

A Protocol for a Scoping Review on the Use of Social Media Communications Regarding Public Health Impacts of Climate Change

Authors

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Author contributions

JOA drafted the scoping review protocol with input from both KC and JM.

Registration

This scoping review will be reported following the PRISMA guidelines proposed by Arskey & O'Malley¹. This protocol has been published and archived online in the University of Guelph's institutional repository, The Atrium which is available at <https://atrium.lib.uoguelph.ca/>.

Amendments

All amendments that may be made to this protocol following registration will be documented within the final manuscript as protocol deviations.

INTRODUCTION

Rationale

Social media use has exploded around the world. As of April 2022, the total number of internet users accessing social media reached 4.65 billion². The most popular internet platforms, not including web-based texting services such as WhatsApp or WeChat, are Facebook, YouTube, Instagram, TikTok, Snapchat, Pinterest and Twitter². Given their popularity, social media channels are effective tools for mass communication. Opportunities exist with social media for the delivery of health communication messaging related to climate change. For example, non-profit organizations have successfully mobilized climate action via social media communications. In 2011, the environmental activist group Greenpeace used social media to

inform the public about Facebook's use of coal as a primary energy source for a new data center in Oregon. Due to their efforts, Facebook transitioned to greener energy as the data center is currently powered through solar energy⁴.

Health communication involves personal or mass communication attempts to explain health information for the purposes of improving the health and knowledge of the listeners⁵. This practice involves presenting information in way that is accessible and understandable to the intended audience, which usually consists of non-experts and the general public. As social media appeals to and is used by a large global demographic, it may be a useful tool for disseminating accessible health information to a large target audience that will benefit from new knowledge.

Climate change is the biggest global health crisis of our time⁶, with negative implications already documented or forecasted for human health, wellbeing, and quality of life. According to the 2021 report of the Lancet Countdown on health and climate change⁶, the human health impacts of global climate change include the effects of heat, climate-sensitive infectious diseases, food security and undernutrition, migration and displacement of populations, and rising sea levels⁶. In 2020, individuals aged 65 and older experienced an increase in cumulative total days of extreme heatwave exposure. Likewise, children aged one year and younger experienced a similar increase in heatwave exposure, displaying that our most heat-sensitive and vulnerable populations are living through more days-at-risk. Moreover, the increase in ultraviolet radiation exposure along with increased extreme-heat exposure puts the human population at a greater risk for developing skin cancer⁷. Simultaneously, changing conditions are suitable for many pathogens that are water, air, food, and vector borne. For instance, from 1950-59 to 2010-19, suitable conditions for malaria transmission via mosquitoes (*Plasmodium falciparum*), rose by 39% in vulnerable countries⁶.

As climate change negatively effects the global population, social media platforms provide a useful tool with a global reach to disseminate information related to health impacts of climate change and potential mitigation actions. Widespread accessible messaging has the potential to improve knowledge, and encourage lifestyle changes. This review will detail the existing state of the literature that utilizes social media to disseminate climate change information.

Research Question

What is the current state of literature on the use of social media communications to convey information on the health impacts of climate change?

For the purposes of this review:

- "Social media" will include the following platforms: Twitter, Facebook, Instagram, TikTok, and YouTube.

- “Health impact” information will describe the biological, social, and environmental effects of global climate change

Objectives

The objective of this review is to describe the use of social media for conveying the health impacts of climate change.

Eligibility Criteria

The following criteria (Table 1) will be used to determine eligible studies for inclusion within this scoping review.

Table 1 Inclusion and exclusion criteria for the screening of articles for use in the scoping review

Inclusion Criteria	Exclusion Criteria
Full text published and available in English	Full text has not been published or made available in English
Describes health communications delivered through social media platforms	Does not describe health communications delivered through social media platforms
Describes the negative health impacts of climate change including biological, social, mental, and environmental effects	Does not mention the negative health impacts of climate change including biological, social, mental, and environmental effects
Primary research papers, systematic literature reviews and meta-analyses, and scoping literature reviews	Opinion pieces, media articles, written or video commentary, textbooks, books, or editorials

Study Selection

Study selection will be conducted in two stages by one individual using the listed screening questions. If any article is unclear, a second individual be consulted.

In Level 1 screening, title and abstract will be reviewed to answer the following questions:

1. Is this article published or made available in English?
 - a. If **yes**, continue to item 2.
 - b. If **no**, exclude this article.
2. Is this article primary research, a systematic review, a meta-analysis or a scoping review?
 - a. If **yes**, continue to item 3.
 - b. If **no**, exclude this article.
3. Does this abstract describe health communications delivered through social media?

- a. If **yes**, continue to item 4.
 - b. If **no**, exclude this article.
4. Does this abstract mention climate change?
- a. If **yes**, include this article.
 - b. If **no**, exclude this article.

In Level 2 screening, a secondary screening will be performed after the full text review of the article.

- 1. Does this article describe health communications delivered through social media?
 - a. If **yes**, continue to item 2.
 - b. If **no**, exclude this article.
- 2. Does this article describe health communications about climate change and its health effects?
 - a. If **yes**, include article.
 - b. If **no**, exclude this article.

Search Strategy

The generated search terms are listed in Table 2. To conduct the literature search, the following databases will be accessed Web of Science, CAB Direct, Ovid Medline, and Cochrane Library.

Table 2 Search terms to be used while conducting the literature search for study selection

#	Search Terms
1	“Social media” OR Facebook OR Instagram OR Twitter OR YouTube OR TikTok
2	Climat* OR “Global warming”
3	“Health communicat*”

Data Management

Search results will be uploaded to Covidence and deduplicated. Information regarding the initial number of articles found, the duplicate articles removed, the articles exclude, and the articles included for the scoping review will be presented in a flow diagram depicted in Appendix A. All data will be managed using Covidence as well.

Data Extraction

The data to be collected from each included study is listed in Table 3.

Table 3 Data to be collected from each selected article after two levels of screening

Author(s)	Publication Year	Population Characteristics	Sample Size	Methods	Results	Outcome(s)
		<ul style="list-style-type: none"> • Age of viewers • Location of viewers • Data set of content 	<ul style="list-style-type: none"> • Number of posts published 	<ul style="list-style-type: none"> • Social media platform • Type of communication (image, video, infographic etc.) • Analytics collected • Length of follow-up • Call to action 		<ul style="list-style-type: none"> • Did the audience perform an intended behaviour change? • Did the audience engage with the post (likes, shares, comments)?

Results Strategy

Results of each study's characteristics and key outcomes will be presented in a descriptive summary, including figures and tables.

Discussion

This scoping literature review will provide a detailed description of the existing literature that uses social media platforms for health communications. Ultimately the goal of health communication is to equip the population with the necessary knowledge and motivation to make behavioural choices that are supportive of good health. The results of this review will serve as a foundation for future content creation and overall message delivery and methodology. Additionally, targeting climate change related behaviours may trigger a large-scale impact on global behaviour that may help slow the current negative trends. This could serve as a stepping-stone for advocacy in policy creation. Although top-down solutions stemming from government policies and changes in large corporations are important, large-scale behaviour and lifestyle changes can serve as a springboard for important climate change action⁷. For instance, research suggests that a 20% carbon emission reduction could be

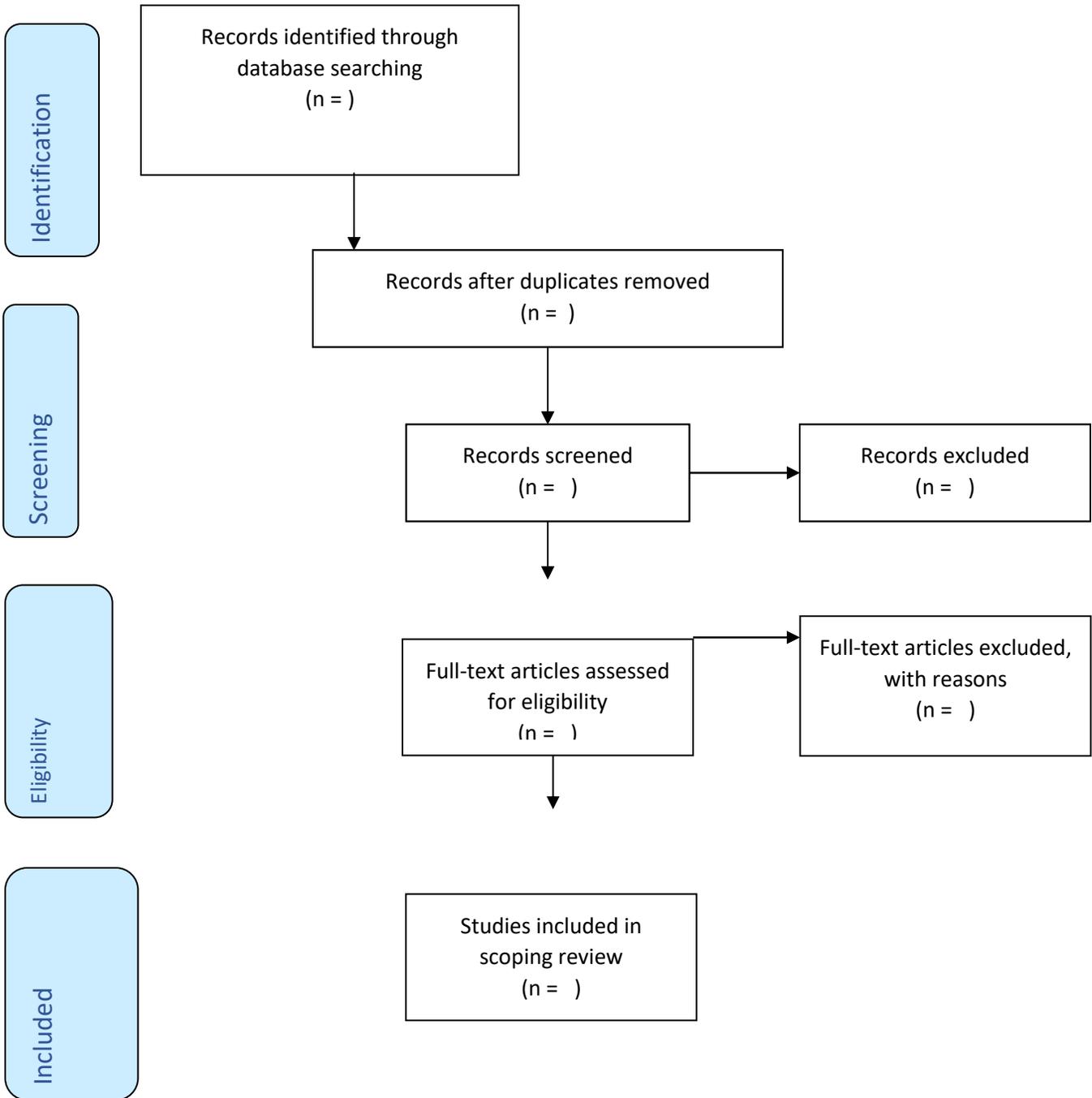
obtained at a household level in the United States, and this could be achieved with several different lifestyle changes per household, such as upgrading home-heating systems and the use of fuel-efficient vehicles⁶.

Limitations

Bias from this scoping review could arise from evidence selection. It is possible this review does not identify all that is available and published regarding health communications, climate change and social media. As well, this review will exclude gray literature.

Appendix A

Figure 1: PRISMA Flow Diagram



References

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