

Using Social Media to Disseminate Behavior Change Interventions: A Scoping Review of Systematic Reviews

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Abstract

Background: Compared to implementation, the conceptual frameworks, strategies, and outcomes of efforts to disseminate evidence-based interventions are less developed. Though, several studies have used social media dissemination to spread diverse interventions in a broad range of populations. We conducted an overview of the systematic reviews of social media strategies to disseminate evidence-based interventions. We focused on the common themes in the methodology and evaluation frameworks of social media-based dissemination strategies.

Objective: The goal of our overview is to identify common themes in the design, delivery, and impact assessment of social media-based dissemination strategies.

Methods: We searched the Epistemonikos database (till 2022) to retrieve systematic reviews on social media dissemination. We included 21 reviews in this overview. We extracted and classified the data on the characteristics of the included studies, ingredients of intervention, and outcome assessment.

Results: The study designs, intervention strategies and evaluation measures of social media dissemination interventions were diverse and mostly lacked a theoretical framework. We classified the goals of interventions reviewed in the included studies into One-way spread (using social media to reach out and share), invoking Conversations (using conversational and community features of social media to promote dialogue), peer motivation (dissemination through peer feedback and update), and miscellaneous (e.g. developing Wiki or dissemination through online multiplayer games). The main outcomes of dissemination efforts are diffusion and reach, engagement, Impact on health and health-related behaviors, and social support.

Conclusions: The findings of this overview call for attention to the drastic knowledge gaps in the effective utilization of different components of social media for dissemination. Studies are using various features of social media (e.g., peer-to-peer sharing, online engagement in conversations (one-on-one or with a broad audience), formation of clusters and communities, and peer feedback to facilitate the dissemination of interventions.

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Original Manuscript

Scoping Review

Using Social Media to Disseminate Behavior Change Interventions: A Scoping Review of Systematic Reviews

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Abstract

Background. Compared to implementation, the conceptual frameworks, strategies, and outcomes of efforts to disseminate behavioral interventions are less developed. We conducted a scoping review of the systematic reviews of social media strategies to

disseminate behavior change interventions. We focused on the common themes in the methodology and evaluation frameworks of social media-based dissemination strategies.

Objective. The goal of this scoping review is to identify common themes in the design, delivery, and impact assessment of social media-based dissemination strategies for behavior change interventions.

Methods. We searched the Epistemonikos database (until 2024) to retrieve systematic reviews on social media dissemination. Two independent reviewers screened the abstracts and full texts. We extracted and classified the data on the characteristics of the included reviews and outcome assessments. We followed the reflexive thematic analysis steps to identify the main themes of the ingredients of the social media dissemination strategies.

Results. We screened 613 records based on the title and abstract, followed by the assessment of 100 full texts of potentially eligible reviews. The 43 included reviews assessed a median of 20 empirical studies (IQ range 21). The study designs, intervention strategies, and evaluation measures of social media dissemination interventions were diverse. We classified the main themes of the ingredients of social media dissemination strategies into four main categories: One-way spread (aiming for spread/diffusion, with little or no effort to develop two-way communications or engage target users in conversation and feedback) (n=37), invoking conversations (facilitating and enhancing the one-way spread using conversational and community features of social media to promote dialogue among users or between the users and experts) (n=21), peer motivation (facilitate sharing individual behavior on social media to receive confirmation, feedback, and support, to further personalize the dissemination) (n=11), and miscellaneous (e.g., dissemination through online multiplayer games) (n=3). The main outcomes of dissemination efforts were reach and engagement (n=12), user perception of their knowledge, intention to change the behavior, feasibility and acceptability of the intervention (n=24), and impact on health and health-related behaviors (n=43). The majority of theoretical frameworks that were identified by the reviews were individual and social behavior change models (including the theory of planned behavior, and Social Cognitive Theories). A smaller number of reviews also identified social and contextual models (e.g., Social Network Theory), dissemination and implementation frameworks (e.g., Diffusion of Innovation), and social marketing and action models (e.g., community mobilization and Reader-to-Leader framework).

Conclusions. Researchers use various features of social media (e.g., peer-to-peer sharing, online engagement in conversations (one-on-one or with a broad audience), formation of clusters and communities, and peer feedback to complement and enhance the one-way dissemination. Further research is needed to inform the theoretical underpinnings and the interventional ingredients of social media dissemination strategies.

Keywords: Social Media; Social Networking; Dissemination; Behavioral Interventions; Health Information

INTRODUCTION

The definition of “dissemination” varies across studies. Compared to spontaneous and unplanned spread, dissemination is typically defined as the active and targeted distribution or transfer of new ideas, such as evidence-based interventions, to specific populations [1, 2]. Identifying, reaching out to, and transferring innovations to potential users is crucial in the implementation of innovations [3, 4]. Yet, the science of dissemination has been less explored than that of implementation, and little is known about the determinants, processes, and outcomes of dissemination efforts.

Dissemination strategies are actions and processes that promote and support the

dissemination of information, conveying it from a source to the audience through the intentional development and selection of sources, content, and channels [1-3]. These actions may involve the development and tailoring of the content/message (e.g., best practice advice and recommendations and policy briefs), identification and adaptation of channels (e.g., in-person communication or social media platforms such as X.com and Facebook, websites and weblogs, email, mass media, and podcasts), and engagement and activation of sources (e.g., endorsement and distribution by valid, popular, target-specific individuals and organizations) [2, 3]. Purposeful and systematic dissemination is essential for the uptake, spread, and use of health innovations, as the significant gap in translating research findings into practice and policy is partially attributed to ineffective and inadequate dissemination [3, 5].

Social media is omnipresent as a potentially powerful dissemination platform, with more people accessing web-based content through social media links than through direct searches [6, 7]. Thus, social media platforms play a prominent role in shaping and framing the public's opinion at a low cost over short periods of time [6, 8, 9]. Leveraging the power of social media can help implementers overcome the barriers of scope and reach posed by traditional dissemination methods [10-13]. Social media also presents a new dimension to healthcare, as communication and collective actions through social interactions in online platforms have the power to influence health practices and policies [14, 15].

However, little is known about the ingredients of social media-based dissemination strategies, the determinants of their success, and methods for assessing their effectiveness in disseminating behavior change interventions [6, 16]. We conducted a scoping review that investigated the uses of social media in disseminating strategies in behavior change interventions. The goal of our review was to identify common themes in the design, delivery, and impact assessment of social media-based dissemination strategies on behavior change.

METHODS

We conducted a scoping review of systematic reviews to understand the range, diversity, and characteristics of the literature, and identify potential research gaps [17]. Unlike systematic reviews, scoping reviews provide a broader conceptual overview of existing evidence, making them particularly useful for areas where the literature is dispersed across multiple disciplines or sources [18]. We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) for Scoping Reviews (PRISMA-ScR) guidelines [19]. We also adopted the methodological framework developed by Arksey and O'Malley, modified by Levac and colleagues [20].

Inclusion and exclusion criteria

We included systematic or scoping reviews that assessed the effect of social media-based strategies on the dissemination of health behavior change interventions.

Systematic or scoping reviews

We included published systematic or scoping reviews in English that employed structured methods for literature searching, study selection, and synthesis. We excluded protocol papers, narrative reviews, and opinion pieces.

Social media

We included studies that utilized social media as a part of their dissemination strategies.

Following Carr and Hayes (2015) [21], we defined social media as “Internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others.”

Dissemination

We defined dissemination as an active and targeted process of identifying, reaching out to, and transferring knowledge to users [1, 2].

Interventional studies

We included reviews that assessed the effectiveness of dissemination strategies through empirical studies, in which researchers deliberately used social media to disseminate behavior change-related innovations or information. We excluded observational studies of social media user behavior patterns.

Behavior change interventions

We defined behavior change interventions as structured sets of actions designed to modify specific behavioral patterns. These patterns are typically assessed based on the prevalence or occurrence of certain behaviors within defined populations [22]. Popular examples include physical activity, smoking cessation, healthy sexual behavior, medication adherence, and adherence to guidelines.

Exclusion Criteria

We excluded non-English papers, unstructured (narrative) reviews, conference abstracts, unpublished reports, and research protocols.

Literature Search

We searched the Epistemonikos database to retrieve systematic reviews [23]. Epistemonikos is an open access meta database that screens 10 bibliographic databases on a daily or weekly basis (Cochrane Database of Systematic Reviews (CDSR), PubMed, Excerpta Medica Database (EMBASE), Cumulative Index to Nursing & Allied Health (CINAHL), PsycINFO, Latin American and Caribbean Literature on Health Sciences (LILACS), Database of Abstracts of Reviews of Effects (DARE), The Campbell Collaboration Online Library, JBI Database of Systematic Reviews and Implementation Reports, and Evidence for Policy & Practice Information Centre (EPPI) Evidence Library) to identify systematic reviews relevant to health interventions [24]. As of June 2024, the database had retrieved 1,822,333 references from various databases and other sources, classified by human screeners and a machine learning algorithm, resulting in a total of 515,182 systematic reviews.

We used a sensitive search strategy to identify systematic and scoping reviews of dissemination studies, up to November 2024. The research team developed the search strategy using an iterative approach based on relevant keywords pertaining to the social media and dissemination. We also reviewed the records obtained through Google Scholar search and complemented the keyword list of Epistemonikos search strategy, to improve the search recall. We limited to the search to studies including the variations of the word ‘behavior’ in title and/or abstract. The comprehensive search strategy is provided in the Multimedia Appendix 1, which includes alternative terms related to social media and specific social media platforms, dissemination/spread, and behavior change.

Study Selection

We imported the retrieved records to the Rayyan platform [25]. Pairs of reviewers (PD, QQ, and SC) independently screened the abstracts, and disagreements were resolved through discussions with the third reviewer (RYN) in weekly meetings. We conducted a calibration review and, after reaching satisfactory agreements among reviewers, divided the included papers for full-text assessment. The team had regular meetings to reach a consensus on eligibility.

Data Charting and Thematic Analysis

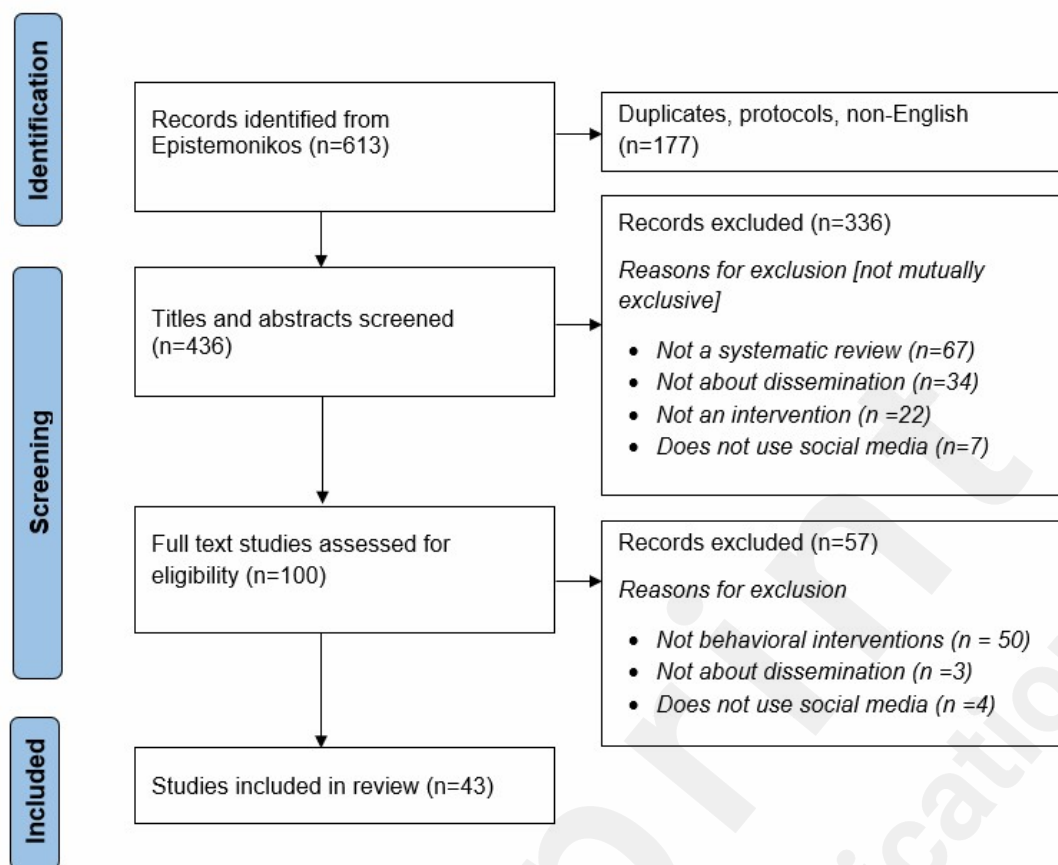
A data-charting form was jointly developed to determine variables to extract; and was continuously revised and updated based on the new information identified through data extraction. Three reviewers (PD, QQ, SC) reviewed each paper in pairs to identify the relevant components. The disagreements and confusions were resolved in regular meetings with RYN.

To identify the main themes of the ingredients of social media dissemination strategies, we needed to go beyond the description of strategies in the included reviews. We followed the principles of reflexive thematic analysis [26], following the recommendation by Arksey and O'Malley [27] and Colquhoun et al. [28]. It involved familiarization with data, coding the intervention components, generating and reviewing themes, defining and naming themes, and writing up. The information on the ingredients of social media dissemination strategies was obtained from the full texts and/or appendices of included reviews and, where needed, through the retrieval of the original empirical studies that were mentioned in the reviews.

RESULTS

Figure 1 illustrates the PRISMA flowchart, outlining the process of study selection. The Epistemonikos search in November 2024 yielded 613 potential systematic reviews, of which 513 were excluded through title/abstract screening. After reviewing the full texts of the reviews for eligibility, we excluded an additional 55 records. We included and extracted the data from 43 reviews. The number of interventional studies included in these reviews varied from 7 to 143, with a median of 20 (IQ range: 21). Thirty-one out of 43 (72%) reviews were published in or after 2020 [16, 29-58]. Out of 43, 17 were from the United States [29, 34, 37, 39-41, 45, 49, 52, 57-64], 10 from Australia [36, 47, 48, 50, 54, 56, 65-68], 6 from the United Kingdom [31, 32, 38, 44, 51, 69], 3 from Canada [16, 42, 70], and 7 from the rest of the world [35, 46], Italy [33], Japan [43], Netherlands [30], Saudi Arabia [55], and Singapore [53]. The most frequent behaviors targeted were physical activity and healthy eating, followed by smoking cessation and vaccination and testing. Twenty eight studies reported a risk of bias assessment or commented on the quality of primary studies [32-34, 36, 38, 40, 41, 43, 44, 47-53, 55, 56, 58-60, 63-68, 70].

Figure 1. PRISMA flow diagram illustrating the study selection procedure.



Target populations

As shown in Table 1, the included systematic reviews summarized the findings of reviews that focused on the following categories:

General Population

Fifteen reviews focused on the general population with little specification of demographics [29, 35, 36, 40, 43-45, 47, 49, 55, 58, 63, 64, 68, 69]. Of the reviews that specified the target population, two focused on adults [16, 48]; one on children aged between 5 and 12 years [32]; nine on young adults and adolescents [38, 42, 46, 54, 60-62, 66, 67]; two on rural communities and people with low socioeconomic status [30, 37]; two on expectant mothers or mothers with infants [51, 57]; two on young women [50, 56]; and one on university students [71].

Patients

Two reviews focused on specific clinical conditions: obesity and metabolic syndrome [59] and clinical indication of mental illness [65].

Multiple groups

Seven reviews included studies targeting multiple groups: one review included studies on clinicians, health workers, medical students, and patients [31]; one on healthy adults, overweight or adults living with obesity, chronically ill patients, pregnant mothers, and children of different age groups [53]; one on adolescents and their parents [34]; one on unvaccinated youth and their parents [52]; one on different groups like Men who have sex with men, people living with HIV, adolescents, and college students [39]; one on overweight or healthy sedentary individuals [70], one on Black and Latinx men who have sex with men, and women under the age of 29 years [41].

Study designs

All reviews except one [58] reported the inclusion of randomized controlled trials (RCTs). The quasi-experimental study design was also commonly reported among the included reviews [33, 47, 50, 52, 54, 56, 61, 62, 67]. Fifteen reviews included studies with pre-post designs [16, 29, 33, 34, 37, 39, 42, 46, 48, 49, 59, 60, 62, 63, 69]. Observational studies were included in seven reviews [37, 39, 41, 51, 55, 58, 68]. Three reviews included qualitative studies [37, 38, 57], and five included Mixed-method studies [37, 38, 42, 52, 57]. One review did not report the study design of their included studies [44].

The ingredients of the social media dissemination strategies

We generated a classification for each included article by thematically categorizing the reported dissemination strategies into the following groups: one-way spread, invoking conversations, peer motivation, and miscellaneous. Three reviews did not provide sufficient information about the components of interventions used in their included studies [30, 33, 53]. One review did not report any included studies with a focus on dissemination through social media, despite an appropriate eligibility criterion [65]. We summarized these categories in Table 1.

One-way spread

One-way spread involves posting content on social media platforms (such as X/Twitter, Facebook, Instagram, LinkedIn, blogs, and webcasting), aiming for dissemination, with minimal effort to develop two-way communication or engage target users in conversation and feedback. Thirty-seven reviews included interventions that incorporated one-way

spread of dissemination strategies [16, 29, 31, 32, 34-45, 47-52, 54, 55, 57-64, 66-70]. Examples include posting evidence-based messages on public social media platforms (e.g., X/Twitter) or specialized groups (e.g., Facebook groups for patients with similar conditions) and training opinion leaders to post on social media.

Invoking conversations

The reviews identified several studies that included interventions aimed at initiating or facilitating conversation and dialogue among users and experts, thereby promoting and enhancing dissemination. The communications may aim to provide clarifications and personalized instructions to facilitate the adoption of behavior and its dissemination through trusted sources (e.g., opinion leaders or friends) [16]. This category can be further broken down into creating communities for peer discussions and promoting private communications with experts or among select individuals.

Researchers created specialized communities to promote conversations among peers, such as closed social media groups only accessible to the target users (e.g., patients or individuals committed to quitting smoking). Twenty-one reviews indicated the development of and posting materials in closed communities, like discussion boards and forums, as the dissemination method [32, 37-39, 42, 44-49, 51, 52, 54, 55, 61, 64, 67-69, 72]. Alternatively, researchers utilized social media platforms to facilitate one-to-one communication. Two of these systematic reviews included conversations with experts [37, 70]. Fifteen systematic reviews included studies that invoked private communications among target users, such as peer mentorship and sharing information in private chats [37, 39, 42, 45-48, 51, 54, 57, 60, 64, 67-69].

Peer motivation

Dissemination strategies in this category aimed to facilitate sharing individual behavior on social media to receive confirmation, feedback, and support from others. This category aimed to reinforce one-way dissemination through peer influence and personalization.

This category primarily focuses on posting progress updates on social media. Eleven reviews indicated that users promoted the intervention by posting their personal improvements on social media, either manually or automatically through apps [16, 33, 37, 41, 46, 51, 54, 63, 64, 69, 70]. Examples include sharing dietary or tobacco abstinence progress with a peer group or publicly on social media, where one can receive compliments and support from others.

Miscellaneous

Three reviews included studies that developed socially interactive social media-based games that involved inviting friends and sharing progress with them, interaction with peers, and the communication of tailored feedback to reinforce dissemination [34, 46, 64]. Martin et al. (2020) also included studies that used social media dissemination through fictional characters with social media pages that promoted healthy behaviors [46].

Outcome assessment

We classified the primary reported outcomes into four categories by building on previous work by Baumann et al. [1]. As demonstrated in Table 1, we classified the primary reported outcomes into four categories:

Diffusion and Engagement

Twelve reviews included studies that reported users' engagement with social media platforms or apps as diffusion and engagement indicators, including social media impressions, shares, tweets, retweets, likes, comments, frequency of interactions, participation in peer communications, survey participation, downloads, and other bibliometric measures [31, 36-38, 44, 45, 50-52, 55, 60, 64].

Users' perceptions

Seven reviews included studies that assessed users' perception of the feasibility, usefulness, and acceptability of the interventions through self-report [30, 31, 46, 47, 64-66]. Seventeen reviews included studies that used tests, screening, and questionnaires to assess user perception, attitude, and knowledge [33, 35, 36, 39, 41, 44, 49, 51, 52, 54, 55, 57, 58, 61, 62, 66, 67].

Impact on health and health-related behaviors

All included reviews reported the effect of social media interventions on health/clinical outcomes. This included self-reported healthy behavior, indicators of adherence to the desired intervention, measures of psychological well-being and quality of life, and indicators of improvement in health-related outcomes (such as weight management or smoking cessation).

Theoretical frameworks and models

Many theories and conceptual frameworks have been reported in the included reviews, including individual-level behavior change theories (e.g., Theory of Planned Behavior, Health Belief Model, self-efficacy, and cognitive behavioral approaches)[30, 34, 36, 37, 44, 47, 58, 60, 61, 68, 69], stage-based and motivational theories (e.g., Trans-theoretical Model, Self-Determination Theory, Technology Acceptance Model)[34, 36, 37, 47, 56, 60, 61, 69, 73], socially focused behavioral theories (e.g., Social Learning Theory, and Social Cognitive Theory)[30, 34, 37, 41, 42, 44, 46, 47, 56, 58-61, 63, 66-69], broader social and contextual models (e.g., Social Network Theory, social norms theories, Social Identity Theory)[42, 58, 60, 63, 69], dissemination and implementation of theoretical models and frameworks (e.g., Diffusion of Innovations, and Theoretical Domains Framework)[34], and marketing and community-focused models (e.g., community mobilization, Reader-to-Leader framework, bystander education, and social marketing)[42, 58]. Because many of these theories and models span multiple categories, this classification necessarily simplifies their nuanced conceptual overlaps.

TABLE 1. Characteristics, ingredients of the dissemination strategies, and outcome assessment of the included systematic review

Study	Number of included studies	Behavior change	Target population	Ingredients of the social dissemination strategies	Outcomes	Theory
Cucina 2020 [29]	11	Cancer preventive health behaviors (i.e., sunscreen use,	General population	One-way spread: watching videos on YouTube	Impact on health and health-related behaviors. User Perception:	Not Mentioned

		smoking, and diet) and/or early detection strategies (i.e., screening testing and/or self-skin exams)			knowledge and intention, Information preference	
Al-Dhahir 2022 [30]	59	Lifestyle modification (weight loss, physical activity, healthy eating, smoking, and alcohol use) for people with a low SES	General population	Not enough information provided	Impact on health and health-related behaviors. User Perception	Social cognitive theory, I-Change Model, Theory of Planned Behavior, Health Belief Model, theories of self-regulation, Precaution Adoption Process Model
an 2017 [59]	27	Physical activity and weight management	Patients: adults living with obesity, metabolic syndrome, and cancer survivors	One-way spread on Instagram, Facebook, Twitter	Impact on health and health-related behaviors: BMI, weight measures, and body fat	Social Theory Cognitive
hatt 2021 [31]	5	Adoption of clinical practice guidelines	Multiple groups: Clinicians, health workers, medical students, patients	One-way spread on Twitter, YouTube, LinkedIn, Facebook Invoking conversations: discussion board, Twitter chat	Diffusion and reach Impact on health and health-related behaviors: adherence User perception	Not Mentioned
ridgen 2020 [32]	17	Behavior change in chronic health conditions (e.g., obesity, anxiety, ADHD, Asthma, Cerebral Palsy)	children aged between 5 and 12 years.	One-way spread on web-based platforms Invoking conversations: discussion on WhatsApp	Impact on health and health-related behaviors.	Not Mentioned
riijnath 2016 [55]	14	Literacy and behavior related to mental illness	adult participants with a clinical indication of a mental illness	Miscellaneous: Facebook game	Impact on health and health-related behaviors User Perception: Perceived stigma about mental illness	Not Mentioned
uja 2024 [33]	19	Physical activity	University Students	One-way spread on Facebook Peer motivation to increase steps/day in a Facebook group.	Impact on health and health-related behaviors. User Perception (Levels of Perceived Stress). Social support for physical activity	Social Cognitive Theory, Cognitive Behavior Framework and Self-Determination Theory
Carson 2017	30	Smoking	Young people	One-way spread on	Impact on health and	Social Cognitive

66]		Cessation	under the age of 25 years	Facebook, YouTube, and Twitter	health-related behaviors. User Perception	Theory, Social Learning Theory
Chau 2018 [60]	16	Maintaining a healthy diet	adolescents (10–19) and/or young adults (18–25) who are healthy, or have a health challenge, such as being overweight, living with obesity, or having a chronic disease	One-way spread on Twitter, Facebook Invoking conversations: Facebook, WhatsApp, Twitter chat	Impact on health and health-related behaviors Diffusion and reach of app and website usage, frequency of interactions, reading/viewing content, and participation in peer communication activities. User satisfaction	Theory of Reasoned Action, Self-Determination Theory, Trans contextual model of motivation, Theory of Planned Behavior, Attitude-Social Influence-Self-efficacy model based on the Theory of Planned Behavior, Social Cognitive Theory, social network theories
Choi 2023 [34]	24	HPV vaccination	adolescents and their parents	One-way spread on Facebook Invoking conversations: Facebook Miscellaneous: game-based interventions	Impact on health and health-related behaviors.	Information systems research frameworks, Health Belief Model, Inoculation Theory, Social Cognitive Theory, Theory of Planned Behavior, Theory of Reasoned Action, IDM (Informed Decision Making), Diffusion of Innovations Theory, Transportation Theory, Transtheoretical Model, Integrated Behavioral Model, Intervention Mapping, Self-Determination Theory, and Theoretical Domains Framework.
de Oliveira Junior 2023 [35]	12	Oral health	general public	One-way spread on Facebook	Impact on health and health-related behaviors. User Perception	Not Mentioned
Praganidis 2024 [36]	14	Help seeking in mental illness	general public	One-way spread on Twitter, YouTube, Instagram, Facebook Invoking conversations: Facebook, Twitter chat	Impact on health and health-related behaviors Engagement User Perception:	Health Belief Model, Transtheoretical Model of Behavior Change.
Alaheebocus 2018 [69]	143	Healthy diet and physical activity	general public	One-way spread on Twitter, YouTube, Facebook Invoking conversations:	Impact on health and health-related behaviors	Theory of Planned Behavior, Social cognitive Theory, Cognitive behavioral approach, Principles

				Facebook, Twitter chat Peer Motivation: using a private group chat		of web usability Transtheoretical Model of Change theory of social support, Social Learning Theory, cognitive-behavioral and self-control principles, Goal Setting Theory, Social Comparison, Self-Determination Theory
Oppes 2023 [37]	23	Healthy diet, physical activity, and breastfeeding practices	vulnerable families	One-way spread on Twitter, Facebook Invoking conversations: Facebook, Twitter chat Peer Motivation: using a private group chat	Engagement Impact on health and health-related behaviors	Social cognitive theory, Health Belief Model, Transtheoretical Model, Cognitive Social Health Information Processing, Health Action Process Approach, Socioecological model, Theory of Planned Behavior
Goodyear 2021 [38]	16	Healthy diet and physical activity	young people and adults	One-way spread on Twitter, Facebook Invoking conversations: Facebook, Twitter chat	Impact on health and health-related behaviors engagement	Not mentioned
Guise 2012 [61]	10	Sexual health	adolescents	One-way spread on MySpace Invoking conversations: Bulletin board	Impact on health and health-related behaviors: sexual behavior, Removal of MySpace sex references, Removal of MySpace substance abuse references, MySpace profile security set to private. User Perception: Perceived importance and self-efficacy regarding abstinence and condom use, knowledge about EC and abortion law, permissiveness toward premarital sex and contraceptive use	Social Cognitive Theory, Theory of Planned Behavior, Theory of Reasoned Action, the extended parallel process model, Transtheoretical Model
Ismail 2018 [67]	14	Healthy diet	General population:	One-way spread on blogs	Impact on health and health-related	Social Cognitive Theory, Mentoring

			Adolescents aged 13-18 years	Invoking conversations: discussion boards and forums	User Perception: Perceived behavioral control	models, ASE model attitude, social influence, self-efficacy, Theory of Interactive Technology, Social Learning Theory Health Promotion reference model
brahim 2024 [39]	23	HIV/AIDS prevention and control	General public: Men who have sex with men, people living with HIV, adolescents, and college students	One-way spread on Twitter, Instagram, Facebook, and LinkedIn Invoking conversations: Facebook groups	Impact on health and health-related behaviors: HIV testing, behavioral skills social support for HIV test and also adherence to HIV treatment User Perception: condom use attitudes	Not mentioned
ones 2014 [62]	11	Sexual health	General population: adolescents and young adults, aged 13-29 years	One-way spread on Facebook	User perception Impact on health and health-related behaviors: sexual health behavior	Not mentioned
im 2024 [40]	25	Hepatitis testing	General population	One-way spread on WeChat	Impact on health and health-related behaviors: HBV surface antigen (HBsAg) and HCV antibody (anti-HCV IgG) test uptake	Not mentioned
udrati 2022 [41]	8	Pre-exposure prophylaxis	Black and Latinx MSM and women under the age of 29 years	One-way spread on Facebook and Instagram Peer Motivation: using a Facebook group	Impact on health and health-related behaviors: PrEP uptake User Perception: Pre-exposure prophylaxis (PrEP) awareness	Social Theory Cognitive
ulandaivelu 2023 [42]	28	Healthy dietary behavior	Adolescents	One-way spread on Facebook Invoking conversations: Facebook groups	Impact on health and health-related behaviors: Improvements in BMI and dietary behavior	Theory of Interactive Technology, Social Learning Theory Cognitive behavioral approaches, Social Cognitive Theory community mobilization, and social network theory Reader-to-Leader Framework, Technology Acceptance Model Transtheoretical Model

Uwahara 2023 [43]	7	COVID-19 preventive behaviors, vaccination, information-seeking behaviors	General Public	One-way spread on Facebook	Impact on health and health-related behaviors: COVID-19 infection, preventive behaviors, such as vaccination uptake, information-seeking	Not mentioned
Arango 2015 [63]	12	fitness, sexual health, food safety, smoking, and health promotion	General public	One-way spread on Facebook Peer Motivation: using a Facebook group	Impact on health and health-related behaviors: physical activity change, dietary habits, smoking cessation, alcohol consumption, and sexual behaviors	Social network theory and Social Cognitive Theory
Li 2021 [44]	20	COVID-19 vaccine uptake	General Public	One-way spread on Twitter, Facebook, and YouTube Invoking conversations: Facebook and WhatsApp	Impact on health and health-related behaviors: increase in vaccine doses, Knowledge of specific diseases and their vaccination. Engagement through assessment of the number of likes, comments, and shares User Perception: improvements in attitudes regarding vaccination benefits,	Health Belief Model Theory of Planned Behavior, and Social Cognitive Theory
Limaye 2021 [45]	46	Vaccine uptake	General public	One-way spread on Twitter, Facebook, and Instagram Invoking conversations: Facebook and WhatsApp	Impact on health and health-related behaviors: Vaccine knowledge, intentions/ behaviors. Engagement through assessment of the number of likes, comments, shares, and tweets User Perception: Vaccination attitude	Not mentioned
Maher 2014 [68]	10	Key modifiable health behaviors (tobacco and alcohol consumption, dietary intake, physical activity, and sedentary behavior)	General public	One-way spread on Twitter, Facebook, and Podcasts Invoking conversations: discussion board and forum, Facebook	Impact on health and health-related behaviors: BMI, physical activity, smoking	Social Cognitive Theory, Social Learning Theory, Theory of Planned Behavior
Martin 2020 [46]	60	Sexual health	Adolescents and young	Invoking conversations: Discussion forums and	Impact on health and health-related	Information-Motivation-Behavioral

			adults	Facebook Peer motivation: Facebook group chat Miscellaneous: Online games	behaviors: Behaviors, knowledge, communication, skills, self-efficacy, use of contraception, incidence, or history of STIs, HIV stigma, and test history, homophobia, partner violence User perception: Acceptability, attractiveness, feasibility, satisfaction, and implementation of the intervention process.	skills model; Social Identity Theory; Social Cognitive Theory; Social Learning Theory
McKeon 2022 [47]	8	Physical activity and healthy eating	General Public	One-way spread on Facebook Invoking conversations: online discussion boards, online bulletin boards, chat rooms, online community, and Facebook Peer motivation: Facebook group chat	Impact on health and health-related behaviors: minutes of physical activity, sedentary time, step count or changes in overall food consumption, nutrient, mineral, and/or supplement intake User perception: feasibility, acceptability, safety defined by adverse events, usability,	Social Cognitive Theory, Transtheoretical Model, Self-efficacy theory, Theory of Self-regulation
Merisha 2024 [48]	32	smoking, nutrition, alcohol consumption, physical activity, and obesity	adults	One-way spread on Facebook Invoking conversations: online discussion boards, online bulletin boards, chat rooms, online community, Twitter, and Facebook	Impact on health and health-related behaviors: Smoking, Alcohol, Nutrition, Physical activity, Obesity	Not mentioned
laslund 2017 [49]	7	Smoking cessation	General Public	One-way spread on Facebook Invoking conversations: Twitter, WhatsApp, Facebook Peer motivation: Facebook group chat Miscellaneous: Facebook-based game	User perception: feasibility, acceptability, safety, usability, efficacy, implementation, or effectiveness. Engagement through posting comments or liking content. Impact on health and health-related behaviors: the	Not mentioned

					number of relapses, and the number of quit attempts.	
Li 2022 [49]	62	Promoting sun protection and skin examination	General Public	One-way spread on Facebook Invoking conversations: Twitter, WhatsApp, Facebook	Impact on health and health-related behaviors: sun protection or ultraviolet radiation (UV) exposure-related outcomes. User Perception: cognitive outcomes, such as assessed knowledge of skin cancer or melanoma, the perceived risk of getting skin cancer.	Not mentioned
O'Connor 2023 [50]	10	Physical activity and healthy eating	women of childbearing age, older than 18 years, who were not currently pregnant and were between pregnancies or actively trying to conceive	One-way spread on Facebook	Impact on health and health-related behaviors: changes in women's body weight, BMI Engagement through posting comments or likes.	Not mentioned
Orchard 2020 [51]	22	Breast-feeding practices	breastfeeding mothers, pregnant mothers, parents, and expecting prospective parents.	One-way spread on Facebook and Twitter Invoking conversations: Facebook Peer motivation: Facebook group chat	Impact on health and health-related behaviors: duration of breastfeeding User Perception: Breastfeeding, Intention, Attitude towards Breastfeeding, and Breastfeeding Self-Efficacy. Engagement: page popularity (high or low, as measured through page likes, shares, and comment likes)	Not mentioned
Qu 2023 [52]	17	HPV vaccination	unvaccinated youth and their parents	One-way spread on Facebook and Twitter Invoking conversations: Facebook	Engagement: clicks, likes, comments, and shares. User Perception: HPV-Associated Knowledge, Attitudes, and Beliefs Impact on health and health-related	Not mentioned

					behaviors: Vaccine uptake and completion	
heid 2024 [53]	39	Healthy eating	healthy adults, overweight or living with obesity, chronically ill patients, pregnant mothers, and children of different age groups.	Not enough information provided	Impact on health and health-related behaviors: nutrition, breastfeeding, reading nutrition labels, and preventing food contamination.	Not mentioned
ewak 2023 [54]	61	Sexual health	Young adults and adolescents	One-way spread on Facebook Invoking conversations: Facebook chat Peer Motivation: using a Facebook group chat	Impact on health and health-related behaviors: promoting sexual health-related behaviors, promoting sexual health-related products and services, and impact (viral load). User perception	Not mentioned
simeon 2020 [6]	71	HIV testing, mental health, physical activity, smoking cessation, and vaccination	Adults	Peer Motivation: using Facebook, Twitter, and WhatsApp	Impact on health and health-related behaviors: health-related behaviors, physical health, well-being, and psychological health.	Not mentioned
alie 2024 [55]	32	COVID-19 preventive behaviors	General Public	One-way spread on Facebook, WhatsApp, LinkedIn, and YouTube Invoking conversations: group chat	Engagement by expressing likes, by writing comments, or by sharing its contents. Impact on health and health-related behaviors: Precautionary behaviors about COVID-19 (such as hand hygiene, mask-wearing, and social distancing) User perception: fear or concern about COVID-19	Not mentioned
Williams 2014 [70]	22	Diet and exercise	Overweight individuals, healthy sedentary individuals	One-way spread on Twitter, Instagram, blogs Invoking conversations: Discussion boards and forums, bulletin boards Peer motivation: Posting	Impact on health and health-related behaviors: BMI, weight measures, body fat, daily activities	Not mentioned

				progress on Facebook by users		
Watson-Mackie 2024 [56]	23	Physical activity	Young women	Not enough information provided	Impact on health and health-related behaviors: self-reported physical activity	Social Cognitive Theory, Transtheoretical Model of Behavior Change, and Self-Determination Theory
Yu 2021 [57]	7	Vaping cessation	adolescent mothers and pregnant adolescents; first-time mothers aged 18-21	One-way spread on Facebook Invoking conversations: private Facebook group, Discussion boards and forums, bulletin board	Impact on health and health-related behaviors: Maternal: mental health, parental outcome, pregnancy complications, birth preparedness, Infant: Healthcare use, breastfeeding, birth weight, gestational age, child protection User Perception: Attitudes and Beliefs about Prenatal Health.	Not mentioned
Leh 2023 [58]	11	Alcohol consumption	General Public	One-way spread on Facebook	Impact on health and health-related behaviors: Self-reported drunk driving and related behaviors; motor vehicle crash data; behaviors; Self-reported drinking beliefs and behaviors; campaign awareness User Perception: awareness of designated driver program, Exposure and opinion toward media campaign, drinking	Social norms theory, Social Cognitive Theory, Theory of Planned Behavior, Bystander education model, social marketing, network, marketing, holistic

DISCUSSION

This scoping review aimed to provide a typology of the ingredients and characteristics of social media dissemination strategies for disseminating behavioral interventions. We included 43 reviews, mainly targeting the general population. The one-way spread of content on social media was the primary strategy. This was complemented and enhanced by more communicative strategies, relying on social relationship facilitated through social media platforms, to invoke small or large group conversations among peers, with experts, or with influential actors (i.e., opinion leaders, and to facilitate the sharing of personal behavior and progress to raise attention of and receive positive feedback from peers. These communicative activities would enhance one-way spread through incorporating interpersonal trust, collective norms, and individualized feedback into the messages. Few

studies also used collaborative projects to create and disseminate knowledge collectively [74]. The impact of interventions was typically measured through health and clinical outcomes, as well as individual perceptions, with less emphasis on indicators of dissemination and diffusion processes.

Dissemination strategy ingredients

The included strategies were often multi-component and complex. Other investigators have observed the complexity of social media strategies, which makes it difficult to assess their effectiveness and the mechanisms of impact [75, 76]. We identified the lack of clarity in definitions as a critical factor contributing to this complexity, as it was often unclear what the authors intended by 'social media' and 'dissemination'. Informed by structured definitions of social media [21, 77], we specified the following characteristics for a platform to be considered a social media platform: internet-based, providing opportunities for users to interact and self-present, in real-time or asynchronously, and either privately or publicly, in small groups or on a broad scale. Similarly, there were inconsistencies in the operationalization of the concept of dissemination. We defined dissemination as the targeted process of identifying and reaching out to users for engagement. According to this definition, many social media strategies would be considered dissemination efforts, even though terms like 'dissemination', 'diffusion', or 'spread' were not mentioned in some of the included reviews.

Unlike traditional means of communication, social media offers unique opportunities for bi-directional interactions through verbal (comments) and non-verbal (liked and shared posts, followed accounts, and the use of emojis and picture-based media) communication. These communication features engage the target users with the message in a more profound way, transforming the messages to provide opportunities for user input and customization, and ultimately converting them into personal stories that enhance adaptation and adoption [73]. In other words, through two-way communication, users are also engaged in recreating messages by adding their interpretations and feedback [78]. Through this process, the original messages are adapted to the needs and unique experiences of different user groups; however, the content may evolve in ways not intended by the original developers. Newer models of communication, such as the Dynamic Transactional Model, recognize the two-way and dynamic nature of content creation and within and between subject transactions that happen through social media conversations [79].

Providing opportunities for peer motivation also enhances user engagement through other cognitive processes, as users observe the feasibility of behavior change in their peers' progress. This would influence 'perceived behavioral control' and 'subjective norms' as two key determinants of behavior change [80]. People who share their progress towards the new behavior are acting as new sources of messages, influencing not only their peers' motivation and behavior but also being influenced by their peers as they receive positive feedback and compliments. This will enhance the feedback loops of reinforcement.

Intervention developers should consider various factors when developing social media strategies to disseminate behavioral health messages, including the content (e.g., relevance to the audience, evidence-base), the channels (e.g., technological limitations, privacy, and access), the audience (e.g., literacy skills, knowledge and attitude, incentives, information overload), and broader contextual barriers (e.g., norms, misinformation, etc.) [5]. In addition, they should recognize the possibility of the evolution of the messages and the role of the audience as the new co-creators.

Social media interventions built upon the one-way spread of content require platforms that optimize reach and visibility for intended users. Interventions designed to invoke conversations necessitate platforms that facilitate dialogue, reflection, and information exchange among users and between users and experts. On the other hand, interventions focusing on peer motivation should develop indicators of progress that are both meaningful and easy to share, facilitating other users to provide positive feedback and compliments.

One-way spread requires developing messages in a format that is eye-catching and accessible, making them easy to consume. In conversational interventions, the messages become digested and reshaped as users engage with and discuss them. In the latter interventions, researchers have less control over the final content and format, instead using social media platforms to contextualize and adapt interventions for different user groups. Peer motivation interventions rely on social influence and peer pressure to engage new potential users with the intervention.

Theoretical underpinnings and outcomes

Our findings suggest that, although many studies have reported theories and frameworks that informed interventional studies of social media dissemination, they primarily relied on classical theories of individual behavior change. The use of theories related to dissemination, communication, and community action was infrequent. This is a frequent limitation in dissemination research [1, 81, 82]. Theoretical frameworks offer researchers a systematic approach to plan, organize, evaluate, and explain the factors that influence outcomes [83]. Failure to inform the study with sound and relevant theoretical models limits the study's usefulness, as it is unclear what is meant by dissemination, how its related constructs are measured, and how different intervention components correspond to dissemination processes [1, 81].

In 2022, Baumann and colleagues presented a taxonomy of dissemination frameworks in a scoping review of the literature [1]. Among the theories and frameworks that they identified in their review, only the Diffusion of Innovation (one included review), the Technology Acceptance Model (one included review), and the Theory of Planned Behavior (nine included reviews) were mentioned in our studies. Several other relevant theoretical models from our included reviews were not mentioned in Baumann's assessment. Examples include theories that pertain to the role of social dynamics on individual behavior (e.g., Social Learning Theory and Social Cognitive Theory), as well as marketing and community-focused models (e.g., community mobilization, Reader-to-Leader framework, and bystander education), which are particularly relevant to social media behavior change. For example, models of social mobilization and community action aim to explain the processes and interventions to facilitate the collective behavior of communities to address shared concerns [84], and have been applied to social media and health promotion studies [11, 85]. Social marketing approaches also provide helpful strategies for more effective use of social media for health promotion [86, 87], which inherently involve dissemination activities.

Similarly, we found that most dissemination studies have predominantly focused on health behavior change and clinical outcomes, with less emphasis placed on dissemination process indicators, such as reception, awareness, persuasion, and emotional reactions of users, which may ultimately contribute to behavior change and improvement in clinical outcomes.

Limitations

There are several limitations to this scoping review. First, we relied on the digested data from the included systematic reviews and, with some exceptions, did not extract data from the original empirical studies they included. Additionally, we did not incorporate the potential overlap among those empirical studies across the included reviews. Consequently, some empirical findings may have been counted multiple times, potentially inflating the apparent strength or consistency of evidence for certain dissemination strategies. However, this limitation would not impact the nature of the themes of the ingredients of dissemination strategies that were identified in this study. We also only included reviews published in English-language peer-reviewed journals, which may have led to the exclusion of relevant data from other potentially relevant literature syntheses. For practical reasons, we limited our search to reviews that included the variations of the term 'behavior' in the title and abstract, which might have led to missing papers that focused on specific types of behavior, such as vaccine uptake, without mentioning the term. Also, systematic reviews included in this study were identified from a single database, though it includes the records from 10 other popular bibliographic databases and is updated frequently. Given the rapidly evolving nature of dissemination practices and the inherent time lag involved in conducting and publishing systematic reviews, there is a risk that more recent, innovative, or emerging dissemination strategies were not captured in the included reviews.

Additionally, we did not assess the methodological quality of the included reviews or their original studies. This is consistent with the goals of this scoping review, as we aimed to demonstrate the breadth of approaches and techniques used to develop social media dissemination strategies and ways to assess their success. Hence, we did not intend to summarize the effectiveness of these interventions.

Furthermore, this review was not pre-registered, which could impact its transparency and reproducibility. However, given the inductive and evolving nature of our analysis, we maintained an internal audit trail of modifications and employed an open and communicative approach within the review team to address emerging issues.

Conclusion.

Social media dissemination strategies for behavioral interventions often focus on the one-way spread of messages to the intended audience, using social media platforms as mass media channels. Investigators enhance and expand the one-way spread, using the communicational features of social media. These strategies include activities that facilitate conversations among peers (e.g., discussion forums and groups) and between users and experts (through private chats and closed communities), as well as promoting peer motivation through peer feedback and confirmation. These communicational enhancements personalize the disseminated health messages and enhance their adoption through interpersonal trust, while dynamically changing the nature of the messages as they spread through and are recreated by the users.

We propose that intervention developers design social media dissemination strategies based on the scope of the target audience, the extent to which they intend to engage the audience as co-creators and influencers, and the intended role of experts in the

dissemination process. The resulting theoretically informed interventions will better resonate with the target audience and encourage active participation in the dissemination. Although we are currently unable to assess the strength of the evidence supporting the three categories of social media dissemination strategies, this could provide valuable direction for future investigations.

Future research could further explore the ingredients of social media dissemination strategies, interactions among interventional components, and their impact on dissemination and behavioral outcomes by synthesizing quantitative measures of impact and effectiveness across studies.

List of Abbreviations

CDSR: Cochrane Database of Systematic Reviews

DARE: Database of Abstracts of Reviews of Effects

PRISMA-ScR: The Preferred Reporting Items for Systematic reviews and Meta-Analyses for Scoping Reviews

CINAHL: Cumulative Index to Nursing & Allied Health,

LILACS: Latin American and Caribbean Literature on Health Sciences

EPPI: Evidence for Policy & Practice Information Centre

Declarations:

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Not applicable

Consent for publication

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Conflict of Interest

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PD, QQ, and RYN conceptualized the study and formulated the research question. PD, QQ, and SC contributed to the study screening, data extraction, and analysis, under supervision of RYN. All authors contributed to the drafting and revising the manuscript and approved the final version.



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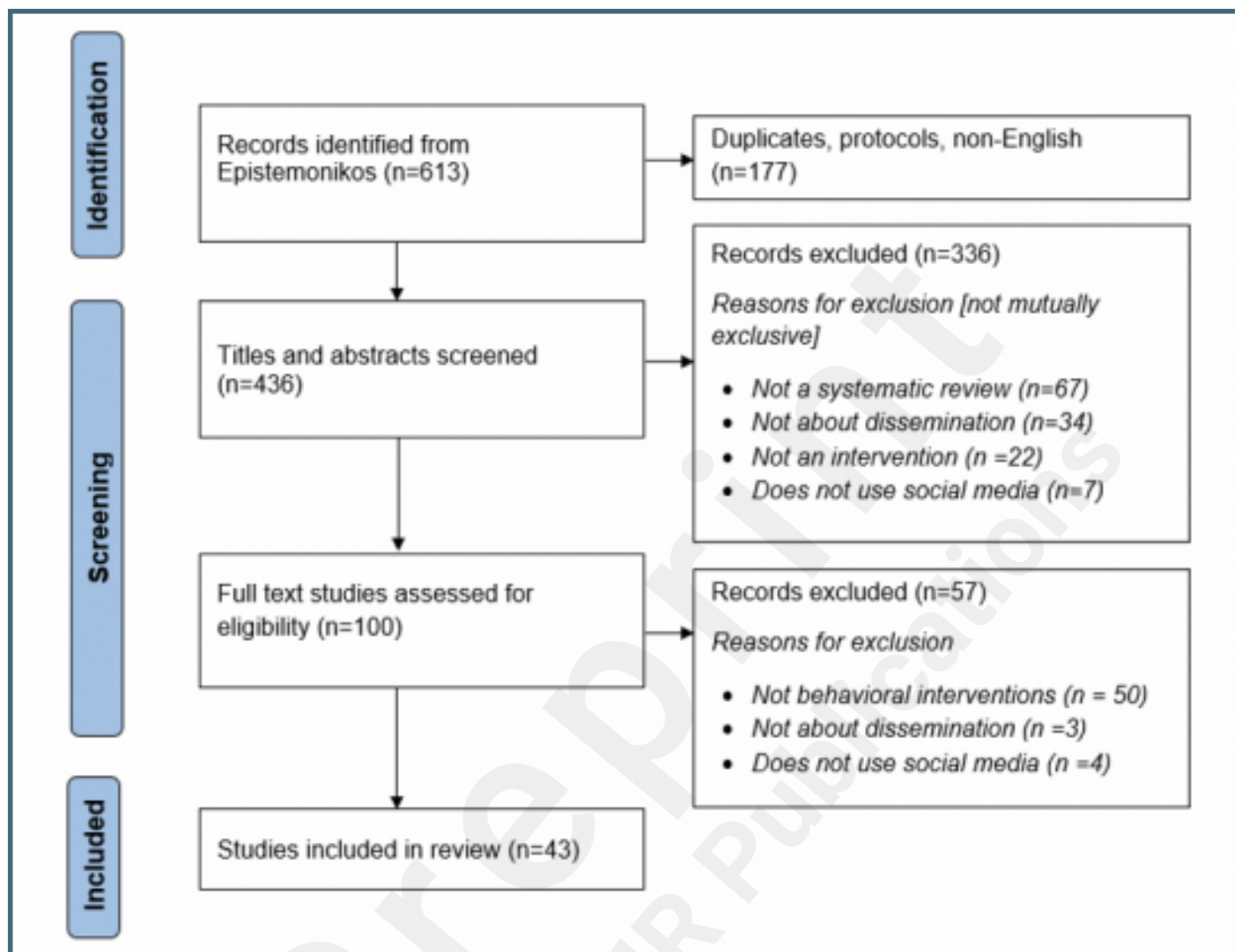
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Supplementary Files

Figures

PRISMA flow diagram illustrating the study selection procedure.



Multimedia Appendixes

Search Strategy.

URL: <http://asset.jmir.pub/assets/204f8ff51c9c9ef61ba23f1fca4c1114.docx>



CONSORT (or other) checklists

PRISMA Checklist.

URL: <http://asset.jmir.pub/assets/b04735a76893e8e900566c1ce9f26f11.pdf>