A Systematic Review of Wellness Misinformation via Social Media Using the Social Cognitive Theory

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Abstract

Background: The rapid proliferation of wellness misinformation on social media is a critical public health issue that significantly influences health behaviors and perceptions. Despite the vast amount of health information available, there is a significant gap in understanding how misinformation spreads and its impact on the public.

Objective: This systematic review aims to address the gap by analyzing the mechanisms of wellness misinformation dissemination and its counteraction using Social Cognitive Theory (SCT) as a framework.

Methods: The review included 39 articles to explore the dissemination and counteraction of wellness misinformation. It focused on the role of observational learning, self-efficacy, and self-regulation in the spread and reception of misinformation.

Results: The findings indicate that observational learning, self-efficacy, and self-regulation are key factors in the spread and reception of wellness misinformation. The study also found that educational interventions, regulatory actions, and technology-driven solutions are effective in mitigating misinformation.

Conclusions: The review underscores the need for integrated strategies to enhance user literacy and foster critical evaluation of health information on social media. These strategies aim to improve public health outcomes and combat misinformation effectively, contributing to both academic and practical fields.

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Original Manuscript

A Systematic Review of Wellness Misinformation via Social Media Using the Social Cognitive Theory

Abstract

This systematic review addresses the critical issue of wellness misinformation on social media, a rapidly growing concern that influences public health behaviors and perceptions. Despite the vast amount of information available, there exists a significant gap in understanding the mechanisms through which such misinformation spreads and its impacts. Employing Social Cognitive Theory (SCT) as a framework, this review analyzed 39 articles to explore how wellness misinformation is disseminated and countered. Findings reveal that observational learning, self-efficacy, and self-regulation are key factors in the spread and reception of misinformation. The study highlights the effectiveness of educational interventions, regulatory actions, and technology-driven solutions in mitigating misinformation. Contributing to both academic and practical fields, this review underscores the need for integrated strategies that enhance user literacy and foster a critical evaluation of health information on social media, aiming to improve public health outcomes and combat misinformation effectively.

Keywords: Social Media; Wellness; Misinformation; Social Cognitive Theory; Systematic Review

Introduction

In today’s interconnected world, social media platforms are not just tools for social interaction but pivotal channels for disseminating information, shaping public opinion, and influencing behavior across the globe (Riaz, 2023). These platforms reach billions, with over 3.6 billion users worldwide, offering unprecedented access to a vast array of content, including health information (McCarthy et al., 2023; Park et al., 2022). However, this digital boon also presents significant challenges, particularly in the form of wellness misinformation. Misinformation refers to false or misleading information spread regardless of intent to deceive. It often includes unverified or inaccurate content

that can mislead individuals into making harmful decisions (Chen & Tang, 2022). Wellness misinformation, within the context of this review, specifically refers to incorrect or misleading health-related information concerning wellness practices, treatments, and lifestyle choices that are shared on social media platforms. This type of misinformation promotes unproven, exaggerated, or pseudo-scientific claims about health, which can undermine evidence-based public health efforts (Tandoc et al., 2019; Xiao & Su, 2022). Research indicates that misinformation about health can spread more swiftly and widely than accurate information, posing a serious risk to public health by promoting unproven treatments, undermining public health campaigns, and spreading panic or false security (Chen & Tang, 2022; Tandoc et al., 2019; Xiao & Su, 2022). Studies show that false health claims are 70% more likely to be shared than valid information, highlighting the allure of sensationalist content. The consequences of such misinformation are especially critical in areas like public health, where beliefs directly influence behaviors and choices that can have life-or-death outcomes (Borah, 2022; Chu, 2023). For example, during the COVID-19 pandemic, the rapid spread of false information about preventative measures and cures significantly impacted public responses to health directives and vaccination campaigns. In the first three months of 2020 alone, nearly 6,000 people were hospitalized due to misinformation about COVID-19, and at least 800 people died as a direct result of such misinformation (Lazić & Žeželj, 2021; Lee et al., 2022).

Despite the clear dangers posed by wellness misinformation, there is a lack of comprehensive research focusing on its patterns of spread, the psychological and social impacts on individuals, and the effectiveness of countermeasures. This review aims to fill this gap by systematically analyzing the dissemination of wellness misinformation through the lens of Social Cognitive Theory (SCT), exploring its patterns, impacts, and potential counter-strategies to mitigate its harmful effects on public health. Reviews globally have addressed various aspects of wellness misinformation on social media, each highlighting specific regional or thematic concerns but often falling short in providing a holistic view (Xiao et al., 2021; Xiao & Su, 2022; Yusuf, 2024). For instance, in the United

States, reviews have largely concentrated on the impact of vaccine misinformation propagated through platforms like Twitter and Facebook, but these studies have typically not explored the underlying cognitive processes that drive individuals to believe and share such misinformation (Borah et al., 2022). In Europe, while reviews such as those conducted in Germany have detailed the spread of alternative cancer treatment misinformation, they have predominantly focused on patient outcomes without delving into the social and cognitive dynamics facilitating this spread (Chung, 2023). Similarly, in non-Western contexts like South Korea and Nigeria, reviews have addressed misinformation regarding dieting products and malaria treatments respectively, but these studies have often overlooked the broader social networks and the reciprocal relationship between users and content. Moreover, Brazilian studies examining the dissemination of dengue fever prevention methods have not adequately considered how individual and collective behaviors are shaped by the misinformation circulated on platforms like Instagram (Galande, 2023; Jennings & Russell, 2019; Lazić & Žeželj, 2021). These previous reviews, while invaluable, reveal a significant gap: they have not incorporated an analysis through Social Cognitive Theory, particularly not within the past five years. This theory's focus on the interplay between individual behaviors, personal cognitive factors, and environmental influences provides a crucial framework for understanding how misinformation is processed and acted upon within social networks. The existing literature's lack of application of this theoretical perspective has limited our comprehensive understanding of the mechanisms behind the spread and acceptance of wellness misinformation. This review aims to address this gap by applying Social Cognitive Theory to analyze the cognitive and behavioral processes involved in the dissemination of wellness misinformation, providing deeper insights into how misinformation can be effectively countered. This systematic review, grounded within the framework of Social Cognitive Theory, seeks to fill a significant knowledge gap by exploring how wellness misinformation is disseminated across social media, the cognitive and behavioral impacts on users, and the effectiveness of various counter-strategies. Despite the prevalence of studies on misinformation, very little is known about the interplay between cognitive behaviors influenced by

environmental factors on social media and misinformation dynamics (Ha, 2023).

This study set out to determine whether a theoretical application of Social Cognitive Theory could offer deeper insights into the cognitive, behavioral, and environmental dynamics. To achieve this, the review meticulously collects and synthesizes peer-reviewed articles from the past five years, ensuring the findings reflect the latest technological and behavioral trends in social media usage. The aim is to provide a comprehensive overview of the current landscape of wellness misinformation and to evaluate how effective Social Cognitive Theory is in explaining the psychological and social factors influencing user interactions with misinformation. By integrating these findings, the review contributes to the counter-strategies of wellness misinformation.

Literature Review

A preliminary search on the topic of wellness misinformation on social media through the lens of Social Cognitive Theory has yielded five similar literature reviews. The contrasted differences between these papers are detailed in **Table 1**.

As shown in the table, none of the current systematic reviews have provided an integrated analysis of wellness misinformation patterns, impacts, and counter-strategies through the lens of Social Cognitive Theory. This gap highlights the need for a comprehensive review that not only synthesizes these dimensions but also ties them back to cognitive and behavioral theories which can inform intervention development.

Wellness Misinformation on Social Media

Wellness misinformation on social media encompasses a range of inaccurate, misleading, or outright false health-related content that circulates widely across various digital platforms (Aleksandra & Iris, 2021). This type of misinformation typically includes unsupported health claims, pseudoscientific theories, and misinterpreted medical research, all of which lack verification by reputable health authorities (Riaz, 2023). The spread of such misinformation can have

profound and detrimental effects on public health, as it often influences individuals to make uninformed or harmful health decisions, such as choosing untested remedies or eschewing proven medical treatments (Lili et al., 2020). As social media platforms continue to serve as integral parts of daily communication, their capacity to quickly amplify and spread misinformation complicates efforts to maintain informed public health behaviors (Muhammad, 2023). The ease with which users can publish content, coupled with the algorithms that prioritize engaging or sensational material, significantly challenges the accurate representation of health information. Understanding and mitigating the impact of wellness misinformation is therefore crucial, as its consequences can range from individual health risks to widespread public health crises.

Table 1. Preliminary literature review.

Reference	Covered Years	Research Topics	Framework	Insights	Analyzed Dimensions	Limitations
Alfred Nela, Etion Parruca (2023)	February 2020 to 2022	Impact of social media disinformation during COVID-19 on mental health	Positive Transcultural Psychotherapy (PPT)	Misinformation can corrode psychosocial norms and trigger negative emotions, impacting public health and social order	Impact of social media disinformation and overexposure to fake news during the Covid-19 pandemic on actual capacities and psychological well-being	Does not address the impact on vulnerable populations; does not explore the role of social media platforms in misinformation dissemination
Sedona Chinn, Ariel Hasell (2023)	March 2-8, 2021	Prevalent themes in wellness content on Instagram and audience composition	Structural topic modeling	Wellness content includes both beneficial health behaviors and unsubstantiated claims driven by commercial interests	Analyzed themes in wellness content, audience composition, and the relationship between wellness content exposure and health beliefs	Wellness content on social media circulates messages that promote distrust in science, leading to potential harmful decisions
Yang-Jun Li, Jens Joachim Marga (2022)	Current state of research	Health misinformation on social media and challenges of rapidly advancing social technologies	Integrative stage-based framework based on the Shannon-Weaver communication model	Identified research gaps in health misinformation on social media and proposed an integrative framework for understanding and addressing misinformation	Analyzed 101 papers on health misinformation and proposed an integrative stage-based framework	Lack of cohesion in current research and limited attention from IS researchers
Kaye Rolls, Debbie Massey (2021)	September 18, 2019	Investigating health-related misinformation content on social media	Systematic review	Discussed rapid increase in social media use and concerns about health-related misinformation	Investigated the spread of health-related misinformation on social media	Focus on investigating spread of misinformation rather than highlighting specific research gaps
Cristiane	Various	Characteristics of the	Systematic literature	Need for more studies	Investigated characteristics of	Lack of standardized

Reference	Covered Years	Research Topics	Framework	Insights	Analyzed Dimensions	Limitations
Melchior, Mírian Oliveira (2021)	Years	research community and challenges in studying health-related fake news on social media	Review	focusing on the research community characteristics and challenges in combating health-related fake news	the research community studying health-related fake news and the challenges faced	methodologies for studying health-related fake news
Kulvinder Kaur, Samrat Gupta (2022)	Not specified	Spread, detection, and combating of misinformation on social media	Systematic literature review based on PRISMA framework	Identified intrinsic predictors of misinformation dissemination, detection approaches, and ways to combat misinformation	Analyzed 33 relevant articles identifying intrinsic predictors of misinformation spread, detection approaches, and ways to combat misinformation	Did not specify study limitations or generalizability of findings
Victor Suarez-Lledo, Javier Alvarez-Galvez (2021)	Before March 2019	Main health misinformation topics and their prevalence on social media platforms	Social network analysis, content analysis, sentiment analysis	Characterized dominant health misinformation topics and described their prevalence on different social media platforms	Analyzed prevalence of health misinformation topics such as vaccines, drugs, noncommunicable diseases, and eating disorders	Difficulty in characterizing and evaluating information quality on social media; information and selection biases in studying health misinformation
Alfred Nela, Etion Parruca (2023)	February 2020 to 2022	Impact of social media disinformation during COVID-19 on mental health	Positive Transcultural Psychotherapy (PPT)	Misinformation can corrode psychosocial norms and trigger negative emotions, impacting public health and social order	Impact of social media disinformation and overexposure to fake news during the Covid-19 pandemic on actual capacities and psychological well-being	Does not address the impact on vulnerable populations; does not explore the role of social media platforms in misinformation dissemination

Wellness misinformation on social media spans a broad spectrum, taking various forms that impact public health across different dimensions and countries. Common types include the promotion of unverified and potentially harmful health treatments, conspiracy theories about the medical industry, and the distortion of scientific facts. For instance, in the United States, the anti-vaccination movement has leveraged social media to spread dubious claims about vaccine safety, linking vaccines to unfounded health risks. In India, viral posts promoting turmeric and other natural remedies claimed to offer foolproof immunity against COVID-19, misleading millions given the absence of clinical evidence (Riaz, 2023). Another dimension involves nutritional misinformation, such as the superfood trend, which often exaggerates the health benefits of certain foods without substantial scientific support. In Australia, misinformation about the ketogenic diet led many to adopt this high-fat, low-carbohydrate diet without understanding potential health risks or the details of nutritional balance (Herasimenka et al., 2022). Additionally, in parts of Africa, myths about HIV/AIDS treatments and prevention strategies circulate widely on social media, significantly hampering public health efforts to combat the disease (Krüger, 2019). Each type of misinformation not only sows confusion and misleads individuals but also fuels skepticism and resistance towards established medical guidelines and health interventions. The pervasive nature of such misinformation necessitates a detailed understanding of its forms and impacts, as it poses unique challenges to public health initiatives globally.

Previous systematic reviews have extensively examined the diverse landscape of wellness misinformation on social media, each

highlighting unique aspects and impacts across different contexts (Wagner & Boczkowski, 2019). For instance, a review conducted in the United States focused on the detrimental effects of vaccine misinformation, detailing how false claims about vaccine safety have undermined immunization efforts and public trust in healthcare systems (Wagner & Boczkowski, 2019). In Europe, another review analyzed the spread of nutritional misinformation, particularly how diet myths and superfood fads propagated via social media influence dietary behaviors and can lead to nutritional imbalances or health complications (Hameleers et al., 2022). In Asia, researchers have tackled the issue of traditional remedies being misrepresented as cure-alls in social media posts, examining how such misinformation affects consumer health choices and trust in conventional medicine (Tandoc et al., 2019). Another review from Australia discussed the impact of fitness and wellness misinformation, highlighting how unqualified influencers often promote fitness regimes or health products that may not be scientifically validated, leading to risky behaviors among followers (Zhu et al., 2022). These reviews collectively underscore the critical need for ongoing research to understand the mechanisms of misinformation spread and to develop effective counter-strategies. Despite these extensive analyses, there remains a noticeable gap in synthesizing this information to provide comprehensive strategies that directly address the varied forms of misinformation and their impacts across different global contexts. This study seeks to bridge the gap by providing a detailed exploration of existing literature through the application of Social Cognitive Theory, offering a structured framework to analyze and understand the mechanisms and impacts of wellness misinformation on social media.

Social Cognitive Theory on Social Media

The application of Social Cognitive Theory (SCT) to the study of behaviors on social media has exhibited diverse trends over the past two decades, mirroring the rapid evolution of digital platforms and the complex dynamics of user interactions (Bandura, 2001). Research from 2000 to 2005 focused primarily on the fundamental aspects of observational learning, examining how users mimic behaviors observed within their social networks on emerging social media platforms. This period's studies laid the groundwork for understanding basic behavioral modeling but often lacked comprehensive data on long-term effects and were predominantly centered on Western users. From 2006 to 2010, the research focus expanded to include cognitive factors that influence how users engage with and disseminate content. This period saw an increased understanding of the cognitive processes behind social media interactions, though it still neglected the emotional and motivational dimensions that significantly affect user behavior. The interval between 2011 and 2015 marked a shift towards integrating motivational theories within SCT, exploring how personal motivations impact user interactions and the virality of content. However, these studies typically did not adequately address the reciprocal determinism that characterizes the interplay between users and platform dynamics, a critical aspect of SCT. In more recent years, from 2016 to 2020, the emphasis shifted towards the influences of algorithms on user behavior, particularly how these technological frameworks shape content exposure and user interactions on social media. Despite these advances, there remained a dearth of empirical research specifically focused on how

algorithms interact with user cognitive biases. The current period from 2021 onwards has seen a more comprehensive application of SCT, aiming to understand the full spectrum of interactions and influences within the realm of social media misinformation. Research is now increasingly focused on integrating all elements of SCT to address the challenges posed by misinformation, which can be seen in **Table 2** .

The systematic reviews summarized in the table above provide valuable insights into the spread and impact of wellness misinformation on social media, yet a critical gap remains evident in the existing literature. Most prior studies have not specifically utilized Social Cognitive Theory as a framework to analyze the complex interactions between user cognition, behavior, and environmental influences on social media platforms. Furthermore, while these reviews cover various forms of misinformation across different platforms, they lack a comprehensive analysis that integrates these elements to thoroughly understand the mechanisms of misinformation transmission and the effectiveness of specific counter-strategies. This oversight underscores the necessity of this study, which aims to fill these gaps by applying the Social Cognitive Theory.

Table 2. Comparative analysis of related literature.

Reference	Research Focus	Social Media Platforms	Use of Social Cognitive Theory	Methodology	Key Findings	Identified Gaps
Breanne Mertz et al., 2023	Focuses on social media wellness, exploring issues related to social media consumption and proposing a research agenda.	Twitter	SCT not used; focuses more on consumer well-being and topic analysis.	Observational study using topic modeling (Latent Dirichlet Allocation) to analyze Twitter hashtags and posts.	Discussed social media wellness impacts on consumer well-being; highlighted the need for further research into social media's role in consumer health.	Calls for more consumer research in social media wellness, noting a lack of detailed studies in marketing disciplines.

Reference	Research Focus	Social Media Platforms	Use of Social Cognitive Theory	Methodology	Key Findings	Identified Gaps
Hanyin Wang et al., 2021	Investigates COVID-19-related health beliefs on Twitter and their influencing factors.	Twitter	SCT not used; employs the Health Belief Model instead.	Used natural language processing and machine learning to analyze over 92 million tweets for health belief trends based on HBM constructs.	Found that both scientific and nonscientific events significantly influence health belief trends; social media spreads health-related misinformation rapidly.	Suggests extending the study to include multiple languages and further examining the role of different event types in shaping health beliefs.
Lida Safarnejad et al., 2021	Characterizes health misinformation during the Zika outbreak on Twitter.	Twitter	SCT not used; focuses on network metrics and content analysis.	Developed algorithms to infer information dissemination networks and used machine learning to analyze tweet features.	Identified influential misinformation tweets and real information; developed methods to detect misinformation through network and content analysis.	Highlights the lack of exploration into user interactions and the psychological impact of misinformation.
Shao Jiang,	Examines the impact	Not	SCT not used;	Panel survey	Demonstrated that	Recommends exploring

Reference	Research Focus	Social Media Platforms	Use of Social Cognitive Theory	Methodology	Key Findings	Identified Gaps
2022	of health worry and social media fatigue on health fact-checking behaviors during COVID-19.	specified	focuses on O-S-O-R model.	conducted in China during the pandemic, assessing social media fatigue and fact-checking behaviors.	social media fatigue due to information overload significantly reduces health fact-checking behaviors.	the impact of social media use on fact-checking beyond journalism, and a deeper analysis of health worry and its mediation effects.
Emily K. Vraga and Leticia Bode, 2022	Studies the effectiveness of truth signals in correcting health misinformation on social media.	Not specified	SCT not used; experimental design focused on misinformation correction.	Conducted experiments to test the effects of various truth signals on the perception of misinformation.	Found that sharing misinformation, even to debunk it, is not effective as it is often seen as endorsement; responses debunking misinformation reduce misperceptions.	Calls for more research on the influence of non-expert corrections and various sources of misinformation correction.
Connie B.	Discusses the role of	Not	SCT not used;	Content analysis of	Highlighted that	Points out the absence

Reference	Research Focus	Social Media Platforms	Use of Social Cognitive Theory	Methodology	Key Findings	Identified Gaps
Diekman et al., 2022	critical thinking and ethical practice in combating misinformation in food science and nutrition.	specified	focuses on ethical practice and critical thinking in nutrition.	social media posts by health and wellness influencers.	misinformation by self-proclaimed experts on food and nutrition is widespread and undermines evidence-based practices.	of detailed methodologies to combat misinformation and the need for promoting critical thinking among professionals.
Stephanie A. Baker, 2022	Analyzes the influence of alt. health influencers using wellness culture to spread conspiracy theories during COVID-19.	Instagram	SCT not used; examines cultural and participatory media influences.	Content analysis of Instagram posts by alt. health influencers during the first year of the COVID-19 pandemic.	Demonstrated how wellness and web culture merge to promote conspiracy theories and misinformation through alt. health influencers on social media.	Suggests further research into the strategies used by influencers and their impact on public discourse, especially the intersection of wellness culture and authoritarian movements.

Reference	Research Focus	Social Media Platforms	Use of Social Cognitive Theory	Methodology	Key Findings	Identified Gaps
Ciarra N. Smith et al., 2019	Tests strategies for correcting neuroscience myths on social media platforms.	Twitter, Google	SCT not used; focuses on corrective messaging in neuroscience.	Experimental design with a web-based survey to test the effect of corrective messages on neuromyths.	Found that immediate corrective messaging can combat misinformation effectively; varied responses based on article evaluation.	Notes limitations in experimental design and suggests testing correction strategies in more realistic media usage scenarios and across diverse demographics.

The table above underscores a significant gap in the existing literature: none of the reviewed studies explicitly utilize SCT in analyzing wellness misinformation on social media. While these studies offer valuable insights into various dimensions of misinformation, such as its spread, user engagement, and correction strategies across different health topics and social media platforms, they lack a unified theoretical approach that could provide deeper insights into the cognitive and behavioral mechanisms at play. The absence of SCT, which offers a robust framework for understanding the reciprocal influences between individual behavior, cognitive factors, and environmental contexts, highlights the unique contribution of the proposed study. This research will integrate SCT to comprehensively analyze how wellness misinformation is processed and countered on social media, thereby offering new strategies for effective communication and intervention in public health.

Research questions

The rising tide of wellness misinformation on social media poses significant challenges to public health, necessitating a robust investigation grounded in a sound theoretical framework. This research is driven by the urgent need to dissect the intricateness of misinformation, its impact, and the effectiveness of existing countermeasures through the prism of Social Cognitive Theory. This theoretical approach offers a unique lens to examine the reciprocal influence of individuals, their behavior, and the environment, providing deeper insights into the mechanisms at play. The following research questions have been crafted to guide this investigation:

(1) How do patterns of wellness misinformation on social media impact user behavior?
(2) What are the most effective counter-strategies for addressing wellness misinformation on social media?

Theoretical Framework

Social Cognitive Theory (SCT), developed by Albert Bandura (Bandura, 2001), posits that learning occurs in a social context and can result from direct instruction or mere observation. Central to this theory is the concept of reciprocal determinism, which suggests that a person's behavior, personal factors (such as cognitive skills and attitudes), and the environment interact to influence each other. Key constructs of SCT include observational learning, where individuals emulate behaviors seen in others; self-efficacy, referring to one's belief in their ability to succeed in specific situations; and self-regulation, which involves controlling one's behavior through self-monitoring, judgment, and affective self-reaction. These components are crucial for understanding how behaviors are acquired and maintained within social networks, especially in the context of the pervasive and often misleading streams of information found on social media.

In this study, SCT is applied to systematically review how wellness misinformation is disseminated and countered on social media. Through the lens of SCT, this review examines different dimensions such as the sources of misinformation (observational learning), the reasons certain pieces of misinformation are more likely to be shared or believed (self-efficacy in judging information validity), and how individuals regulate their interactions with this misinformation

(self-regulation), which is depicted in **figure 1**. By applying SCT, the study not only explores the cognitive and environmental factors that contribute to the spread of wellness misinformation but also evaluates the effectiveness of various counter-strategies. This approach allows for a comprehensive analysis of the interplay between social media users' behaviors and the content they encounter, providing valuable insights into designing more effective educational and intervention strategies to combat misinformation.

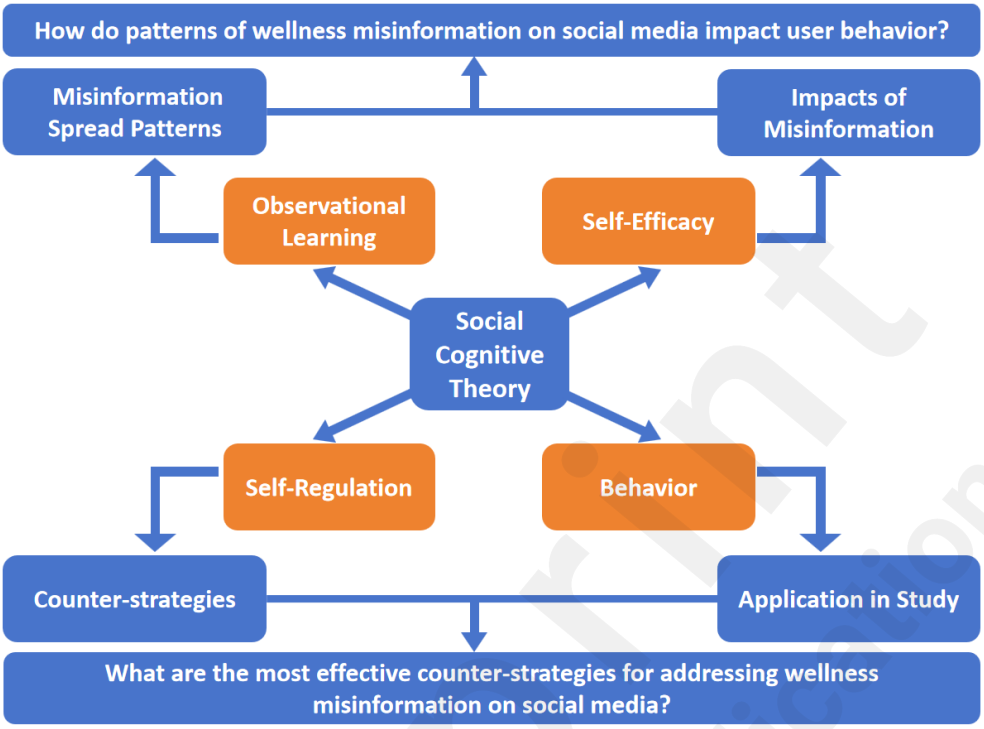

Figure 1. SCT framework.

Methods

This systematic review was conducted following the four-phase process outlined in the Preferred Reporting Items for Systematic Reviews guideline (Rethlefsen et al., 2021). The methodology involved four critical stages: (a) identification of potential studies, (b) screening of abstracts, (c) assessment of full texts for eligibility, and (d) qualitative synthesis of the studies that met inclusion criteria. **Figure 2** provides an overview of the process and the number of papers included and excluded at each phase.

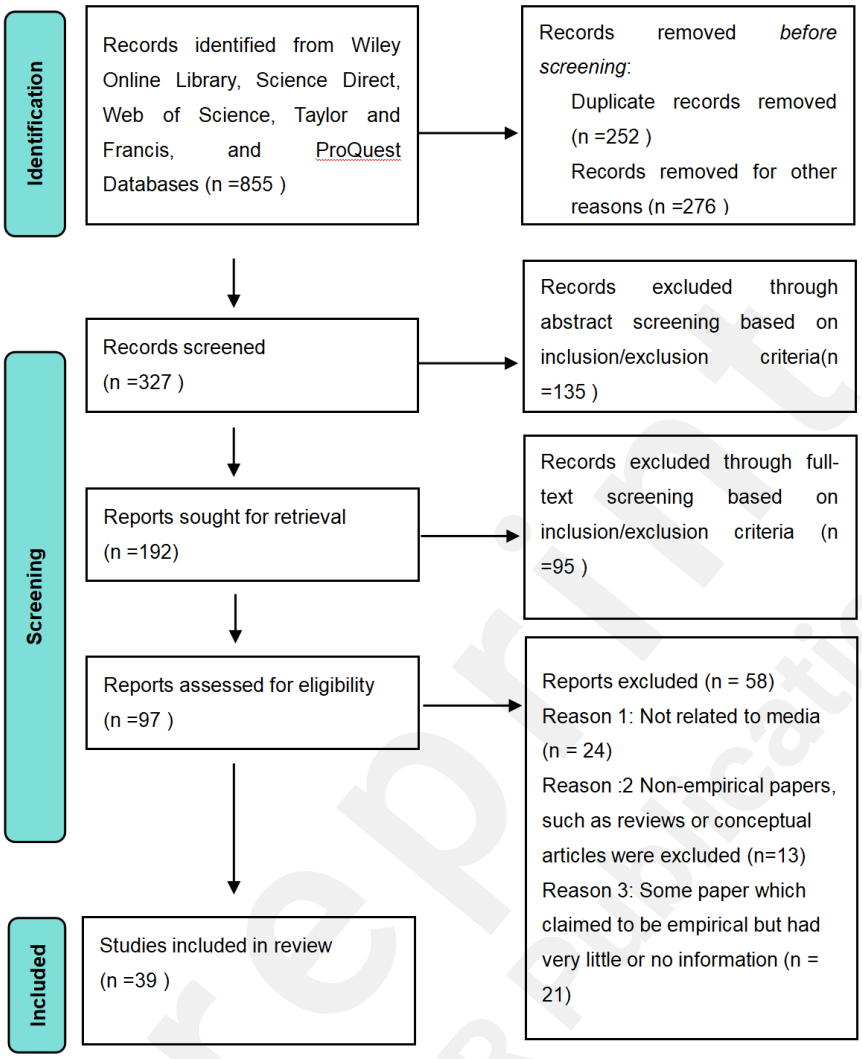

Figure 2. The PRISMA diagram (Rethlefsen et al., 2021).

Search Strategy

To conduct a thorough literature search for the systematic review, multiple databases renowned for their comprehensive coverage of psychology and social sciences were utilized, including Wiley Online Library, Science Direct, Web of Science, Taylor and Francis, and ProQuest. This approach aimed to minimize publication bias and capture a broad spectrum of studies relevant to wellness misinformation on social media. The timeframe for the search was

set from January 2019 to January 2019 to January 2024 to ensure inclusion of the most current research. Search terms were carefully selected and used in combinations formatted in complete Boolean logic formula: ("wellness misinformation" OR "health misinformation") AND "social media" AND ("Social Cognitive Theory" OR "observational learning" OR "self-efficacy" AND "misinformation").

Inclusion/Exclusion Criteria

The inclusion and exclusion criteria for this systematic review ensure a focused examination of current trends in wellness misinformation on social media. By selecting studies from January 2019 to January 2024, the review captures relevant technological and behavioral developments. Limiting sources to peer-reviewed, English-language, empirical studies guarantees scientific rigor and relevance. The following is a list of inclusion and exclusion criteria:

Table 3. Inclusion and Exclusion Criteria.

Inclusion Criteria	Exclusion Criteria
Published between January 2019 and January 2024.	Published before January 2019.
Published in English.	Not published in English.
Studies specifically focusing on wellness misinformation on social media.	Studies not focusing on wellness misinformation on social media.

Inclusion Criteria	Exclusion Criteria
Empirical studies involving quantitative, qualitative, or mixed methods data.	Theoretical papers without empirical data.
Articles from peer-reviewed journals.	Articles from non-peer-reviewed sources, blogs, or informal publications.
Studies that include analyses of user interactions and behaviors on social media platforms.	Studies limited to offline contexts or general media without specific relevance to social media.

Study Selection

The initial search for relevant literature commenced with a comprehensive query across multiple academic databases, including Wiley Online Library, Science Direct, Web of Science, Taylor and Francis, and ProQuest. This search yielded a total of 855 articles. Rigorous preliminary filters were applied, resulting in the removal of 252 duplicates and an additional 276 records excluded for various reasons not aligning with the research focus, leaving 327 articles for more detailed evaluation. The screening process was structured in two phases: abstract screening and full-text assessment. During the abstract screening, each article was meticulously reviewed against the inclusion and exclusion criteria set forth in the study's methodology. A total of 135 articles were excluded in this phase, primarily due to their lack of direct relevance to the core themes of wellness misinformation and Social Cognitive Theory, leaving 192 articles. These articles underwent a detailed full-text review, where

each study was evaluated for empirical rigor and relevance to the specific dimensions of Social Cognitive Theory as applied to misinformation. Of these, 95 articles were further excluded for reasons including: 24 articles were unrelated to the specific application of wellness misinformation; 13 articles were theoretical reviews or conceptual pieces without empirical data; 21 articles claimed empirical evidence but provided insufficient data for credible analysis. After thorough scrutiny, 97 articles were deemed eligible, with a final selection of 39 studies meeting all criteria for inclusion in the systematic review.

Results and discussion

The results of this systematic study focus on identifying the trends, effects, and rebuttal strategies of wellness misinformation on social media. From the 39 rigorously selected articles, data were categorized into three primary topics based on Social Cognitive Theory: observational learning (17 articles), self-efficacy (14 articles), and self-regulation (8 articles). These themes were explored to understand how wellness misinformation proliferates through social networks and the impact it has on public health.

Using Social Cognitive Theory as a lens, this study aimed to answer two key questions: how the patterns of wellness misinformation on social media affect user behavior, and what counter-strategies are most effective in addressing misinformation. By organizing the analysis around themes like misinformation spread patterns, user impacts, and effective interventions, the study provides a cohesive overview of current research, identifying critical gaps and proposing solutions to bridge the divide between theory, practice, and policy.

Table 4 below illustrates the breakdown of the different categories of misinformation found in the reviewed articles. The most prevalent category is diet-related myths, found in 20 articles, which often promote quick-fix weight loss solutions and unsubstantiated claims about superfoods. Following closely are articles focused on health treatments, particularly unverified or harmful remedies, which appeared in 15 articles. The influence of social media influencers was highlighted in 18 articles, showing how they amplify misinformation through their large followings and perceived authority. Algorithmic facilitation, where social media platforms prioritize engaging yet misleading content, was identified in 10 articles. Additionally, platform-specific analyses showed that Facebook and Instagram were the most commonly cited platforms for spreading wellness misinformation, mentioned in 22 articles, while Twitter was discussed in 8 articles due to its retweet functionality that accelerates the dissemination of false information.

Table 4. Misinformation Category.

Category	Description	Number of Articles
Diet Myths	Articles addressing diet-related misinformation, such as quick weight loss solutions and superfoods.	20
Health Treatments	Articles focusing on unverified health treatments that are often harmful or misleading.	15

Category	Description	Number of Articles
Role of Influencers	Articles exploring how influencers amplify wellness misinformation through their large followings.	18
Algorithmic Facilitation	Articles highlighting how algorithms promote engaging but potentially misleading content.	10
Platform Focus: Facebook & Instagram	Articles discussing the spread of misinformation primarily on Facebook and Instagram due to their visual and engaging content.	22
Platform Focus: Twitter	Articles discussing how misinformation spreads on Twitter, facilitated by its retweet function.	8

This analysis illustrates the widespread nature of wellness misinformation on social media, with particular emphasis on how influencers and algorithms contribute to the rapid spread of false information. The identification of these patterns provides a comprehensive foundation for understanding the dynamics of misinformation and underscores the importance of targeted counter-strategies, such as educational interventions and regulatory measures, which can mitigate the impact of wellness misinformation on public health.

Thematic Focus of Misinformation

The systematic review highlights a significant concentration on diet myths within the realm of wellness misinformation on social media.

Of the 39 articles reviewed, 22 specifically tackle various diet-related myths that promote sensational claims about rapid weight loss, detoxifying effects of certain superfoods, or exaggerated benefits of trendy diets. These claims exploit common desires for immediate health improvements, making them highly appealing and widely shared among social media users. Another prevalent theme is unverified health treatments, discussed in 17 of the reviewed articles. This misinformation ranges from natural remedies to potentially dangerous pseudo-scientific treatments that promise miraculous cures for serious diseases. The danger lies in their potential to lead individuals to disregard professional medical advice in favor of these unproven treatments, posing significant risks to public health.

To address these issues, it is crucial to understand how influencers promote these themes. Influencers often use methods like product endorsements, sharing personal experiences, or misinterpreting scientific data to promote health myths and unverified treatments. **Figure 3** summarize these methods visually.

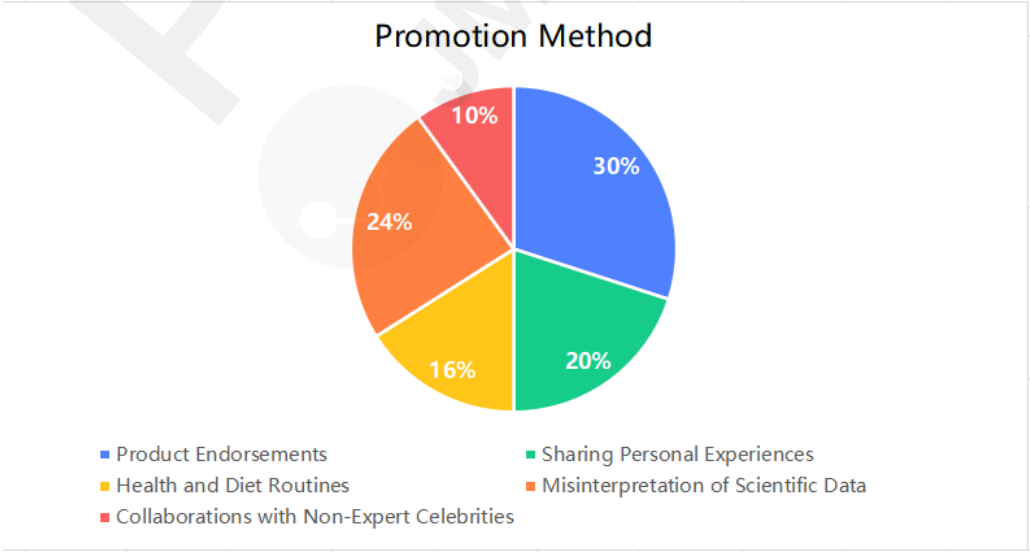

Figure 3. Promotion Methods.

This detailed breakdown provides insight into the specific tactics used by influencers to spread wellness misinformation, emphasizing the need for targeted educational and regulatory interventions to mitigate the spread of such misleading content on social media platforms.

Role of Social Media Influencers

Social media influencers significantly impact the dissemination of wellness misinformation, a phenomenon highlighted in 21 of the reviewed articles. These influencers, armed with large followings and the ability to establish a personal connection with their audience, wield considerable persuasive authority. Their recommendations and endorsements, especially regarding health products or practices, often go unquestioned by followers. This trust is not always benign, as it can be exploited to promote health products or lifestyles lacking scientific support, misleading followers into adopting potentially harmful practices based on perceived authority rather than verified information. Influencers commonly employ several methods to propagate wellness misinformation. They often make product endorsements, sharing personal success stories or experiences that may not be scientifically validated. For example, an influencer might promote a specific diet plan or a supplement as a miraculous solution, despite insufficient evidence of its effectiveness. The personal testimonies and anecdotal evidence they provide can be highly persuasive, especially when presented as firsthand experiences that suggest authenticity and reliability. This approach not only spreads misinformation but also

complicates efforts to counteract it, as the personal nature of the endorsements fosters a deeper trust in the misinformation. The reliance on influencers for health information necessitates a strategic response to mitigate their role in spreading wellness misinformation. Education campaigns that enhance critical thinking and media literacy among social media users are crucial. Such initiatives should teach users to critically evaluate the information shared by influencers, understanding the difference between anecdotal evidence and scientifically backed data. Additionally, regulatory measures could require influencers to clearly disclose any commercial relationships and provide disclaimers when promoting health-related products or advice not supported by scientific evidence (Jonas Nygaard et al., 2021). These combined efforts could diminish the impact of misinformation by challenging its propagation mechanisms and reducing its acceptance among social media users.

Algorithmic Amplification

Algorithmic amplification significantly influences the spread of wellness misinformation on social media, a critical issue analyzed in 12 of the reviewed articles. Social media algorithms prioritize content that generates high engagement—likes, shares, and comments—often promoting sensational or controversial wellness misinformation. These algorithms, designed to keep users engaged on the platform, do not differentiate between credible information and misinformation. This indiscriminate approach results in misinformation often receiving equal or greater visibility than scientifically supported data. The impact of algorithmic behaviors is further detailed in the articles: 5 of them specifically discuss how

algorithms create echo chambers, enhancing exposure to misinformation among users predisposed to certain health myths or unverified treatments. For example, if a user interacts with posts promoting natural cures, the algorithm is likely to present more such content, irrespective of its accuracy, perpetuating a cycle of misinformation. Another 7 articles highlight how misinformation about diets and health regimes receives amplified visibility due to its high engagement metrics, often driven by sensational claims or celebrity endorsements.

Addressing the challenges of algorithmic amplification requires a strategic adjustment in content curation on social platforms. Potential reforms could include modifying algorithms to prioritize indicators of credibility, such as endorsements from recognized health authorities or the inclusion of verifiable sources.

The systematic review provides an insightful analysis into platform-specific dynamics that underlie the spread of wellness misinformation across different social media platforms. Each platform facilitates the dissemination of health-related misinformation in unique ways, impacted by their respective user interfaces and algorithmic prioritizations, which can be seen **figure 4**. Facebook and Instagram are heavily implicated, with 25 reviewed articles highlighting these platforms' roles in propagating wellness misinformation. These platforms are characterized by their highly visual content, where misleading health information, often presented in appealing formats such as photos and videos, can rapidly gain traction due to the algorithms that prioritize content with high engagement. This makes it especially challenging to curb the spread of health myths that visually captivate users and

encourage widespread sharing. Other platforms like Twitter, YouTube, TikTok, and Pinterest also contribute significantly to the spread of misinformation but in different capacities. Twitter, noted in 10 articles, accelerates the spread of misinformation through its retweet functionality that favors rapid information dissemination over accuracy. YouTube, discussed in 7 articles, allows influencers and content creators to produce seemingly authoritative health misinformation videos that reach large audiences. TikTok, with 5 references, is particularly potent at viral misinformation due to its algorithm that quickly amplifies short, catchy videos among a predominantly younger audience. Pinterest, although less frequently mentioned with 3 articles, also poses risks with its image and infographic-focused format that often circulates health tips without thorough context or verification.

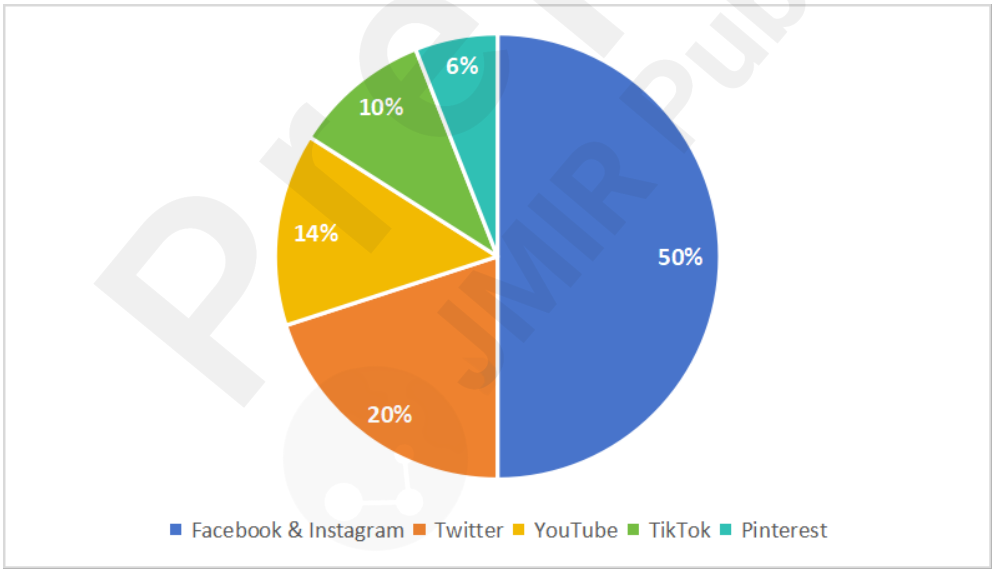

Figure 4. Types of Social Media Platform.

This diverse ecosystem of social media platforms necessitates tailored approaches to effectively combat misinformation,

understanding that each platform's unique features and user dynamics require specific strategies for intervention.

Impacts of Misinformation

The systematic review provides a detailed exploration of the profound impacts that wellness misinformation on social media has on both individual behaviors and broader societal health perceptions. Analyzing insights from 39 articles, the review categorizes various types of misinformation, highlighting how each type significantly influences health behaviors and undermines public health efforts. One major area of impact is individual health behaviors, where misinformation about diet and fitness is particularly prevalent. As noted in 18 articles, misinformation leads individuals to adopt extreme dietary practices, such as excessive fasting or restrictive diets that promise rapid weight loss but lack scientific support and may pose health risks. The fascination with so-called 'miracle' diets and quick health fixes is often fueled by sensational claims made by influencers or unverified online sources. This trend not only jeopardizes individual health but also spreads rapidly due to the viral nature of social media platforms. **Figure 5** summarizes the primary types of misinformation and the extent to which they are discussed across the reviewed articles.

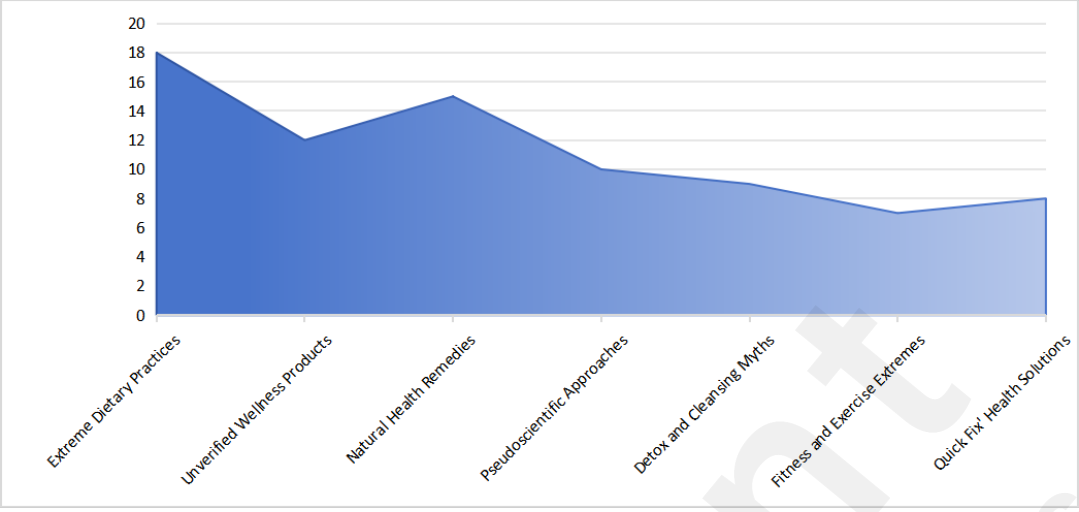

Figure 5. Misinformation Type.

Moreover, the misinformation impacts public trust in established health advice and medical professionals, a concern highlighted in 12 articles. This erosion of trust prompts a broader societal shift towards skepticism of scientifically validated health practices, elevating the allure of alternative remedies that lack empirical support. As misinformation proliferates, it creates a public health environment where pseudoscientific claims are not only more readily accepted but are also shared as legitimate health advice, complicating public health initiatives and policy implementation. Psychologically, the barrage of conflicting health information available on social media platforms causes significant stress and confusion among users, affecting their mental well-being. This psychological burden is exacerbated by the algorithms of social media platforms that amplify engaging yet potentially misleading content, regardless of its accuracy. This systemic issue not only makes it challenging for individuals to make informed health decisions but also perpetuates a cycle of misinformation that can be hard to break. Collectively, these findings underscore the urgent

need for targeted interventions aimed at mitigating the spread of health misinformation. Such efforts should include educating the public on the importance of critically evaluating health information, enhancing regulatory measures on social media platforms to prioritize the dissemination of accurate information, and fostering a greater public understanding of science-based health practices.

Counter-strategies

Educational interventions are a crucial counter-strategy against wellness misinformation on social media. Discussed in 12 of the reviewed articles, these interventions focus on enhancing public health literacy. Programs are designed to educate users about evaluating the credibility of information sources and understanding scientific evidence. By deploying these educational campaigns directly on platforms like Facebook and Instagram, accurate and accessible health information is provided, helping users distinguish between valid and misleading health claims. These educational efforts not only clarify health concepts but also promote critical thinking among the online community.

Regulatory actions form another essential strategy, detailed in 10 articles. These actions include deploying fact-checking services and modifying algorithms to limit the visibility of false information. Such regulatory measures demand collaboration among health experts, social media companies, and policy makers to enforce standards that ensure content accuracy without compromising free expression. Platforms are increasingly adopting these measures, applying labels to misinformation and removing egregious content, thus creating a safer online environment for discussing health issues.

Technology-driven solutions, highlighted in 8 articles, utilize cutting-edge AI and machine learning technologies to detect and counteract misinformation automatically (Xiao et al., 2021). These systems are integrated into social media platforms to scan and analyze content swiftly, flagging suspicious posts for further human review. This approach allows for real-time moderation of content, significantly enhancing the platform's capability to manage the spread of misinformation. By implementing these advanced technologies, social media platforms can keep pace with the rapid spread of misinformation, ensuring that the most harmful or deceptive content is quickly contained.

Application in Study

The application of Social Cognitive Theory (SCT) in our systematic review has provided a structured framework for analyzing how wellness misinformation is disseminated and countered on social media. This approach was instrumental in dissecting the complex dynamics of user behavior and misinformation through the lens of key SCT constructs such as observational learning, self-efficacy, and self-regulation. Observational learning was particularly highlighted, showing how users often mimic health behaviors observed on social media. This mimicry, frequently influenced by influential figures or peer behaviors, occurs often without critical assessment, leading to the widespread adoption of unverified and potentially harmful health practices.

In terms of self-efficacy, the review detailed how this SCT construct influences the way individuals assess and interact with health information. The findings suggested that users with higher self-

efficacy are more adept at discerning the credibility of health claims and less likely to be influenced by misinformation. This is because these individuals have greater confidence in their ability to evaluate health information critically. As a result, enhancing self-efficacy through targeted educational programs can significantly empower users to make better health decisions and reduce the impact of misinformation.

Table 5. SCT Application.

SCT Construct	Application in Study	Key Insights	Number of Articles Referencing Construct	Percentage of Total Articles
Observational Learning	Explored the tendency of users to emulate health behaviors they observe on social media, often without sufficient critical assessment.	Influential in the widespread adoption of unverified health practices; prominently observed when influencers or peers endorse these practices.	18	46%
Self-Efficacy	Investigated how individuals' confidence in their ability to judge health information affects their susceptibility to misinformation.	Users with higher self-efficacy are better at discerning misinformation; they question the validity of health claims more rigorously.	15	38%
Self-Regulation	Examined the methods users employ to control or adjust their	Effective self-regulation techniques, like personal verification rules,	12	31%

SCT Construct	Application in Study	Key Insights	Number of Articles Referencing Construct	Percentage of Total Articles
	interaction with misleading information, such as proactive verification before sharing.	significantly curb the spread of misinformation.		

Finally, the review explored the role of self-regulation in managing interactions with misinformation. Effective self-regulation strategies, such as personal verification of information before sharing, were noted to significantly reduce the spread of misinformation. This insight into self-regulation emphasizes the potential for social media platforms to incorporate features that encourage users to reflect on and verify information. Promoting such behaviors could foster a more conscientious information-sharing environment, ultimately mitigating the spread of misinformation and enhancing the overall quality of public discourse on health matters.

Conclusion

The systematic review presented in this paper highlights the significant challenge posed by wellness misinformation on social media and the diverse strategies that can be employed to counter its spread. Through a detailed analysis grounded in Social Cognitive Theory (SCT), this study has illuminated the complex interplay between individual cognitive processes and social behaviors that facilitate the proliferation of health-related falsehoods. The findings underscore the pivotal role of observational learning in the dissemination of misinformation, where users often adopt and propagate health practices based on influential social media figures without sufficient critical evaluation. Enhancing individual self-efficacy emerged as a crucial countermeasure, empowering users to critically assess the validity of the information they encounter and make informed decisions. Furthermore, the review has emphasized the importance of regulatory and educational interventions in

mitigating the impact of health misinformation. Regulatory measures, including the use of fact-checking services and algorithmic adjustments by social media platforms, are essential to curb the spread of harmful content. Simultaneously, educational initiatives that improve health literacy can equip users with the necessary tools to navigate the complex information landscape of social media. These strategies, combined with the use of advanced technology to detect and flag misinformation, form a comprehensive approach to preserving the integrity of information shared online. In conclusion, this systematic review calls for a concerted effort among policymakers, health professionals, social media companies, and the public to address the challenges of wellness misinformation. As social media continues to shape public health perceptions, it is imperative that all stakeholders collaborate to enhance the accuracy of information and protect users from the detrimental effects of misinformation. This collaboration is not only crucial for improving public health outcomes but also for fostering a more informed and health-literate society, capable of combating the ongoing challenges posed by misinformation in the digital age.

Limitations, implication and future research

The limitations of this study stem primarily from its reliance on existing literature, which may not capture the full scope of rapidly evolving misinformation trends on social media. Future research should focus on longitudinal studies that can provide insights into the complexity of misinformation and the effectiveness of counter-strategies over time. Future studies can explore the impact of emerging social media platforms and innovative technologies like artificial intelligence in detecting and mitigating misinformation.

This will add to ongoing literature on the complexities of misinformation and media literacy strategies particularly on wellness information.

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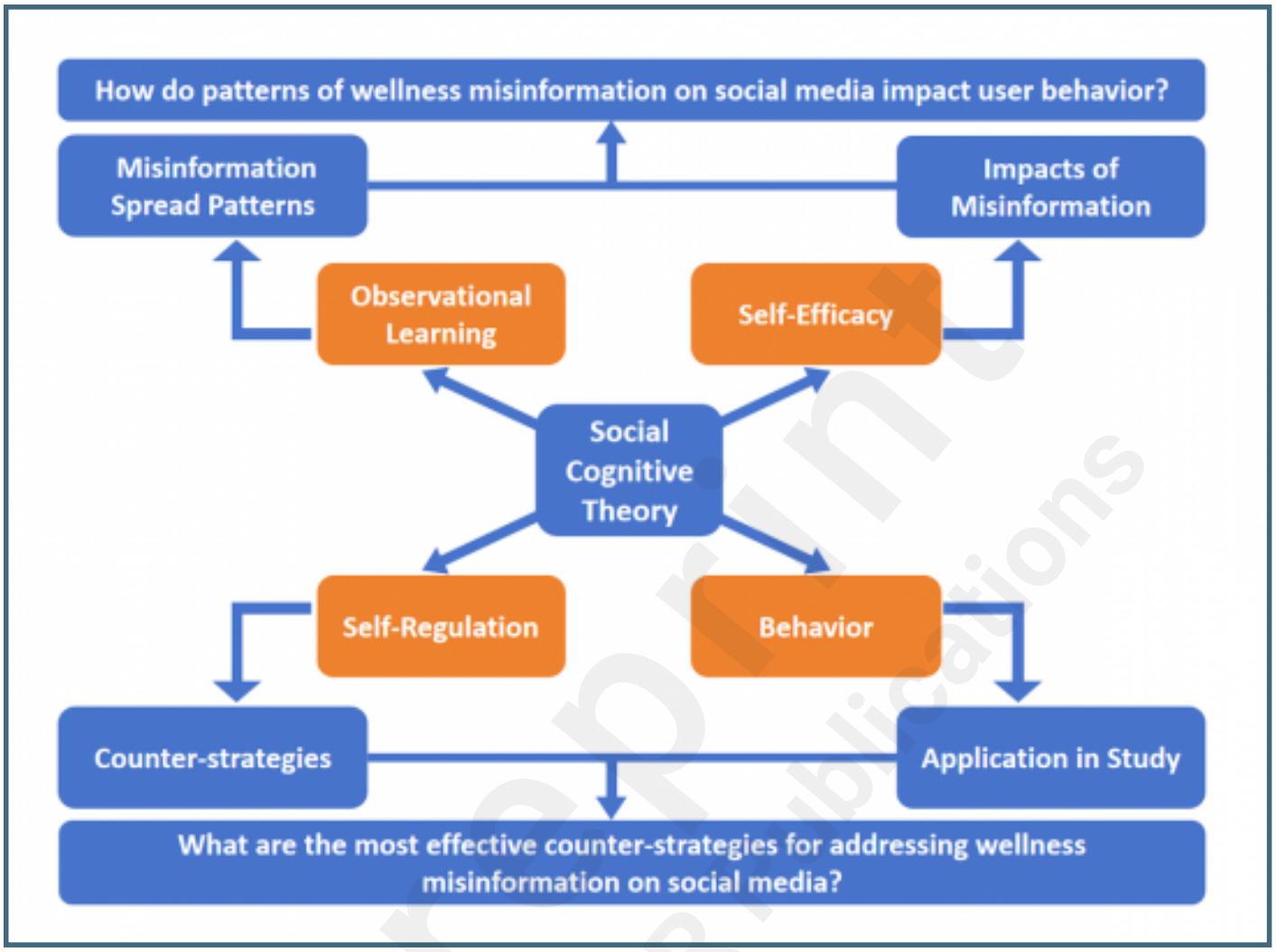
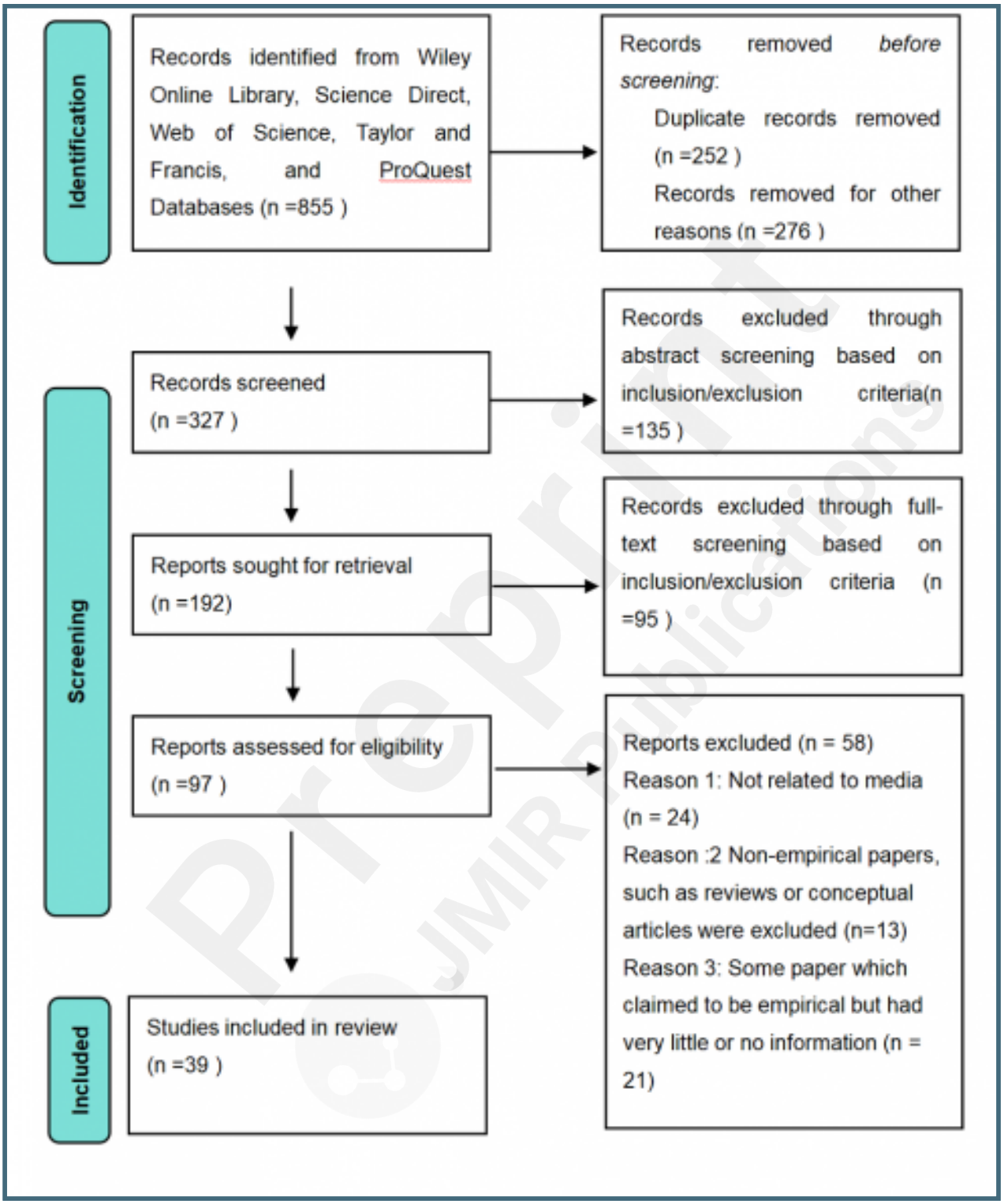
Supplementary Files

Figures

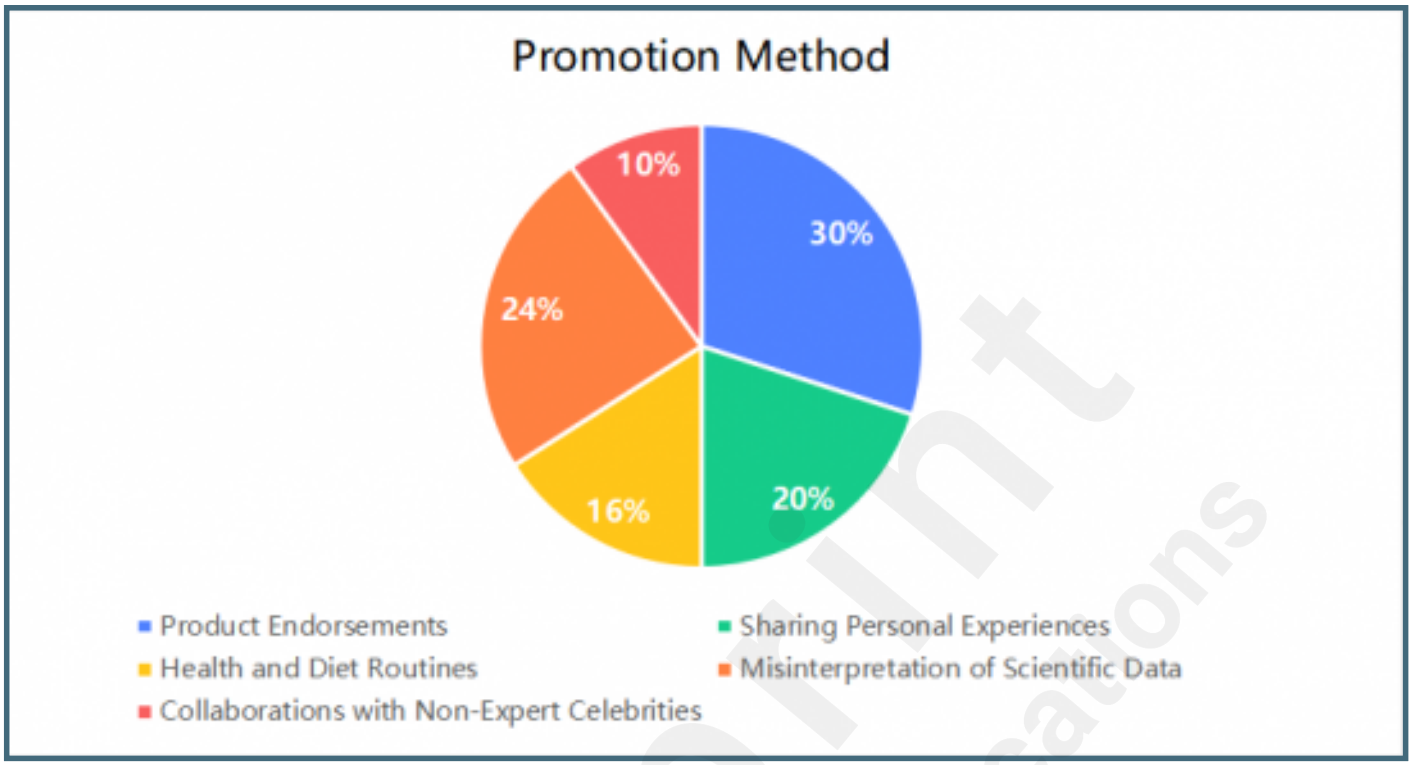
SCT framework.



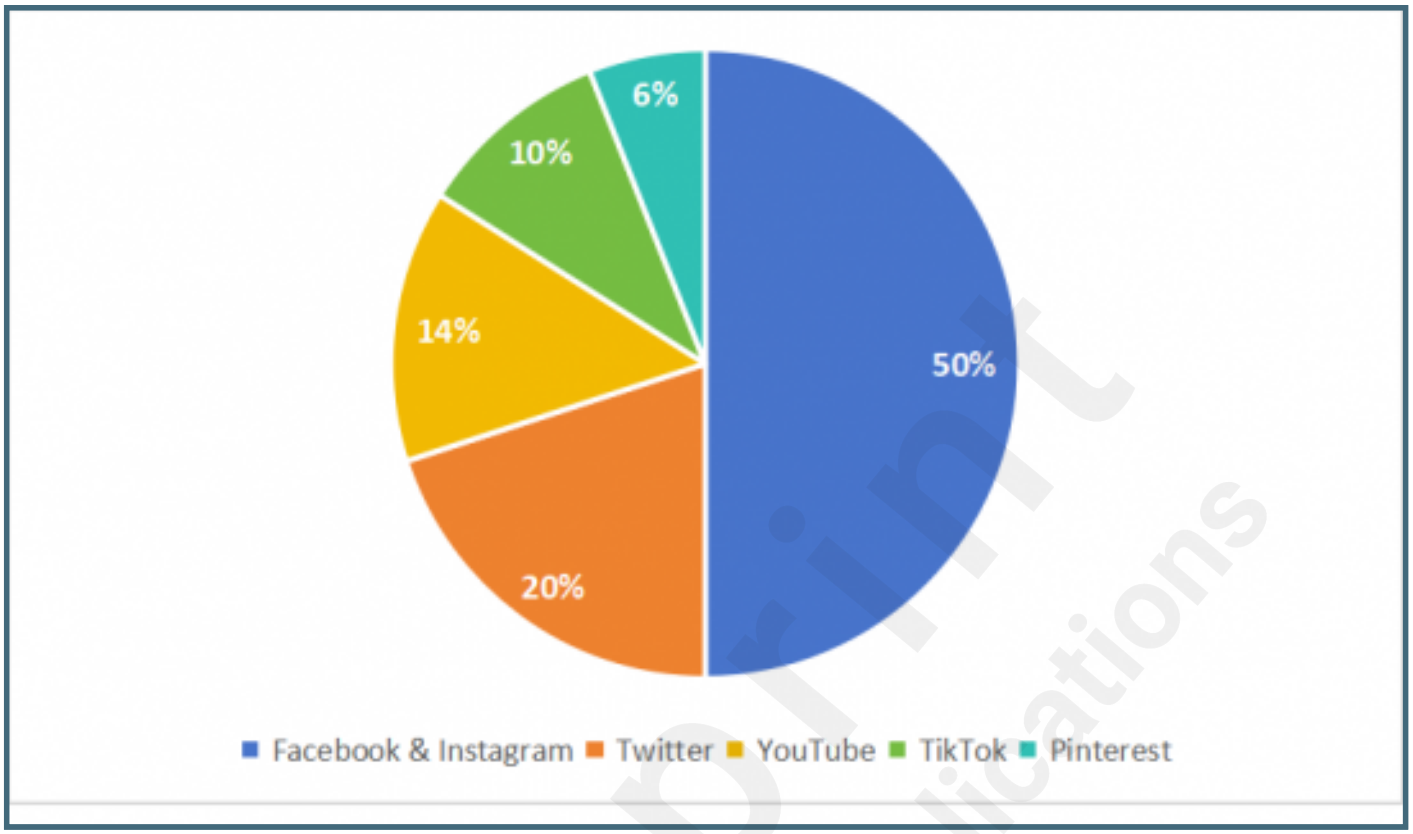
The PRISMA diagram (Rethlefsen et al., 2021).



Promotion Methods.



Types of Social Media Platform.



Misinformation Type.