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Article abstract

The rise of social media has enabled influencers to shape public health discourse and promote unproven health products and interventions. Here we examine practical and regulatory challenges and opportunities relating to influencer-driven health marketing in the United States and Canada. Despite existing legal prohibitions on misleading advertising linked directly to influencers by official regulatory guidance, enforcement remains inadequate. Current regulatory frameworks permit vague health claims. Moreover, oversight differs between licensed health professional influencers and layperson influencers. Social media platforms are complicit in and/or indifferent to the amplification of misinformation, as it drives engagement and furthers their profit motives. To address misleading influencer health marketing, both “hard” and “soft” strategies are considered, including international policy coordination and algorithmic solutions that reduce the visibility of misleading content. One key challenge remains how to engender the willing participation of powerful multinational corporations with political and lobbying influence. We raise the potential usefulness of carefully crafted automated enforcement mechanisms, including AI-driven content monitoring systems and automated notice-and-takedown procedures, while simultaneously advocating for a balanced approach that respects freedom of expression. Updated, scalable, and equitable regulations and enforcement mechanisms are needed to protect consumers, foster evidence-based health communication, and restore accountability in digital health marketing.

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Influencers and Unproven Health Claims: Curbing Misleading Promotion in the United States and Canada

Alessandro R Marcon[a], Blake Murdoch[a], Timothy Caulfield[a]

Résumé

L'essor des réseaux sociaux a permis aux influenceurs de façonner le discours sur la santé publique et de promouvoir des produits et des interventions de santé non éprouvés. Nous examinons ici les défis pratiques et réglementaires ainsi que les opportunités liés au marketing de la santé mené par les influenceurs aux États-Unis et au Canada. Malgré les interdictions légales existantes concernant la publicité trompeuse directement liée aux influenceurs, telles que définies par les directives réglementaires officielles, leur application reste insuffisante. Les cadres réglementaires actuels autorisent des allégations de santé vagues. De plus, la surveillance diffère entre les influenceurs professionnels de santé agréés et les influenceurs profanes. Les plateformes de réseaux sociaux sont complices ou indifférentes à l'amplification de la désinformation, car celle-ci stimule l'engagement et sert leurs motivations lucratives. Pour lutter contre le marketing de santé trompeur des influenceurs, des stratégies à la fois « dures » et « douces » sont envisagées, notamment la coordination des politiques internationales et des solutions algorithmiques qui réduisent la visibilité des contenus trompeurs. Un défi majeur reste de savoir comment susciter la participation volontaire de puissantes multinationales disposant d'une influence politique et de lobbying. Nous soulignons l'utilité potentielle de mécanismes d'application automatisés soigneusement conçus, notamment des systèmes de surveillance des contenus basés sur l'IA et des procédures automatisées de notification et de retrait, tout en plaidant pour une approche équilibrée qui respecte la liberté d'expression. Il est nécessaire de mettre en place une réglementation et des mécanismes d'application actualisés, évolutifs et équitables afin de protéger les consommateurs, de favoriser une communication en matière de santé fondée sur des données probantes et de rétablir la responsabilité dans le marketing de la santé numérique.

Mots-clés

désinformation, influenceurs, réseaux sociaux, réglementation, cellules souches, médecine régénérative, intelligence artificielle

Abstract

The rise of social media has enabled influencers to shape public health discourse and promote unproven health products and interventions. Here we examine practical and regulatory challenges and opportunities relating to influencer-driven health marketing in the United States and Canada. Despite existing legal prohibitions on misleading advertising linked directly to influencers by official regulatory guidance, enforcement remains inadequate. Current regulatory frameworks permit vague health claims. Moreover, oversight differs between licensed health professional influencers and layperson influencers. Social media platforms are complicit in and/or indifferent to the amplification of misinformation, as it drives engagement and furthers their profit motives. To address misleading influencer health marketing, both "hard" and "soft" strategies are considered, including international policy coordination and algorithmic solutions that reduce the visibility of misleading content. One key challenge remains how to engender the willing participation of powerful multinational corporations with political and lobbying influence. We raise the potential usefulness of carefully crafted automated enforcement mechanisms, including AI-driven content monitoring systems and automated notice-and-takedown procedures, while simultaneously advocating for a balanced approach that respects freedom of expression. Updated, scalable, and equitable regulations and enforcement mechanisms are needed to protect consumers, foster evidence-based health communication, and restore accountability in digital health marketing.

Keywords

misinformation, influencers, social media, regulation, stem cells, regenerative medicine, artificial intelligence

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INTRODUCTION

The popularity of social media has created an ecosystem where individuals with no medical or scientific training can wield substantial influence in the public's health decision-making (1). This is not a new problem, but one that is intensifying and expanding across diverse contexts and jurisdictions. In turn, this online health influencer phenomenon is creating challenges for regulatory bodies mandated with enforcing advertising standards and protecting consumers from exploitation.

Reaching higher levels of health influencer status requires generating high numbers of followers and/or high levels of audience engagement (2). It is achieved through consistent and viral content creation that often combines with commercial partnerships that blur the lines between personal recommendations and sponsored endorsements (2,3). This content is an integral element in the rapidly expanding health wellness industry (4), which commonly contains inaccurate and misleading marketing discourse of products, services and interventions. Health influencers' online discursive activities exhibit both mis-and-disinformation

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characteristics[1], presenting both a lack of scientific knowledge as well as explicitly anti-scientific perspectives, the range of which works towards advancing commercial, socio-political, and popularity-seeking ends (5,6). For audiences, this discourse hinders consumers' ability to distinguish between personal product reviews, for example, and paid endorsements, and can lead to significant public health harms including the uptake of ineffective and harmful actions and the refusal of evidence-based therapies (7). Further, health misinformation can erode trust in public institutions, cause interpersonal strife among individuals and society at large, generate social and political polarization, and require public entities to devote substantial resources to mitigate its negative impact (7,8). These impacts can have disproportionally negative outcomes for marginalized or racialized communities (9). The spreading of health misinformation from healthcare professionals raises serious ethical concerns around practitioner obligations to uphold beneficence and nonmaleficence principles (10). More broadly, the presence of health misinformation can impinge on patient and public autonomy to make informed choices, including in cases where informed consent is paramount (10).

American and Canadian regulatory frameworks created to address false health claims in advertising have struggled to keep pace with the widespread, decentralized, and fast-moving nature of social media. In addition to blurring distinctions between personal expression and commercial promotion, influencer marketing can exploit regulatory loopholes with ambiguous or vague language that evades triggering mechanisms for increased oversight. This manuscript details the unique issues associated with influencer marketing of health products and illustrates how current regulations in Canada and the United States are currently ineffective. In response, it suggests novel and/or underused methods for curbing the spread of harmful influencer content, including stricter oversight of paid promotion and algorithmic or artificial intelligence (AI)-driven data-scraping enforcement mechanisms. Public institutions can play an active and effective role in curbing public exploitation and strengthening autonomy. Given the severity of the problem, the proposed options are presented critically, highlighting the need for ongoing assessment and evaluation in lived contexts.

THE SCOPE OF THE ISSUE: INFLUENCERS AND UNPROVEN HEALTH CLAIMS

Social media influencers have become highly effective marketers, with marketing surveys indicating they often command high levels of trust and engagement (11). Forging "para-social" or "trans-social" relationships with audiences, health influencers can gain high levels of loyal and trusting followers who become attracted to and swayed by personalized online content, including that which advances particular health actions or products (12-14). Content that may be sponsored by or include products from industry — including products of one's own brand — may be either opaquely presented or uncritically absorbed by audiences. Indeed, studies indicate that consumers perceive influencer recommendations as more authentic than conventional advertisements, making them particularly effective in promoting health and wellness products (15). This has led to a surge in influencer-driven marketing content, which commonly involve misleading or scientifically unsupported health claims, in cases unverified by the content creators themselves (16). In North America, for example, health influencers such as the Food Babe (aka Vani Hari), Paul Saladino, Ty Bollinger, Erin Elizabeth, Joseph Mercola, Dr. Oz, or the Liver King (aka Brian Johnson) among hundreds if not thousands of others, have amassed millions of followers through the creation of viral health content that is misleading and promotional of actions or products that either lack sound scientific evidence demonstrating effectiveness and/or can lead to negative health outcomes (5-10,17-21). Research shows that the spreading of incorrect or harmful health misinformation is not solely a North American issue but a global concern (22-24). Beyond influencers such as those listed above, promoting unscientific and harmful diets (25), advocating for supplements or unproven therapies like ivermectin (26), dissuading the use of sunscreen (27), established academic scientists, such as Andrew Huberman, can also take on social media influencer roles buoyed by numerous partnerships with health and wellness companies (28).

To further illustrate concerns with influencer health marketing, consider a potential growth area: stem cell-related products and therapies. Despite a significant lack of clinical validation, stem cell-related products and therapies are frequently marketed as highly beneficial for a wide range of conditions, including arthritis, chronic pain, skin care, immunity, and anti-aging (29-30). Though understudied, it seems likely that influencers are already playing a role in promoting stem cell-related products and interventions (31), leveraging the persuasive force of personal anecdotes (32) rather than scientific data to create compelling narratives about their claimed effectiveness (33). For example, numerous wellness influencers (including high profile athletes and celebrities) have promoted unapproved stem cell treatments and products, claiming they can regenerate tissue, reverse aging, and treat chronic conditions despite a lack of credible scientific evidence (34-38). This raises concerns about the risk of harm to the public (39).

Importantly, influencer marketing operates in a manner to which advertising laws are not always clearly applied. While direct-to-consumer advertising containing specific health claims or involving pharmaceuticals is highly regulated, influencers discussing health products may frame content as personal testimonials rather than promotional material. This loophole, whether based in vagueness or simply lack of enforcement, has allowed misinformation to thrive, particularly in cases where influencers use language designed to avoid concrete health claims.

[1] The distinction between misinformation and disinformation is well defined in research and policy environments despite it being complex to study empirically. Misinformation refers to varying degrees of inaccurate information where disinformation refers to the intentional propagation of misinformation for various, and often opaque, objectives.

REGULATORY ALLOWANCES IN THE UNITED STATES AND CANADA

Health-related advertising of products and services is variably regulated in both the United States and Canada, and differentially between medical interventions, drugs and products categorized as supplements, natural health products, skin care products and others. Both jurisdictions prohibit false and misleading advertising, including by influencers (40-43). Actual enforcement of these various forms of regulation online remains insufficient and an ongoing challenge in dealing with misleading marketing. Increasing regulatory capacity and influence, however, requires political will and corresponding policies that strive towards this end through the strengthening — and not weakening — of institutional authority and mechanisms (44).

In the context of supplements, for example, classified as Natural Health Products (NHPs) in Canada and dietary supplements in the United States, regulatory frameworks in both jurisdictions have been criticized for failing to offer adequate consumer protections (45-47). American and Canadian regulations restrict product marketing from making strong and direct causal claims of efficacy around a supplement's ability to diagnose, prevent, cure, or mitigate serious ailments and disease (48-50). However, both American and Canadian regulations permit a product's mechanism of action to be described with non-direct verbs (e.g., "promote, "maintain," "support," "help") or with health benefit expressed in a hedged manner, typically using modal verbs (e.g., "may," "could," "might"). This vague and suggestive language of potential health benefit deemed permissible by regulators is described in US dietary supplement regulation as "structure/function" claims, and in Canadian NHP regulation as "general health" claims (48-50).

Further to vague product health claims, the threshold of substantiating evidence demonstrating efficacy in both Canadian and American regulations does not require scientific rigour, despite restricting industry from presenting the evidence misleadingly (47-48). The permissibility of vagueness in regulatory frameworks, coupled with limited regulatory capacity to address the deluge of supplements now on the market, has led to a situation where little is done to protect consumers from fraudulent, misleading and ultimately exploitative supplement marketing (45-47).

VARIABLE OVERSIGHT

Importantly, the extent of regulatory oversight can vary for different types of influencers. Licensed healthcare professionals who promote treatments are subject to professional accountability mechanisms, such as through self-regulating professional colleges of physicians and surgeons, nurses or even alternative medicine bodies such as those applied to naturopaths, etc. Members of these bodies can face disciplinary action if they endorse unproven therapies or engage in advertising that overpromises or misleads. In contrast, unregulated wellness influencers have no such constraints and can make misleading health claims with minimal consequences save those enforced by traditional truth-in-advertising bodies, such as in Canada, by the Competition Bureau, or in the United States by the Federal Trade Commission. One unusual outcome of this regulatory disparity is an environment in which non-experts can have greater influence than trained professionals in shaping public health perceptions, while perhaps being more likely to make claims that attract online attention.

THE WILLING PARTICIPATION OF MULTINATIONAL SOCIAL MEDIA PLATFORMS

The success of measures and mechanisms to address misleading influencer discourse is heavily contingent on the willing participation of and enablement by social media platforms, or at minimum, the ability to compel them to follow new regulation or policies. Indeed, for as large a role as influencers play in the creation and spread of misinformation, major players in the media industry, including social media platforms, have equal if not greater power to influence information exposure (51). All efforts focused on increasing content accuracy at the system level are challenging, however, given social media platforms' focus on generating financial gains in environments where competition for users' attention is fierce (52-54). Further, it is well-known that misleading, sensational, and polarizing content is not an unfortunate consequence of increased social media use but a key driver of its popularity (55-57). International bodies, such as the United Nations, recognize the need for both states and industry to play a role in countering disinformation (58). While regulation in both Canada and the United States enables platform moderation of harmful content — notably hate speech (59,60) — there are complex legal and social challenges that accompany such moderation activities, and which can intersect with freedom of personal expression in both jurisdictions (61,62). Further, in addition to the challenges of when (in which cases), how (which tools and to what extent), and with which processes (i.e., oversight and transparency), there are financial and implementation issues as moderation traditionally requires extensive and costly human resources for whom work assignments can create a significant emotional and mental burden (63). The use of automated or AI tools, detailed below, could prove instrumental in tackling this workload.

While multiple tools will be required to stop the spread of misleading health information, particularly important will be the mechanisms for compelling the cooperation and participation of platforms through the varied use of harder and softer approaches. Harder approaches may include litigation and bans while softer approaches strive for collaboration through relationship-building and shared policy enactment. Concerned with detrimental social and financial effects of social media, Australia has taken harder approaches with social media companies, banning social media use for those under 16 years of age, and creating legislation that requires sharing of ad marketing revenue generated through news sharing on platforms (64,65). The United States has considered banning TikTok over data transparency concerns (66). Similar harder approaches applied to the context of misleading influencer discourse may have beneficial impact, yet this remains speculative.

Meta, for example, has already taken steps to circumvent Australia's ad-revenue sharing legislation (67), and earlier in 2025, significantly weakened its content moderation mechanisms and reduced fact-checking (68). TikTok shows little indication of increasing data transparency despite initiatives purporting to require otherwise (69,70). Ongoing evaluations of harder approaches are therefore required to determine probability of success and effect size. Political will would also be necessary to advance and enact harder approaches.

It may be more effective for governments and public institutions to continue lobbying for increased moderation and oversight, and to work with social media platforms, where possible, to maintain and expand effective mechanisms. Broad measures might include, for example, creating ethics officers or oversight committees with enforcement capabilities, increasing transparency of paid-promotions or industry influence on influencer content, tightening online advertising related to search engines (71), or aligning regulatory measures across jurisdictions with likeminded concerns (72,73). More specific mechanisms could include, for example, shifting efforts from content removal to algorithmic tweaks that reduce harmful polarization (74) or demote the virality of egregious and dangerous content, especially where specific malicious claims and actors have been well-established (75,76). Approaches for moderating hate could be beneficial in developing these tactics, including those using large language models (LLMs) (77,78). Additional approaches might include user-directed options to activate scientific accuracy filters or algorithms with either paid or non-paid account options. Such filters could increase user satisfaction among those seeking greater accuracy, replacing the thorny issues of content removal with other concerns about tiered access. Given that at least some social media users in North America show a desire for accuracy either through algorithmic oversight or content moderation (79), such an option could gain increased popularity among a large user demographic. Concern may still persist, however, that exposure to misleading information will remain high across the total body of social media users.

Ultimately, regulatory and policy efforts may have to get creative with social media platforms, blending harder and softer approaches to improve information accuracy in ways that do not cause overt social strife, materially impede profit generation, or result in widespread public backlash. It is well known, for example, that Meta has changed — both intensifying and weakening — its moderation approach over the years as a direct result of public and political pressure (80,81). Conversely, it could be argued that increasing accuracy and trustworthiness might, over time, benefit a platform's credibility and generate increased user activity. For example, reports on the Canadian population's media use show a significant drop in use of X/(Twitter), which has effectively removed all content moderation save for cases of explicit legal infringement, and the emergence of newer sites such as Bluesky that offer increased content curation and moderation (82,83). Public institutions must play active roles in building public awareness of social dynamics social media use and in empowering the public to play active roles in shaping the kinds of media they create and use. Increased public desire for accurate information can only help the advancement of platform level changes that pursue that objective.

ALGORITHMIC OR ARTIFICIAL-INTELLIGENCE-BASED ENFORCEMENT SYSTEMS

On the "harder" end of potential responses to misleading influencer health claims would be the use of automated enforcement mechanisms. Enhancing the regulation of health-related claims made by influencers could involve implementing a stringent threshold for identifying and penalizing misinformation in advertising, across social media platforms. Given the expanding capabilities of generative AI to produce and disseminate large volumes of misleading health-related content, regulatory frameworks could incorporate algorithmic systems designed to monitor, detect, and assess the veracity of claims made in digital advertisements. This might leverage similar AI technologies alongside data scrapers. Upon surpassing a given defined threshold for potentially misleading content, these systems could automatically require advertisers, including influencers, to substantiate their claims through timely submission of evidence consistent with truth-in-advertising standards. Failure to comply could result in mandatory content removal and/or the imposition of legal sanctions. Such systems could also require platform operators to take down content subject to the influencer providing evidence to overcome the presumption that a flagged post is misleading, though this would be a far stricter standard than one that first provided the advertiser an opportunity to respond with evidence or modify the marketing claim.

In cases where advertisers are made to act and contact information is inaccessible through social media platforms, two alternative mechanisms could be considered. One approach would require platforms to disclose to regulators any relevant contact information in their possession. Alternatively, a "Notice and Notice" framework, adapted from Canadian copyright enforcement practices, could be employed (84). Under this model, the platform would be notified of an advertising infraction and obligated to transmit a formal notice to the implicated advertiser, who would then become subject to corresponding obligations or penalties.

Importantly, however, regulatory interventions need not automatically include penalties. An algorithmic detection tool could initially issue a notice requiring the removal or provision of satisfactory explanation of suspect content within a specified timeframe. Should the content remain online beyond this period, further consequences such as fines could apply. An appeal mechanism would be integral to this process, affording advertisers the opportunity to present supporting evidence within a defined time window, allowing the regulatory body to determine whether the content merits reinstatement. Such determinations could be automated or made by humans, depending on enforcement capacity and AI capabilities.

A stricter model would require content suspected of violating established standards to be promptly removed, placing the burden on advertisers to ensure the accuracy and appropriateness of their claims from the outset. This preventative model could deter the publication of exaggerated or misleading claims and promote greater diligence among content creators. Given the sheer volume of online content, this kind of approach that involves a presumed infraction may be necessary to ensure the efficiency and scalability of enforcement systems, which might otherwise be overwhelmed if each removal required individual review. This model's effectiveness would depend on the development and periodic revision of clear, publicly accessible influencer advertising guidance.

Adopting a highly automated enforcement system — which is increasingly technologically feasible — could reduce the current administrative burden of regulatory agencies. Furthermore, it would act as a deterrent to the dissemination of misleading health information and could increase the efficiency and consistency of enforcement.

OTHER CONSIDERATIONS

Nevertheless, the deployment of such automated systems introduces several critical challenges. Algorithmic tools must be carefully designed to ensure they possess sufficient sophistication to distinguish between scientifically valid statements and those that lack evidentiary support or are demonstrably false. An accessible appeals process would be essential to mitigate the risk of erroneous takedowns and to safeguard legitimate scientific discourse. While human review remains a possible supplement, it would demand substantial human resources, including the use of data and computer scientists in junction with methodologically trained, scientifically informed, and socially-attuned multilingual analysts tasked with building massive data sets and manually coding an arguably unfeasible amount of ever-evolving content. Most plausible scenarios would indicate the need to blend algorithmic tools with human oversight and analysis.

Moreover, any legal consequences for non-compliance must be proportionate and carefully calibrated. Sanctions should be sufficiently robust to serve as a deterrent, while also meeting standards of legal proportionality and public legitimacy. Penalties could be scaled based on factors such as the reach of the advertisement and the potential harm caused by the misinformation. In addition to mandatory retraction, regulators could require remedies such as for influencers to publicly correct and educate the public to counteract misinformation previously shared. The legal basis and feasibility of requiring individuals to create certain kinds of corrective discourse might be highly complex and perhaps unrealistic to implement. It would require careful logistic assessment, and perhaps only be reserved for particular circumstances and contexts, for example, in cases with vulnerable populations or high-risk health (mis)information in a specific context.

While stricter enforcement of influencer-driven health marketing could better protect the public, policy interventions must strike an appropriate balance between consumer protection and freedom of expression. Updated advertising regulations must be carefully applied to ensure that they do not unjustly infringe upon influencers' speech, and their right to discuss personal health experiences.

Another consideration is the potential for new regulation, or over-enforcement, to stifle legitimate discussion about emerging medical treatments. While misleading health claims are clearly prohibited, some social media users — especially those with legitimate and certified scientific training and expertise[2] — may gain popularity online and thus play valuable roles in raising awareness about new medical research and the health sciences more generally (85-87). Ongoing inquiry is required to determine whether the information presented by popular online accounts remains scientifically accurate. Policymakers must ensure that enforcement systems, particularly if automated as described above, distinguish between deceptive marketing practices and good-faith discussions of scientific developments. Importantly, there is a relationship between the types of defensible evidence-based claims that can be made about a product or intervention and the state of its clinical translation, such as whether clinical trials are underway or completed. Though complex, this interconnection could be built into sophisticated algorithmic systems tasked with regulatory enforcement.

Finally, enforcement systems must be equitable and non-discriminatory, ensuring that regulations are applied consistently where the regulatory burden is equivalent. As noted, there can be different net levels of regulatory oversight across groups, such as regulated health professionals versus layperson influencers. Much like tax auditing, it is possible that enforcement actions could disproportionately target smaller influencers while allowing celebrities and major brands to make misleading claims with impunity. For example, high-profile athletes and Hollywood figures have promoted stem cell treatments, detox products, and other questionable interventions with little regulatory repercussions (88). A fair enforcement system should apply the same standards to all influencers that are subject to the same net regulatory burden.

[2] There are numerous examples of scientifically trained health-related scientists, many of whom concurrently hold academic/research positions, who have successfully taken to social media to spread health information, reaching high levels of influencer status. Examples include: Dr. Jessica Knurick (1.4 M followers on Instagram); Dr. Jen Gunter (430K followers on Instagram); Dr. Peter Horez (400K followers on X); Dr. Ana Blakney (250K followers on TikTok); Eric Topol (680K followers on X); Dr. Adrian Chavez (140k followers on Instagram); Dr. Michelle Wong (664K followers on Instagram); Debunk the Funk (98K followers on Instagram); Dr. Ian Copeland (27K followers on X).

CONCLUSIONS

As governments in Canada, the United States, and globally grapple with the growing influence of health mis- and disinformation, improving oversight of influencer health advertising and enforcement of false and misleading claims is a challenging but imperative task. Though facing increasing privatization pressures, the primarily publicly-funded and delivered healthcare system in Canada can lean on its regulatory capacities to create modifications that help ensure greater consumer and patient protections. By doing so, regulators can make advances towards a more accountable and truthful social media and advertising landscape, helping consumers make more informed decisions about these products and interventions. Given that many jurisdictions face similar challenges, cooperation could promote a more global standard of enforcement for misleading influencer health claims. Notably however, the rise of anti-science forces in the United States, led by key political figures like Secretary of Health and Human Services Robert F. Kennedy Jr., means that American leaders may loosen, or even forego, rather than tighten regulation of false claims online. Other nations with evidence-based approaches may need to take increasing leadership roles in improving the regulation of misleading health information online.

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