in the promoted product [41].

Influence of social media on public health

Online platforms, including social networking sites, offer an opportunity to utilize the collective knowledge and insights of clinicians, patients, and the wider community for public health surveillance. Entities such as the Global Outbreak Alert and Response Network of the World Health Organization (WHO) utilize web sources for real-time surveillance, as these sources provide data that may not be captured through traditional methods [42]. In 2018, Wakamiya and colleagues conducted a study utilizing Twitter for detecting Influenza outbreaks by analyzing geotagged tweets and trapped sensors. Their findings provided further evidence supporting this approach [43]. The New York City Department of Health and Mental Hygiene (DOHMH) utilizes a system to monitor reports of potential foodborne illnesses on Yelp [44]. Research has demonstrated that health researchers employ social media for various research-related objectives. Among these, the platform is commonly utilized to recruit participants and gather data from online sources, such as conducting content analysis of

social media posts and data mining activities [45]. Professional associations, public health organizations (such as the World Health Organization (WHO) and the Centers for Disease

Control and Prevention (CDC)), as well as hospitals, regularly utilize social media platforms to disseminate information about science and health-related topics [46].

Table 1 Prevalence Of Different Social Media Users Globally

Types of social media	Prevalence of users globally	Prevalence of users in India
Instagram	5.3 Billion Users	516 Million Users
YouTube	2.56 Billion Users	467 Million Users
What's app	2 Billion Users	487 Million Users
WeChat	1.26 Billion User	10 Million User
TikTok	1 Billion Users	150 Million Users
Facebook	988 Million Users	367 Million Users
Snapchat	557 Million Users	182 Million Users
Telegram	550 Million Users	196 Million Users
Twitter	436 Million users	1.4 Billion Users
Reddit	430 Million User	13.57 Million Users

Influence of social media on food and nutrition

Dietary intake significantly impacts human health, and social media holds the potential to influence individuals' dietary behaviors [47]. Social media has emerged as a widely used platform for obtaining information about food and nutrition [48]. Preliminary research suggests that utilizing social media for accessing recipes and obtaining information on healthy eating can assist consumers in choosing and preparing nutritious meals [49]. On the other hand, studies have indicated that children exposed to marketing of discretionary foods on social media platforms are more inclined to choose the advertised products [50]. A systematic review exploring the relationship between social media use and eating behaviors discovered that overall engagement with social media was linked to body dissatisfaction, restrained eating, and overeating. Interestingly, the review also revealed an association between social media use and healthy food selection, highlighting the significant influence of social media on both healthy and unhealthy eating behaviors [51]. Instagram stands out as one of the most widely used social media platforms worldwide, with nutrition ranking among the most frequently discussed health topics on the platform [52].

Influence of social media on obesity and NCDS

Obesity represents a major health challenge on a global scale, with the number of affected individuals steadily increasing. In 2016, over 1.9 billion adults, accounting for 39% of the global population, were classified as overweight [53]. Obesity is frequently linked to an elevated risk of developing metabolic syndromes such as hypertension and diabetes. However, it is also associated with various other health complications and unfavorable outcomes [54,55]. Obesity is primarily linked to conditions such as diabetes mellitus, coronary heart disease, sleep disorders, and certain forms of cancer [56]. The global obesity epidemic arises from factors including genetic predisposition, a significant reduction in physical activity levels, and the widespread availability of high-calorie foods [57]. Furthermore, viewing videos posted by social media influencers across various platforms may contribute to a looming health crisis, particularly affecting the health of the younger generation. This could manifest in changes in eating behaviors, meal timings, and disrupted sleep patterns [58]. In a longitudinal cohort study involving a nationally representative sample of 10- to 15-year-olds in the US, a robust dose-response relationship was observed between the duration of daily television viewing and the prevalence of overweight. It was estimated that up to 60% of the four-year incidence of overweight could be attributed to excessive television viewing [59]. Observational studies have indicated

that increased screen time is correlated with a broader range of cardiometabolic risk factors, encompassing hypertension, elevated cholesterol levels, insulin resistance, heightened inflammation, and the metabolic syndrome [60].

Impact of social media on obesity

While it's commonly assumed that screen media time replaces time that could be spent engaging in physical activity, epidemiological studies have not consistently shown cross-sectional or prospective associations between screen time and reduced physical activity. This inconsistency may be attributed to challenges in accurately measuring both screen media exposure and physical activity. Experimental studies focused on reducing screen time have generally demonstrated only minimal, if any, measurable increases in physical activity [61]. In contrast, there is considerably more evidence supporting the impact of screen media on energy intake as the primary mechanism linking screen time to obesity in children. Epidemiological studies consistently show that children who engage in more screen media consumption tend to consume fewer fruits and vegetables, and instead consume more energy-dense snacks, sugary drinks, and fast food. Additionally, these children receive a higher percentage of their energy from fats and have an overall higher total energy intake [62-63]. Laboratory-based experimental studies have demonstrated that exposure to screen media can result in increased energy consumption, even in the absence of heightened feelings of hunger or compensation by reducing intake during other parts of the day [64]. A recent systematic literature review examining the relationship between screen time and sleep revealed that over 90% of the studies indicated positive associations between screen time and adverse sleep outcomes, typically characterized by later bedtimes and reduced total sleep duration. It's worth noting that sleep deprivation has been linked to increased obesity and weight gain [65-67].

CONCLUSION

In conclusion, the extensive body of research reviewed here underscores the multifaceted impact of screen media exposure on various aspects of health and nutrition, particularly in relation to obesity and sleep. Evidence consistently points towards screen time as a significant contributor to sedentary behavior, increased energy intake, disrupted sleep patterns, and adverse health outcomes such as obesity and compromised sleep quality. Moving forward, future research should aim to further elucidate the underlying mechanisms by which screen media influences health behaviors and outcomes, including the role of advertising, social influence, and psychological factors.

Additionally, there is a need for longitudinal studies to better understand the long-term effects of screen time on nutritional status outcomes across different age groups and populations. Furthermore, interventions targeting screen time reduction and promoting healthy screen habits should be developed and

evaluated to mitigate the adverse health impacts associated with excessive screen media exposure. Ultimately, continued research in this area is crucial for informing public health strategies and interventions aimed at promoting healthier lifestyles in the digital age.

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