

Nutritional Misinformation and Digital Food Culture in Modern Public Health

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Abstract

The rise of social media has made digital platforms primary sources of dietary guidance for millions. These platforms often displace evidence-based advice from registered dietitians. This narrative review focused on peer-reviewed studies from 2011 to 2024. The review examined nutritional misinformation in digital food culture. It focused on sources mechanisms and public health consequences. Evidence shows misinformation is prevalent across all major platforms. Misinformation is especially common on TikTok and Instagram. Influencers without formal credentials drive much of this content. Algorithmic amplification favors emotionally engaging claims and these claims are often inaccurate. Examples include detox pseudoscience fad diets and supplement overmarketing. Documented harms include increased risks of eating disorders. Other harms include orthorexia and supplement-induced hepatotoxicity. Poor management of chronic diseases is also a concern. Promising interventions include media literacy education. Platform policy changes and collaborations with credentialed influencers are also promising. However these interventions remain under-evaluated. The review concludes that digital nutritional misinformation is a significant public health threat. This threat requires coordinated action from researchers platforms policymakers and educators. Future work must prioritize longitudinal studies. Future work must also prioritize algorithmic transparency and intervention trials. These steps will support effective governance of the online food information environment.

1. Introduction

The global food information environment has changed a lot over the past twenty years. In the past people got dietary advice from doctors dietitians government health agencies and trusted print materials like pamphlets or books. This advice was usually based on scientific evidence and public health guidelines. Today the situation is very different. Social media platforms now dominate how people learn about food and nutrition. These platforms deliver nutritional content at an enormous scale and at very high speed. As of 2024 more than 4.9 billion people around the world have active social media accounts. Surveys show that a large number of these users especially young people between 18 and 34 years old get health and nutrition information from social media regularly (Lim et al., 2022). For many of these users social

media is their primary source of dietary guidance. They turn to Instagram TikTok YouTube Facebook and Pinterest before they consult a doctor or a dietitian.

This shift from professional advice to digital content has serious public health implications. Social media platforms are designed to keep users engaged for as long as possible. They are not designed to make sure information is accurate. The algorithms that run these platforms promote content that gets strong emotional reactions. They favor content that is surprising scary exciting or very appealing. Whether that content is scientifically true does not matter to the algorithm. In the field of nutrition this structural bias leads to the rapid spread of misleading claims. Examples include detox diets that promise to clean the body of toxins. Other examples are extreme elimination diets that cut out entire food groups.

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There are also superfood mythologies that claim one food can cure many diseases. Supplement overmarketing is common too with products being sold as miracle solutions. Caloric distortion is another problem where people are told to eat far too few or too many calories. This type of content often contradicts established nutritional science and official dietary guidelines (Falak et al., 2025; Fernandes et al., 2019). However, it goes viral because it looks beautiful on a plate uses powerful personal testimonials and builds fake but friendly relationships with followers through influencers.

The harms caused by nutritional misinformation go well beyond minor mistakes in daily eating. A growing number of studies have linked digital nutritional misinformation to serious clinical outcomes. One such outcome is orthorexia nervosa which is an unhealthy obsession with eating only pure or healthy foods. Other outcomes include anorexia and bulimia which are severe eating disorders. Doctors have also seen cases of liver damage caused by taking too many dietary supplements promoted online. People with chronic diseases like type 2 diabetes heart disease or inflammatory bowel disease may delay or abandon their evidence-based medical treatment. They do this because they believe online claims that a certain diet or supplement can cure them naturally. This delay can worsen their condition and lead to emergency hospital visits. The COVID-19 pandemic showed this problem with particular clarity. During the pandemic false claims spread rapidly that specific supplements like vitamin C zinc or colloidal silver could prevent or cure SARS-CoV-2 infection. These claims had no scientific basis. They spread alongside the broader infodemic of misinformation about the virus itself. This period demonstrated how quickly false nutritional narratives can travel across the world and the scale of harm they can cause.

Despite the large scale of this problem the academic research on nutritional misinformation is still scattered across different fields. Nutritional scientists have studied some aspects. Public health researchers have studied others. Communication scholars have looked at how misinformation spreads online. Psychologists have examined why people believe false claims. Information scientists have analyzed algorithms and platform design. Each discipline has produced useful work but there is very little synthesis across these domains. Research methods vary widely which makes it hard to compare findings. Long-term studies that follow people over time are especially rare. This narrative review addresses that gap and it systematically examines the evidence on nutritional misinformation within digital food culture. It traces the mechanisms through which misinformation originates from

individual creators or organized campaigns. It explains how misinformation spreads through shares likes and algorithmic amplification. It characterizes the public health consequences ranging from mental health problems to chronic disease mismanagement. It also evaluates the evidence base for different intervention strategies like media literacy education platform policy changes and collaborations with credentialed influencers. The review is structured around seven core thematic domains that align well with the existing literature. It concludes with a detailed research agenda for future investigative priorities. This agenda calls for more longitudinal studies more algorithmic transparency and more rigorous intervention trials to support effective governance of the online food information environment.

2. Evolution of Digital Food Culture and Online Nutrition Trends

Digital food culture is a complex system. It uses digital media to produce share debate and shape food knowledge practices values and identities (Falak et al., 2025; Uclés-Torrents et al., 2026). This culture first emerged with food blogs in the early 2000s. Then visually focused platforms like Pinterest and Instagram rose in the 2010s. More recently short video platforms like TikTok and YouTube Shorts have taken over. Each technological change has changed not just the format of nutrition content but also the social ways people judge and use that content.

2.1 Historical Trajectory: From Food Blogs to Algorithmic Recommendation

Food blogs set the basic style for digital nutrition communication. That style combined personal stories with attractive lifestyle images. These early platforms allowed anyone to give nutrition advice without formal training. Previously only institutions and health professionals had such reach. This democratization had real benefits like wider access and cultural relevance. But it also removed the gatekeeping that credentialed experts once provided. People shifted from passively receiving trusted dietary guidance to actively choosing their own user-generated content. This shift was a major turning point for public health communication (Khazaee & H. Freeland-Graves, 2023).

Algorithms changed the game even further. Facebook first refined algorithmic content curation. Instagram and YouTube later optimized it. TikTok took it to its extreme with the For You Page. These algorithms prioritize engagement metrics like watch time shares and emotional reactions. Scientific accuracy does not matter for these

metrics. This creates a system that favors sensational emotional or beautiful nutrition claims over evidence-based advice. One landmark study of Twitter showed that false news stories spread six times faster than true stories across all topics. This finding is very relevant for nutrition because food topics are highly emotional (Vosoughi et al., 2018)

2.2 The Platformization of Nutritional Identity

Digital platforms have also changed the relationship between food identity and social belonging. Instagram and Pinterest serve as stages where people perform their dietary identity. People project themselves through food choices that look good feel ethical and show aspiration. The clean eating movement is a good example. It started as a return to whole unprocessed foods. But online it gained a moral framework that linked dietary purity to personal virtue attractiveness and social status. This moralizing of food creates strong psychological conditions for misinformation. People want to confirm their identity rather than find the truth. So they accept claims that align with their beliefs instead of critically evaluating them (Wu et al., 2022; Zaharia & Gonța, 2024)

Hashtag communities have made dietary ideologies even stronger. Examples include hashtags like eat clean detox fasting and superfoods. As of 2023 eat clean had over 47 million posts on Instagram. These hashtag ecosystems act like small communities with their own authorities rules and ways to reward or exclude members. They can resist correction even when faced with scientific evidence. One study by Turner and Lefevre in 2017 found a clear link (Turner & Lefevre, 2017). People who spent more time looking at food content on Instagram had higher scores for orthorexia nervosa symptoms. This shows that engaging with platforms is not just passive information seeking. It is an active process of building a dietary identity that can have measurable mental health effects.

2.3 Publication Trends in the Literature

Publication trends show rapid growth in this research area. Studies on social media and nutrition behavior increased exponentially from 2015 onward. The growth became especially sharp after 2020. This acceleration reflects both the maturity of social media as a research field and the attention generated by pandemic misinformation. PubMed indexed publications using terms for social media nutrition and misinformation increased about fourfold between 2018 and 2023. However the field is still methodologically diverse and systematic evidence synthesis remains relatively rare.

3. Sources and Spread of Nutritional Misinformation on Digital Platforms

Understanding nutritional misinformation requires looking at two things. First, we need to know the sources where false claims start. Second, we need to know the spread mechanisms how those claims become popular. These two dimensions can be studied separately but they work together in practice. Some source types have an advantage on certain platforms.

3.1 Typology of Nutritional Misinformation

Nutritional misinformation is not one single thing. It includes a wide range of false or misleading claims. Some claims come from deliberate fraud. Other claims come from well meaning but unscientific beliefs. The major categories of misinformation include detox and cleanse myths. They include superfood exaggeration and anti-vaccination nutrition claims. They include unsupported elimination diet promotion and supplement overmarketing. They also include caloric misinformation. Each category has its own sources its own ways of spreading and its own public health consequences.

3.2 Source Agents: Influencers, Industry, and Institutional Failures

The main sources of nutritional misinformation fall into three broad groups. The first group is individual content creators. These include lifestyle influencers wellness bloggers and fitness personalities. Most of them have no formal nutrition credentials. The second group is commercial actors. These include supplement manufacturers functional food brands and multi-level marketing organizations. The third group is institutional actors. However, these are less common. This group includes institutions that fail to meet evidence based standards. A systematic review in 2021 analyzed 69 studies across major platforms. The review found that health misinformation was present in over 87 percent of the included studies. Nutritional misinformation was the most frequently documented category.

Commercial actors have a very strong position in the digital nutrition misinformation system. The dietary supplement industry was worth over 150 billion US dollars globally in 2023. This industry uses sophisticated digital marketing strategies. It exploits regulatory ambiguities. In many countries regulators must prove a claim is false rather than manufacturers having to prove it is true. A content analysis of dietary supplement promotion on Twitter was done in 2021. The analysis found that 78 percent of promotional tweets made efficacy claims. These

claims had no scientific evidence to support them. The analysis also found that influencer affiliated accounts got much higher engagement than brand accounts. This shows how companies strategically use the trust people feel for influencers.

3.3 Algorithmic Amplification and Filter Bubbles

Algorithmic amplification is perhaps the most important mechanism for spreading nutritional misinformation (Figure 1). Content recommendation systems on YouTube TikTok and Instagram are trained on engagement signals. They are not trained on accuracy metrics. This creates a consistent bias toward content that is emotional beautiful or controversial. One study looked at YouTube's recommendation algorithm for dietary content. The study found a radicalization pathway. Users who started with legitimate nutrition content were progressively directed toward increasingly extreme dietary claims. They moved from general caloric restriction to very

low calorie diet promotion to pro eating disorder content. Each step was reinforced by engagement metrics (Pilgrim & Bohnet-Joschko, 2019)

Filter bubble dynamics make misinformation uptake even worse. When a user engages with dietary content within a certain ideological framework the algorithm reduces exposure to contradictory evidence. For example a user might join the anti-dairy movement or the carnivore diet community. That user will then see less scientific information that challenges those beliefs. This creates information environments where misinformation faces very little correction. This phenomenon is especially concerning because of motivated reasoning. People with strong dietary identities are less likely to check claims that match their existing beliefs. They are also more likely to dismiss contradictory evidence as biased or commercially driven (Chou et al., 2018a)

Nutritional Misinformation and Digital Food Culture in Modern Public Health: A Narrative Review

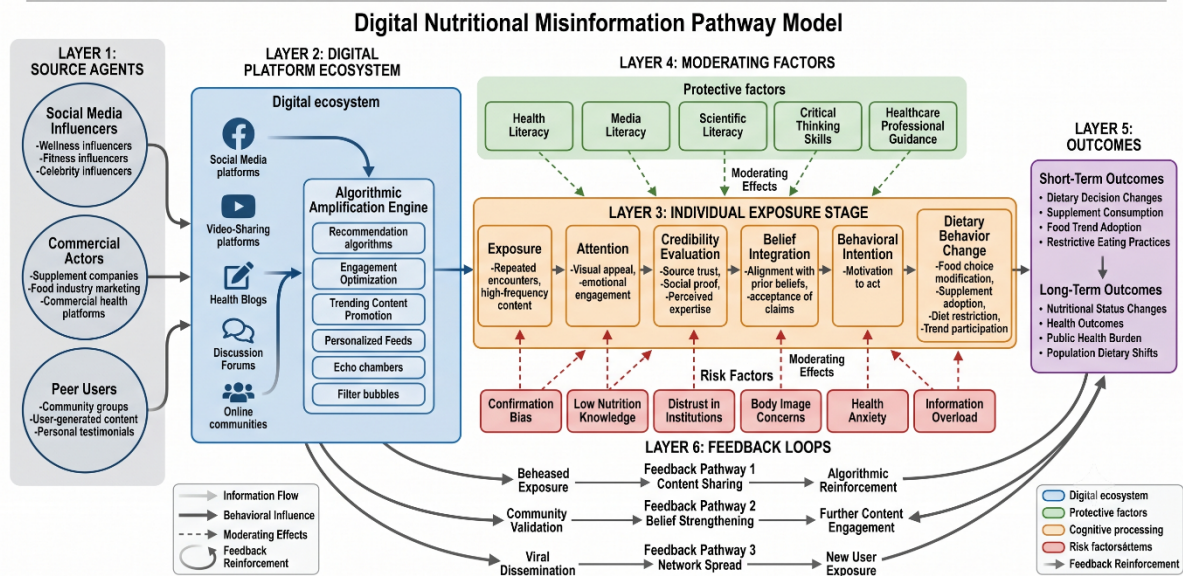


Figure 1: Digital Nutritional Misinformation Pathway Model. This figure presents a conceptual model illustrating the sequential pathway from content creation through algorithmic amplification to individual exposure, belief formation, and dietary behavior change, with feedback loops representing social reinforcement dynamics. The model incorporates source agent nodes (influencers, commercial actors, peer users), platform algorithm layers, and individual cognitive processing stages (exposure → attention → credibility evaluation → belief integration → behavioral intention → behavior), with modulating pathways from media literacy, health literacy, and pre-existing dietary attitudes.

4. Impact of Digital Food Content on Dietary Behaviors and Lifestyle Choices

The link between digital food content and dietary behavior is not a straight line. Many factors mediate this relationship. These factors include health literacy pre-existing dietary attitudes socioeconomic status platform engagement patterns and credibility cues within specific content types. The research in this area uses experimental cross sectional and qualitative methods. The evidence across these different designs shows that digital food content does

affect dietary decision making. However, the size of this effect varies from person to person.

4.1 Experimental Evidence for Content-Behavior Linkages

Randomized experimental studies provide the strongest evidence for cause and effect. However, these studies are relatively few. They are also mostly done with adolescent populations. A randomized trial by Coates and colleagues in 2019 is one of the most rigorous studies in this

field (Coates et al., 2019). The study showed that children who viewed Instagram profiles with healthy foods ate less unhealthy food in a test meal compared to children who viewed unhealthy food content. This study proves that social media food imagery can change behavior. But the short term laboratory setting limits how well the findings apply to real life. The long term effects on dietary patterns remain unclear. Other experimental studies have examined how food imagery influences eating behavior through social comparison. These studies broadly confirm that visual food content on platforms like Instagram activates social comparison processes. It changes perceived food norms. It can also alter both what foods people choose and how much they eat. However, the size of these effects varies a lot across studies. Moderating variables play a big role. These variables include individual differences in social comparison tendency dietary restraint and body image concerns (Carrotte et al., 2017)

4.2 Adolescents and Young Adults: A Particularly Vulnerable Population

Evidence consistently shows that adolescents and young adults are more exposed to and influenced by digital nutritional content. This is because they have higher social media engagement rates. They are more susceptible to social comparison pressures. Their cognitive skills for critical evaluation are not fully developed. Peer norms are also very central to dietary identity formation during this life stage. The research on adolescent eating disorders connects well with this evidence. A systematic review and meta analysis examined social media use and eating disorder risk across 50 studies. The review found a consistent positive association between social media exposure and both symptom severity and treatment avoidance. This was especially true for image heavy platforms. The causal pathway works through multiple mechanisms. These mechanisms include body image idealization internalization of thin ideals social comparison and the normalization of restrictive eating behaviors through hashtag community participation (Boepple & Thompson, 2016)

4.3 Dietary Pattern Effects: Evidence from Cross-Sectional Studies

Cross sectional survey data from multiple countries shows that social media engagement with dietary content is linked to the adoption of specific dietary patterns. Some of these patterns are beneficial and some are harmful. For example, instagram engagement with mediterranean diet content has been linked to modestly improved dietary diversity in some European studies. This suggests that

platform mediated nutrition communication can have health benefits when the content is accurate and evidence based. However, a much larger evidence base documents links between high social media engagement and the adoption of nutritionally deficient elimination diets. It also shows links to excessive supplement consumption and disordered eating patterns. These links are especially strong among people with pre-existing body image concerns (Turner & Lefevre, 2017). The temporal and bidirectional nature of social media and dietary behavior associations is hard to study. People with pre-existing restrictive dietary tendencies may seek out dietary communities on social media that match their existing views. This means social media may amplify their pre-existing tendencies rather than causing new behaviors directly. Future longitudinal research with strong behavioral measurements at the start of the study is essential. This research will help clarify the nature and size of causal relationships.

5. Role of Influencers, Algorithms, and Food Marketing in Nutritional Decision Making

5.1 The Influencer Economy and Credibility Gap

Social media influencers are content creators with enough followers to change the attitudes and behaviors of their audience. They have become the main way nutritional information is shared and trusted in digital environments. The influencer nutrition ecosystem includes a wide range of people. Mega influencers have more than one million followers. Micro influencers have between ten thousand and one hundred thousand followers. Evidence suggests that micro influencers get higher engagement per follower. They are also seen as more authentic. This means they have a larger influence relative to their audience size (Pilgrim & Bohnet-Joschko, 2019).

A critical structural feature of influencer driven nutrition communication is the split between perceived credibility and formal expertise. Research by Coates and colleagues showed that Instagram followers rated nutrition advice from lifestyle influencers as equally credible as advice from registered dietitians (Coates et al., 2019). This happened even though the influencers had no formal nutrition training. This credibility transfer works through parasocial relationship mechanisms. Audiences feel intimacy trust and identification with influencers through repeated exposure to personal and lifestyle content. This feeling is further reinforced by the high quality visuals and production values of influencer content. These quality signals convey competence even when the content is inaccurate.

Influencers are commercially entangled with the supplement and functional food industries. This is a very important part of the problem. Undisclosed or poorly disclosed sponsorships hide the commercial reasons behind influencer nutrition endorsements. Regulatory frameworks for influencer disclosure are enforced unevenly across different countries. A content audit of dietary supplement promotion on Instagram YouTube and Twitter found poor compliance. Disclosure compliance rates for paid partnerships ranged from only 12 percent to 34 percent across platforms. Accounts with more followers had lower compliance rates than smaller creators ([Devanaboyina & Khatri, 2026](#); [Shankar et al., 2023](#)).

5.2 Algorithmic Architecture as a Public Health Determinant

The algorithmic systems that control what content people see on social media act as public health determinants. These systems have structural influence over population level nutrition information exposure. Their reach rivals or even exceeds that of any government public health communication program. TikTok's For You Page algorithm has shown a clear ability to generate rapid global dietary trends. One example is the viral spread of the raw carrot salad for hormone balancing. Another example is the internal shower fiber drink. These trends spread to tens of millions of users within days regardless of whether they had any scientific validity.

Platform algorithms are proprietary and opaque. They are optimized for commercial engagement not health outcomes. This creates a fundamental misalignment between what platforms want and what public health needs. Major platforms like Meta YouTube and TikTok have introduced health misinformation policies and content moderation systems. However, enforcement remains inconsistent. The mechanisms behind moderation decisions are not subject to independent scientific review. The lack of algorithmic transparency is a significant gap in how digital health communication is governed ([Mundt et al., 2025](#); [Wang et al., 2025](#)).

5.3 Food Marketing in the Digital Environment

Digital food marketing by commercial actors works through multiple channels on social media. These channels include sponsored influencer content targeted advertising based on behavioral profiling branded content accounts and native advertising that looks like regular user content. Evidence from multiple countries shows that unhealthy food advertising is heavily overrepresented in the digital advertising ecosystem compared to healthy food categories. Targeting algorithms direct a large share of unhealthy food advertising toward younger people and lower income populations. These groups have higher vulnerability to nutrition related health problems ([Fischer et al., 2021](#)).

A systematic review of food marketing on social media was conducted by Boyland and colleagues. The review found that exposure to social media food marketing consistently increased food intake in experimental settings. The size of this effect was similar to or larger than the effect seen for traditional broadcast advertising. Children and adolescents were especially susceptible. Evidence showed that advertising effects persisted even when participants knew the content was commercial. This finding challenges the assumption that awareness of marketing protects people from its behavioral effects ([Coates et al., 2019](#)).

6. Public Health Consequences of Nutritional Misinformation

The public health consequences of nutritional misinformation on digital platforms appear at many levels. These levels range from individual dietary behavior and mental health to healthcare system burden and chronic disease epidemiology. The causal chains connecting digital misinformation to health outcomes are complex and involve many steps. However a growing body of evidence supports the conclusion that this phenomenon is a real and growing public health concern.

6.1 Eating Disorders and Disordered Eating Behaviors

The relationship between social media nutritional content and eating disorder risk is one of the most studied areas in this literature. It also carries the most direct evidence for actual harm. A meta-analysis combined data from multiple longitudinal studies. The analysis found that social media use was a significant predictor of eating disorder onset. This finding held true even after accounting for baseline body image concerns and dietary restraint ([Boepple & Thompson, 2016](#)). Engagement with appearance related and food related content was especially harmful. The mechanistic pathways are multiple and interact with each other. These pathways include appearance comparison with idealized influencer bodies. They include normalization of restrictive eating patterns. They include reinforcement of caloric preoccupation through community engagement. They also include the displacement of help seeking by immersion in online eating disorder communities. These communities reframe pathological restriction as wellness.

Orthorexia nervosa occupies a special place at the intersection of digital wellness culture and disordered eating. This condition is defined as a pathological preoccupation with dietary purity and quality. It causes clinically significant functional impairment. Unlike anorexia nervosa orthorexia is not yet included in the DSM-5 as a separate diagnostic category. Research by Turner and Lefevre in 2017 showed a significant positive correlation between Instagram use frequency and orthorexia symptom scores ([Turner & Lefevre, 2017](#)). Qualitative analyses of wellness influencer

content have documented systematic promotion of food purity frameworks. These frameworks are phenotypically continuous with orthorexic thinking. The rise and digital spread of clean eating ideology provide a cultural scaffolding for orthorexic restriction. This makes it increasingly hard for both clinicians and individuals to distinguish orthorexia from conventionally normal health behavior.

6.2 Supplement-Related Adverse Events

The overmarketing of dietary supplements through digital channels has documented consequences for physical health. These consequences go beyond just poor nutrition. Supplement related hepatotoxicity has increased substantially in multiple national surveillance datasets. This increase corresponds with the rise of social media supplement promotion. Case series have documented temporal relationships between social media promotion of specific products and subsequent adverse event reporting. These products include green tea extract, garcinia cambogia, and multi-ingredient performance supplements. The FDA Adverse Event Reporting System data show that dietary supplement related adverse events have increased by about 150 percent over the past decade. This trend is plausibly attributable in part to social media driven demand. However, causal attribution at the population level remains methodologically challenging.

6.3 Chronic Disease Management Disruption

A particularly important dimension of nutritional misinformation's public health impact involves chronic

disease management (Figure 2). Social media is full of claims about specific dietary interventions for chronic conditions. These claims include ketogenic diets for type 2 diabetes reversal. They include anti-inflammatory diets for autoimmune disease management. They include elimination diets for inflammatory bowel disease. Some of these claims have a legitimate evidentiary basis when properly specified and medically supervised. However, their presentation in digital wellness contexts systematically removes necessary clinical context. They promote self-management without professional oversight. In some instances, they actively discourage engagement with evidence-based medical treatment (Capocasa et al., 2026; Denniss et al., 2023).

The COVID-19 era provided a stark case study of nutritional misinformation harms. False claims linked specific dietary supplements to COVID-19 prevention or treatment. These supplements included high-dose vitamin D, zinc, quercetin, and colloidal silver. These claims proliferated across all major platforms. They were demonstrably associated with supplement stockpiling. They also led to the displacement of pharmacological prophylaxis and treatment. In isolated cases, they caused direct physical harm from supplement toxicity. The World Health Organization developed an infodemic management framework specifically in response to this phenomenon. This framework acknowledged that health misinformation, including nutritional claims, represented a second epidemic. This second epidemic ran parallel to and complicated management of the primary viral pandemic (Tangcharoensathien et al., 2020).

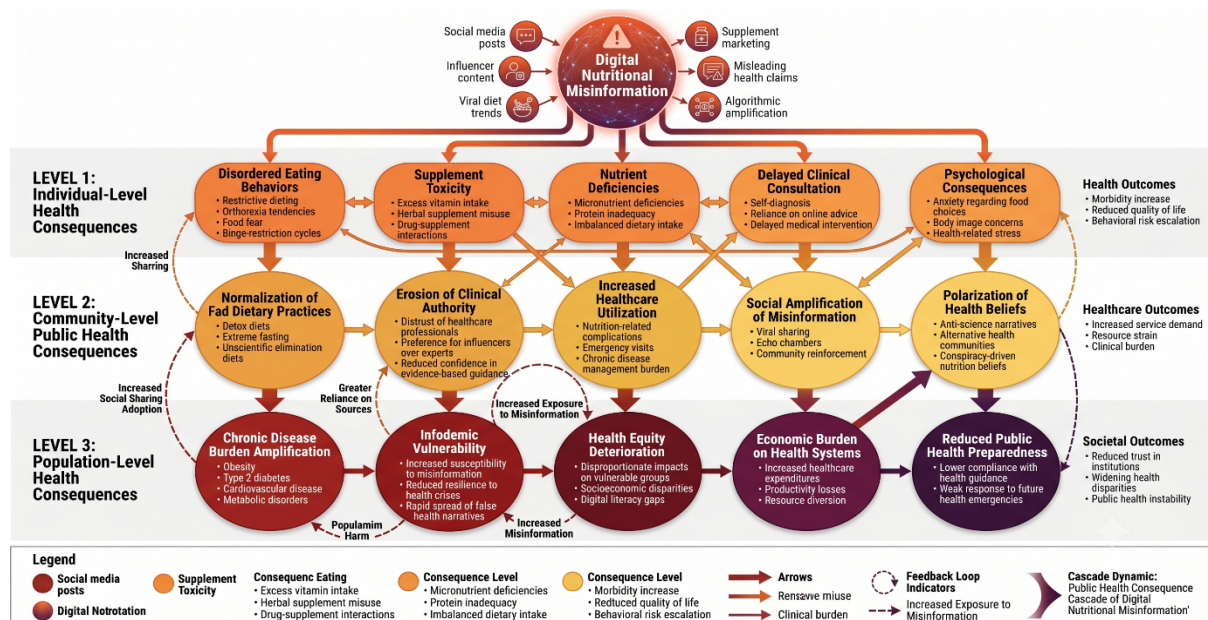


Figure 2: Public Health Consequence Cascade of Nutritional Misinformation. A cascade diagram representing the multi-level public health consequences of digital nutritional misinformation, organized across three levels: individual-level consequences (disordered eating, supplement toxicity, nutrient deficiency, delayed clinical consultation), community-level consequences (normalization of fad dietary practices, erosion of clinical authority, healthcare utilization increase), and population-level consequences (chronic disease burden amplification, infodemic vulnerability, health equity deterioration). Arrows indicate directional influence pathways and feedback loops between levels.

7. Strategies to Combat Nutritional Misinformation Through Public Health Policies and Digital Education

The evidence for interventions targeting nutritional misinformation is much less developed than the evidence documenting the problem itself. This asymmetry exists for several reasons. The phenomenon is relatively recent. Conducting rigorous trials in rapidly changing digital environments is methodologically challenging. The multi stakeholder governance arrangements required for effective large scale intervention are complex. Nonetheless a range of strategies have been proposed. Some of these strategies have been empirically evaluated. These strategies span individual level educational approaches platform policy interventions regulatory mechanisms and broader public health system responses.

7.1 Media Literacy and Critical Appraisal Education

Media literacy education is the most extensively studied individual level intervention in this domain. This education develops skills for critically evaluating the credibility accuracy and commercial context of health information found online. School based curricula that include digital health literacy components have demonstrated measurable short term improvements. Participants become better at identifying misinformation markers in health content including nutritional claims. However, the evidence for long term persistence of these effects is much weaker. The evidence for translation to actual dietary behavior change is also weak. This reflects the well documented gap between knowing something and changing behavior ([Ahmed et al., 2022](#)).

Prebunking or inoculation approaches are a theoretically grounded and empirically promising variant of media literacy. These approaches draw on inoculation theory from social psychology. Prebunking strategies expose individuals to weakened forms of misinformation techniques before full exposure. This builds cognitive resistance to future persuasion. Randomized trials of prebunking interventions targeting health misinformation have shown significant reductions in susceptibility to false health claims. This includes nutritional misinformation. The effects have been shown to persist over several weeks. These approaches are particularly well suited for delivery through the same platforms that distribute misinformation. This potentially leverages digital scale for protective rather than harmful ends.

7.2 Platform Policy and Algorithmic Interventions

Platform level interventions include content

moderation policies. They include the labeling or demotion of health misinformation. They include the elevation of credentialed sources in recommendation systems. They also include the restriction of advertising for unregulated supplement products. Major platforms have announced these measures and implemented them to varying degrees. However systematic independent evaluation of their effectiveness is largely absent from the peer reviewed literature. This reflects the opacity of platform moderation systems. It also reflects the commercial disincentives for rigorous external evaluation.

The evidence that does exist comes primarily from studies of COVID-19 misinformation moderation on Twitter and Facebook. This evidence suggests that content labeling can reduce sharing and perceived credibility of flagged misinformation. However, the effects are modest. They can also be offset by reactance effects. When some content is labelled it may imply that unlabelled similar content is credible. Algorithmic demotion of misinformative content faces an additional challenge. Engagement optimized systems will continue to amplify misinformative content unless engagement metrics are restructured to incorporate accuracy signals. This would require a fundamental redesign that conflicts with prevailing platform business models ([Chou et al., 2018b](#)).

7.3 Regulatory and Policy Frameworks

Regulatory frameworks for nutritional health claims in digital environments remain significantly behind the technological curve in most jurisdictions. The European Union's Digital Services Act of 2022 represents a significant advance. This act requires very large online platforms to conduct and publish risk assessments for systemic harms including health misinformation. However, enforcement is at an early stage. Nutritional misinformation is not explicitly categorized as a regulated content category. In the United States the FTC's influencer disclosure guidelines and the FDA's health claims framework provide relevant mechanisms. However, these mechanisms are incompletely enforced for limiting deceptive nutritional marketing.

A compelling policy case can be made for requiring mandatory nutritional credential disclosure by content creators who provide dietary advice to significant audiences. This would be analogous to professional licensing requirements for investment advice in the financial sector. Another compelling case can be made for establishing platform accountability frameworks. These frameworks would create regulatory incentives for

accurate health content moderation. However, the political economy of social media regulation presents significant implementation barriers. The jurisdictional challenges of governing globally operating platforms also present significant barriers (Fischer et al., 2021).

8. Critical Discussion

8.1 Synthesis of Evidence Across Themes

The literature reviewed here provides robust evidence for the existence of nutritional misinformation as a pervasive phenomenon across major digital platforms. It also provides a plausible mechanistic account of how misinformation spreads through algorithmic and social influence processes. There is a growing body of observational and experimental evidence for consequential associations with dietary behavior and health outcomes. The convergence of evidence across methodologically diverse study designs strengthens confidence in the overall picture. These designs range from computational content analysis to randomized behavioral experiments to longitudinal cohort studies. However individual studies do carry significant methodological limitations.

The literature as a whole is characterized by several important tensions and unresolved questions. First the relationship between misinformation exposure and behavior change is consistently moderated by individual level variables. These variables include pre-existing dietary attitudes health literacy body image concerns and social comparison tendency. These variables are rarely measured consistently across studies. This limits cross study comparability. Second the bulk of available evidence reflects contexts from high income countries with high smartphone penetration and specific platform usage patterns. The considerable diversity of digital food culture across low and middle income country contexts is substantially understudied.

8.2 Methodological Strengths and Limitations of the Field

Content analysis studies are the most prevalent methodological approach in the identified literature. These studies provide valuable descriptive characterizations of nutritional content on specific platforms at specific time points. However, they are inherently cross sectional. They cannot directly inform understanding of exposure outcome relationships at the individual level. Most content analyses use non probability sampling frames. They typically select the top ranked or most engaged content for a given hashtag or search term. This limits representativeness and it may

overestimate the prevalence of extreme content relative to the broader information environment that users actually see. Future content analyses would benefit from pre-registration standardized coding instruments inter rater reliability reporting and probabilistic rather than convenience sampling. The experimental literature provides stronger causal evidence. However, it is characterized by small sample sizes. The laboratory settings may not reflect naturalistic social media engagement. The outcome measures are limited to short term food intake or attitude change rather than longer term dietary pattern modification. Ecological momentary assessment designs represent a methodological advance. These designs measure dietary behavior in real time using mobile platforms. They bridge the external validity gap between laboratory experiments and naturalistic survey studies. More widespread adoption of this approach would substantially strengthen the evidence base

8.3 Contradictions and Controversies in the Literature

Several important contradictions and controversies emerge from the synthesized literature. First while the majority of studies document harmful associations between social media engagement and dietary behavior a minority find neutral or even positive associations. This is particularly true for social media platforms and features explicitly designed for health promotion peer support and credentialed information sharing. This heterogeneity suggests that the effect of digital food content on health is not inherently negative. It is heavily contingent on content type platform architecture and user characteristics. This nuance is often lost in simplified public discourse about social media and health. Second there is an unresolved debate about directionality. Does social media exposure cause maladaptive dietary behavior? Or do individuals with pre-existing vulnerabilities to disordered eating and dietary idealization preferentially seek out and engage with digital dietary content? This directionality question is not merely academic. If social media primarily amplifies pre-existing vulnerabilities rather than creating them de novo then the most effective interventions may be those targeting vulnerable individuals through clinical identification and psychological support. This would be more effective than targeting platform content at the population level. Longitudinal research with robust baseline characterization of dietary attitudes and mental health is essential for resolving this bidirectionality question.

9. Public Health Implications

The synthesis presented in this review carries several immediate and actionable implications for public

health practice policy and research infrastructure. At the practitioner level registered dietitians primary care physicians and mental health clinicians should routinely assess social media dietary information consumption as part of nutritional history taking. They should recognize the specific misinformation frameworks that patients may have encountered. These frameworks include clean eating detox elimination diets and supplement dependency. They should develop culturally competent and digitally literate communication strategies for correcting misinformation within existing patient belief structures. They should do this rather than dismissing those beliefs outright.

At the public health system level health authorities should consider developing and deploying social media content strategies explicitly designed to compete on the engagement metrics that determine algorithmic visibility. They should not rely on traditionally formatted public health messaging. Traditional messaging is systematically disadvantaged in engagement optimized recommendation systems. The World Health Organization's strategic use of social media during the COVID-19 infodemic provides a model for rapid response nutritional communication. This strategy included influencer partnerships viral content formats and platform specific messaging. Health agencies can develop and institutionalize this approach for ongoing deployment.

At the policy level governments and intergovernmental organizations should prioritize the development of evidence based frameworks for digital health information governance. These frameworks should extend existing health claims and advertising regulations to digital environments. They should establish transparency requirements for platform algorithmic systems with respect to health content moderation. They should create accountability mechanisms for influencer nutrition communication. The governance gap between the speed of digital misinformation diffusion and the pace of regulatory response represents a structural public health risk. This risk requires deliberate institutional investment to close (Fischer et al., 2021)

10. Future Research Directions

The evidence synthesis presented here identifies several high priority research directions for the next decade of inquiry into nutritional misinformation and digital food culture. These priorities are organized at the levels of measurement science intervention research and governance analysis.

In the domain of measurement science the field urgently requires standardized and validated instruments

for assessing nutritional misinformation exposure misinformation belief and dietary misinformation susceptibility. These instruments must be sufficiently sensitive to the diversity of platform contexts and content types across which misinformation manifests. Currently exposure assessment ranges from self reported general social media use time to automated content analysis of specific hashtag communities. Self reported general use time is insufficiently specific. Automated content analysis of specific hashtag communities is insufficiently representative of individual exposure. Development of validated digital biomarker approaches to exposure measurement would represent a major methodological advance. These approaches should draw on data donation platforms that can capture actual content encountered by consenting participants.

Longitudinal cohort studies explicitly designed to characterize the trajectory from digital nutritional misinformation exposure to dietary behavior change to health outcome are essential. These studies are required to build the causal evidence base needed to justify major policy and platform interventions. Existing longitudinal studies rarely have sufficient dietary specificity or social media exposure characterization to address this question adequately. Purpose built longitudinal designs with frequent measurement points and objective dietary biomarkers are needed. These biomarkers could include 24 hour dietary recalls and urinary nutritional biomarkers.

In the intervention domain there is a critical shortage of well powered randomized controlled trials evaluating the effectiveness of nutritional misinformation countermeasures. Prebunking and inoculation approaches credentialed influencer partnerships and media literacy curricula all require robust efficacy and effectiveness trial evidence before widespread policy adoption is justified. Pragmatic trial designs that test interventions at the scale of real world digital deployment would substantially accelerate this evidence generation. These designs should leverage platforms as experimental infrastructure. This approach would maintain internal validity while testing interventions in real world settings.

Finally the governance dimension requires substantially more interdisciplinary research. This research should examine the political economy of platform health information moderation. It should examine the effectiveness of regulatory frameworks across different jurisdictional contexts. It should also examine the comparative performance of co regulatory versus hard regulatory approaches to digital nutrition communication governance.

This research agenda necessarily bridges epidemiology communication science legal scholarship and political science. Its development requires sustained investment in genuinely interdisciplinary research infrastructure.

11. Conclusion

Nutritional misinformation embedded within digital food culture represents a contemporary public health challenge of the first order. This challenge combines the epidemiological reach of mass communication with the psychological intimacy of social media. It also combines the commercial power of platform capitalism with the epistemic authority gaps created by the displacement of credentialed health communication. Influencer driven content ecosystems have replaced traditional health communication channels in many cases. The evidence reviewed here demonstrates that this is not a marginal phenomenon. It is a structural feature of the current digital health information environment. The literature documents associations with disordered eating supplement related adverse events chronic disease management disruption and pandemic era infodemic dynamics. At the same time the literature consistently demonstrates that the digital environment is not inherently harmful to nutritional health. Social media platforms are equally capable of facilitating evidence based dietary information. They can provide peer support for healthy lifestyle change. They can also increase access to nutritional guidance for populations historically underserved by conventional public health communication channels. The determinant of outcomes is not the medium itself. The determinant is the governance architecture both algorithmic and regulatory that shapes which content achieves visibility. It shapes which actors achieve credibility. It also shapes which populations are reached by accurate versus inaccurate nutritional information. The public health response to nutritional misinformation in digital environments must therefore be multidimensional. This response must address the individual platform policy and cultural dimensions of the problem simultaneously. It must do so with the urgency appropriate to a challenge of this epidemiological magnitude. A coordinated research agenda is the essential foundation for evidence based action. This agenda should build on the strongest elements of the existing literature while systematically addressing its methodological gaps. The synthesis presented in this review is intended as a contribution toward that agenda.

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Author Contributions

Conceptualization, Data curation, Investigation, Formal analysis, Writing original draft: Harshvardhan. Supervision, Review & Editing the draft: Agrima Thakur.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this manuscript.

Ethical Approval

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Data Availability Statement

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