

SOCIAL MEDIA INTERVENTIONS AND VACCINE HESITANCY: FINDINGS FROM A SYSTEMATIC REVIEW AND KEY INFORMANT INTERVIEWS

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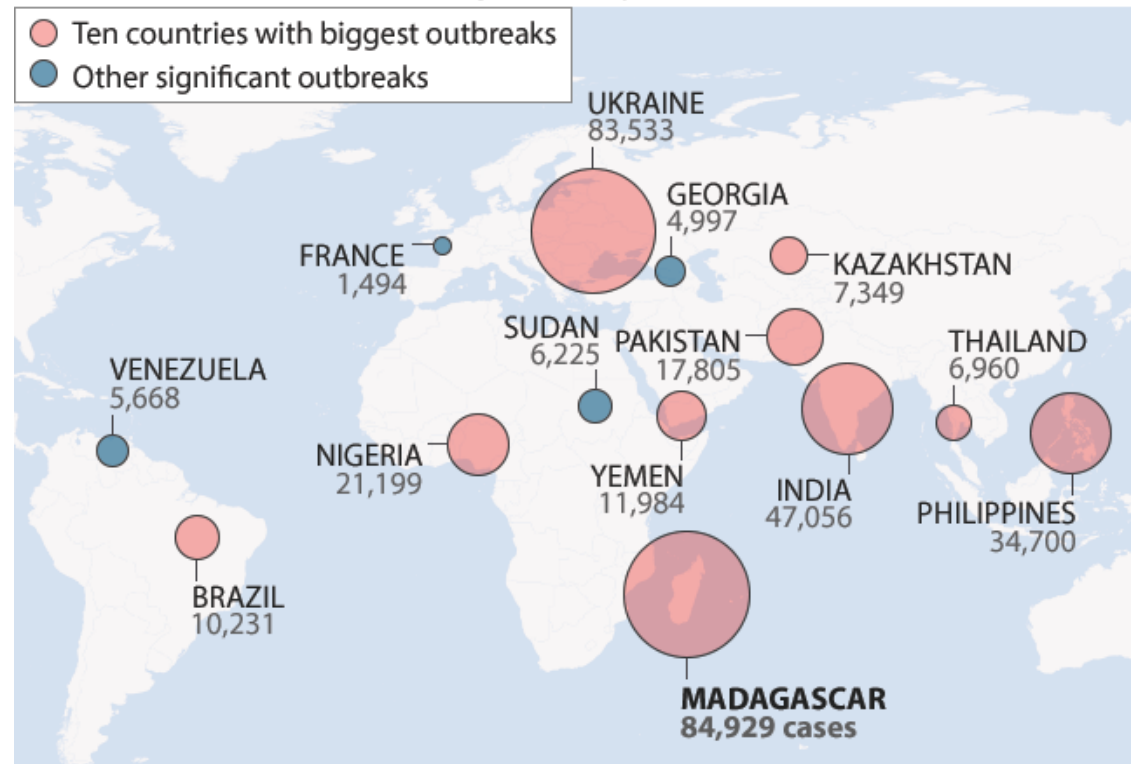


BACKGROUND

- Increase in vaccine preventable disease outbreaks over the last two decades
- Vaccine hesitancy—a **delay in the acceptance or the refusal of vaccines despite their availability**
- Many drivers of vaccine hesitancy, including social media through the spread of misinformation

Measles outbreaks are a global problem

Confirmed cases of measles May 2018 - Apr 2019



Source: WHO



BACKGROUND

- Social media plays an important role in **health information-seeking and decision-making**
- Individuals use social media to obtain vaccine information and engage with peers
- Healthcare professionals use social media to **share health information** with their patients and the general public



AIMS

- Opportunity to harness the strength of the online platforms to **persuade and nudge individuals toward vaccine acceptance**
- We sought to **review literature focused on the influence of exposure to social media content on vaccine hesitancy and interview key informants working in this space**



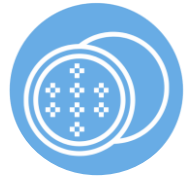
METHODS



Establish review protocol, including inclusion and exclusion criteria



Conduct search on selected databases and remove duplicates



Screen articles by title/abstract and full text

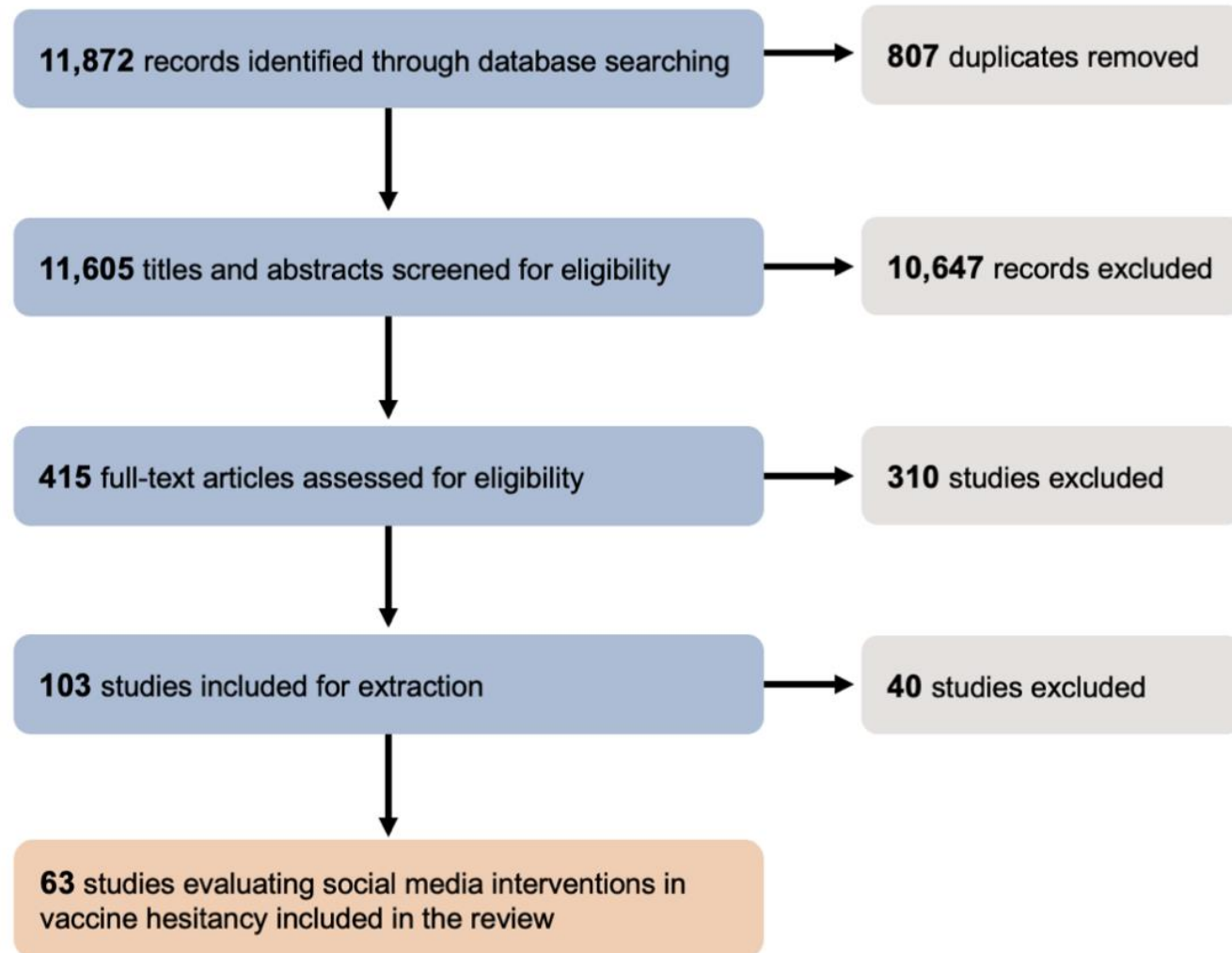


Extract key information from articles

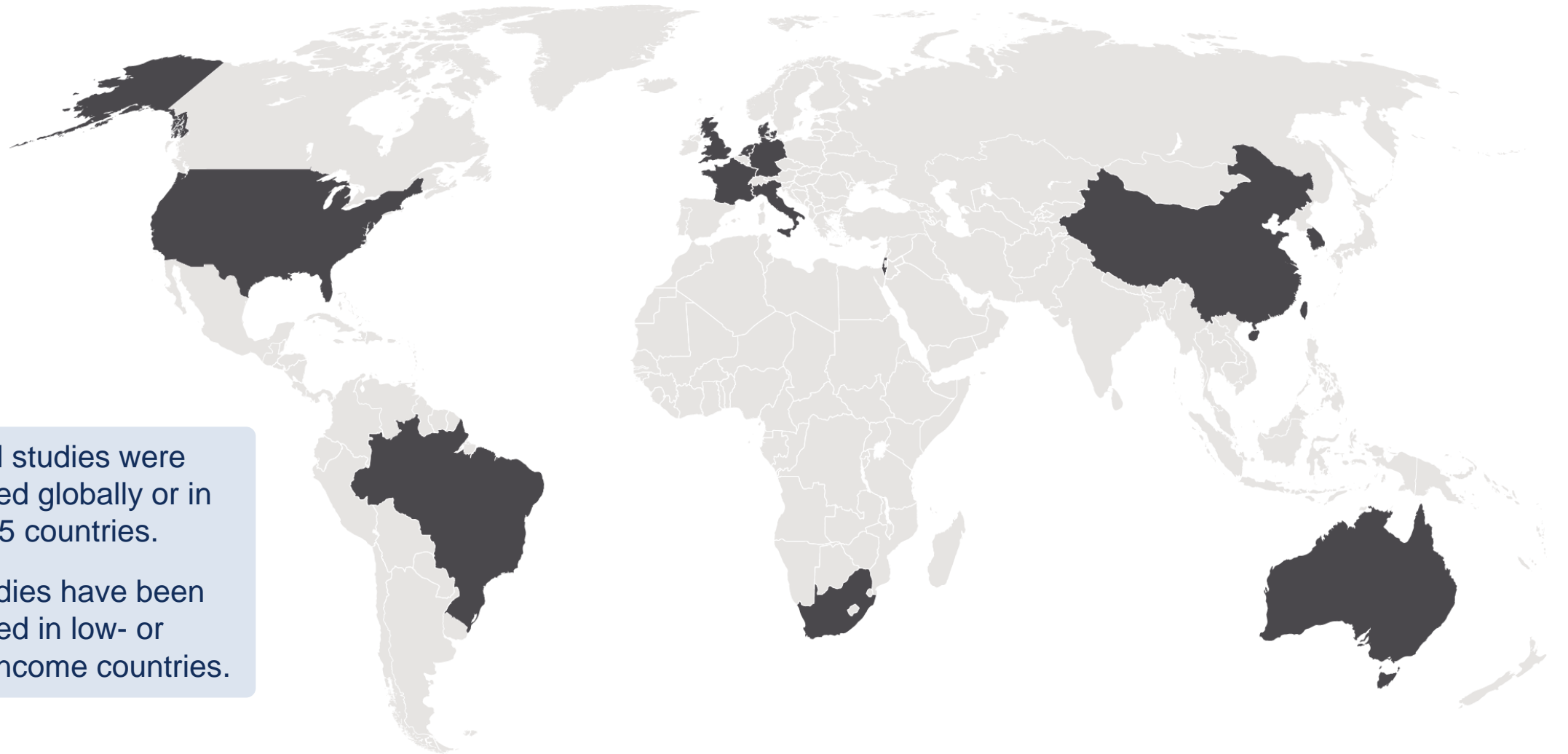


Conduct key informant interviews

SELECTION PROCESS FOR STUDIES



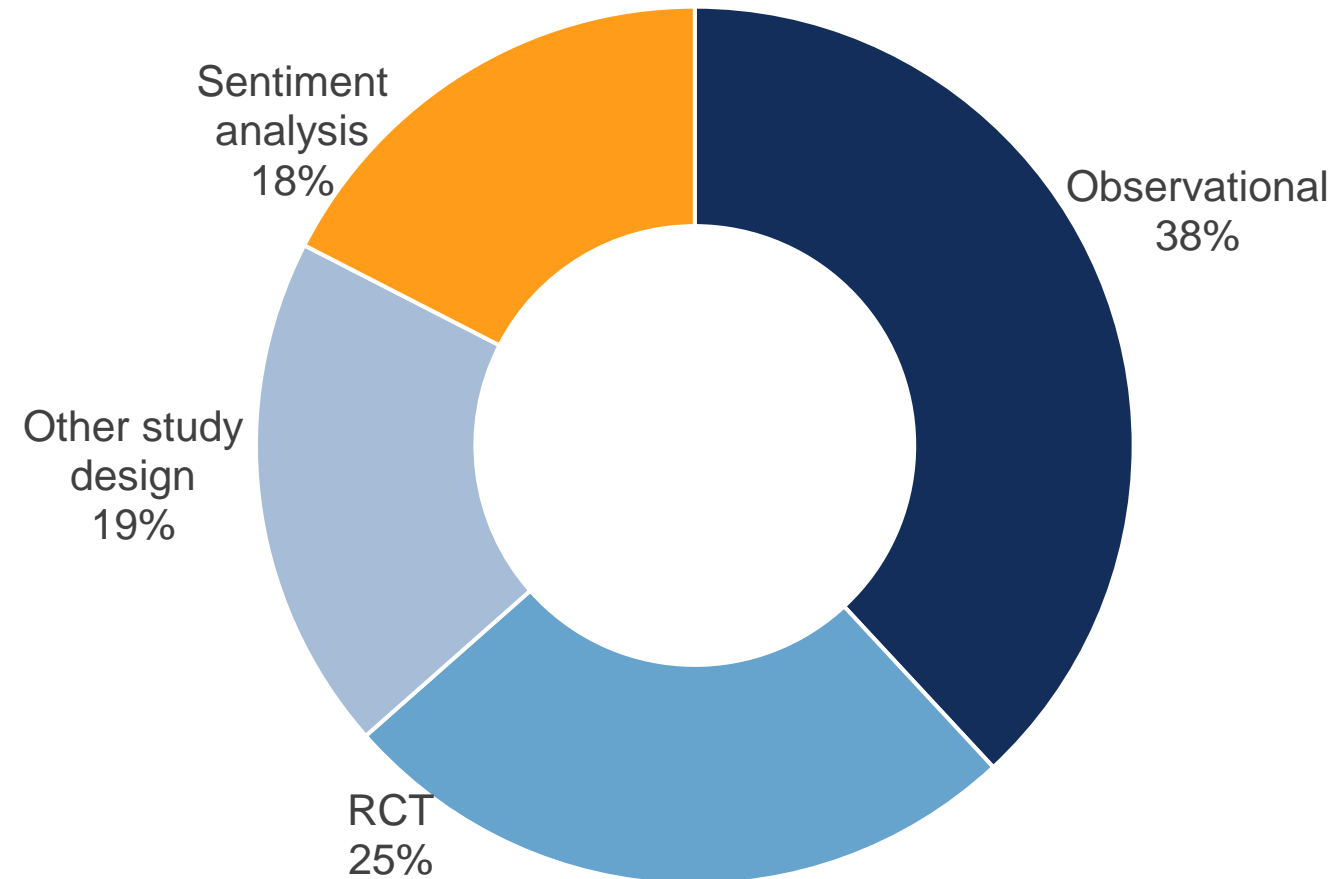
STUDY SETTINGS



Included studies were conducted globally or in one of 15 countries.

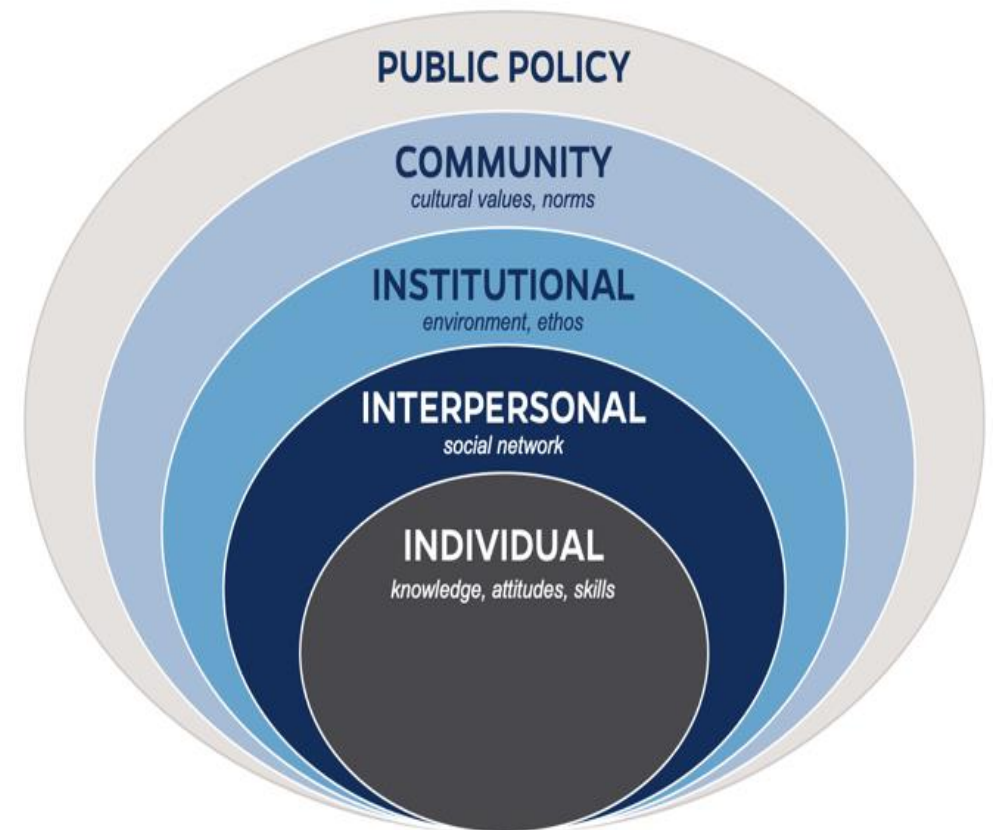
Few studies have been conducted in low- or middle-income countries.

STUDY DESIGNS



KEY FINDINGS: SYSTEMATIC REVIEW

- Vaccine behavior is driven by a diverse set of factors
- These factors can be organized through a socio-ecological model
- Organized findings by intervention effects and influences on knowledge, attitudes, and behaviors



SYSTEMATIC REVIEW HIGHLIGHTS

HIGHLIGHTS – KNOWLEDGE

- As many individuals obtain vaccine knowledge through social media platforms, social media platforms have tremendous potential to improve vaccine knowledge to nudge individuals toward vaccine acceptance.
- Disseminating vaccine knowledge through social media platforms is an excellent way to engage with the community and identify vaccine knowledge gaps.
- Social media platforms can play a strong role in mitigating vaccine misperceptions.

SYSTEMATIC REVIEW HIGHLIGHTS

HIGHLIGHTS – ATTITUDES

- Ascertaining vaccine attitudes through social media platforms can assist in identifying audience segments to inform tailoring strategies.
- While prior attitudes toward vaccination are the strongest predictor of how individuals will react to a post, social media influencers can potentially sway attitudes. As attitudes about immunization are polarized, certain influencers, such as media organizations and celebrity doctors, are critical in shaping immunization attitudes.
- Supplementing in-person engagement with social media-assisted discussion can assist in changing vaccine attitudes toward acceptance.
- Framing techniques (such as gain vs. loss) can influence vaccine attitudes.
- Vaccine attitudes are clustered on social media, suggesting that network-focused interventions using opinion leaders may influence attitudes.

SYSTEMATIC REVIEW HIGHLIGHTS

HIGHLIGHTS – BEHAVIOR

- Social network analysis and web search trends may serve as a proxy measure for vaccine hesitancy.
- Social media plays a role in vaccine decisions; tailoring interventions may help with vaccine acceptance.
- The valence of comments on vaccine discussions is critical for vaccine acceptance.

KEY FINDINGS: SYSTEMATIC REVIEW



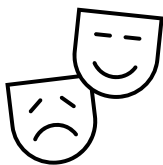
- Social media has the potential to better focus the most important messaging and **fill crucial gaps in vaccine-related knowledge**



- **Exposure to vaccine information online may impact vaccine attitudes, perceptions, and beliefs, depending on information source and peer attitudes**

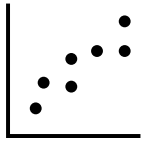


- **Social media campaigns may influence vaccination intent or receipt, particularly if the information source is perceived as credible and people engage in positive discussion about the vaccine**



- Social media has contributed to changes in vaccine sentiment, and **sentiment analysis may help us understand message spread and clustering of attitudes**

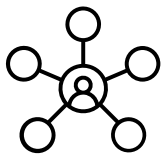
KEY FINDINGS: KEY INFORMANT INTERVIEWS



- **Lack of systematic monitoring and surveillance** of social media leaves countries unprepared to address misinformation



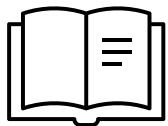
- Industry and government policy related to vaccine content could take a **more active role to stop misinformation and disinformation**



- **Usage of social media campaigns may be useful** in countering vaccine misinformation or improving vaccine attitudes



- **Limited ability to measure and evaluate** how well social media campaigns are working to reduce vaccine hesitancy



- **Future research agendas related to social media and vaccine hesitancy** should leverage influencers and message testing

KEY GAPS

1

Few studies conducted in low- or middle-income countries

2

Existing studies primarily used college-aged populations

3

Existing studies focused on few antigens (influenza, pertussis, HPV, measles-containing vaccines)

4

Lack of studies using randomized controlled trial study design to ascertain and quantify intervention effectiveness

5

Lack of network studies to better understand and quantify vaccine influences

KEY TAKEAWAYS

- Research on social media interventions and vaccine hesitancy is a **nascent field**
- Studies conducted in **LMIC are limited.**
- Social media platforms are **important sources** of vaccine information
- **Message attributes** are crucial in persuasion related to vaccines
- Vaccine decisions cluster within **social networks**
- **Combatting vaccine misinformation** on social media should be a priority

COVID-19 IMPLICATIONS

- **Politicization of COVID-19 vaccination** and other public health measures
 - Especially given the effects the pandemic is having on routine vaccination
 - Lockdowns and other measures have reduced vaccine coverage, and it will be challenging to tease out whether hesitancy has increased
- **Message testing** is critically important to identify what content is “safe and effective” to avoid the backfire effect in hesitant populations
- Challenge of having multiple vaccines in use and how to **address confusion** about vaccine usage among the general public
- Spread of misinformation about COVID-19 and COVID-19 vaccines via social media platforms has created more urgency for social media interventions. These should include **strong evaluation components** so that they can be refined to improve their effectiveness.

RESEARCH AGENDA

Most urgent areas for future research:

- What strategies could be used to **improve vaccine acceptance** generally?
- What strategies could be used to **improve COVID-19 vaccine acceptance**?
- What strategies could help users **recognize and reject vaccine misinformation**?
- How can we better **understand vaccine sentiment**?
- What **specific tools** can be used for measuring vaccine hesitancy?

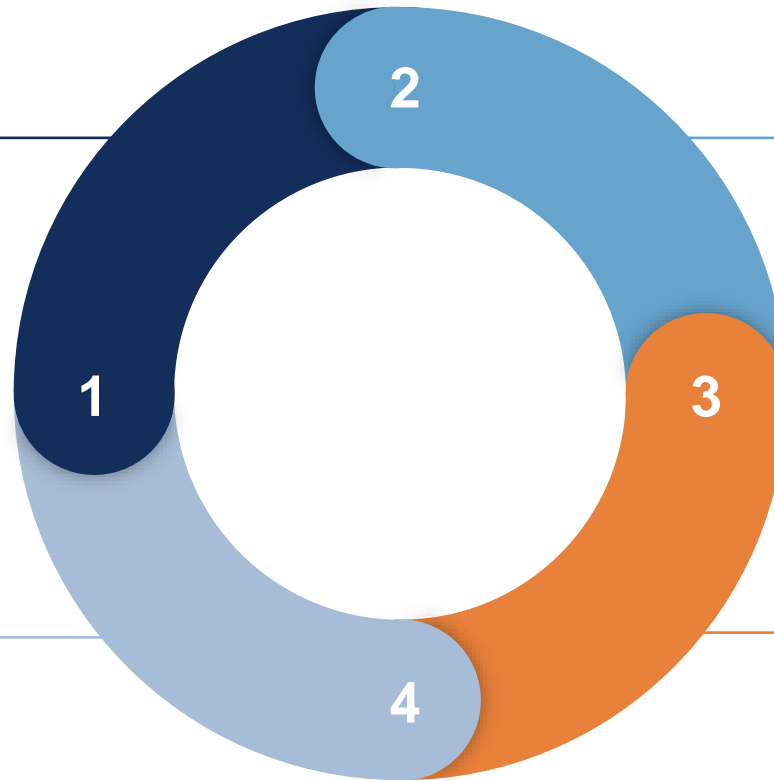
IMPLEMENTATION RESEARCH FRAMEWORK

PROBLEM

Systematically review the literature and available data to describe the problem and its drivers, identify key questions, and define a research agenda

APPLICATION

Apply an evidence-based implementation framework to develop and scale up strategies, assess effectiveness and impact, and ensure continuous monitoring and evaluation



PARTNERS

Identify partners working in vaccine hesitancy and immunization-related social media at all levels, and map key strengths and gaps; identify potential funding streams to support research and implementation

CONSULTATION

Engage a range of partners and stakeholders to gather input, define roles and responsibilities, develop implementation recommendations, and build consensus on which interventions to prioritize

STEP 1: DEFINE THE PROBLEM

- What strategies could be used to **improve vaccine acceptance** generally?
- What strategies could be used to **improve COVID-19 vaccine acceptance**?
- What strategies could help users **recognize and reject vaccine misinformation**?
- How can we better **understand vaccine sentiment**?
- What **specific tools** can be used for measuring vaccine hesitancy?

STEP 2: MAP PARTNERS AND IDENTIFY STRENGTHS

- Ministries of Health
- State or provincial health agencies
- Other Ministries (e.g. Planning, Education)
- Civil society organizations
- Community leaders
- National and local media

Policy and Implementation

- Public/government research agencies and institutes
- Public and private universities
- Independent experts and researchers, non-government research and practice centers/institutes
- Training networks

Research and Training

Cross-Cutting Support

- UN Agencies (e.g. WHO, UNICEF)
- Gavi
- Other INGOs (e.g. PATH, CHAI, JSI)
- Country-based NGO representatives
- Global professional organizations (e.g. IPA)

Funding and Financing

- Ministries of Finance
- Donors
 - Bill & Melinda Gates Foundation
 - Wellcome Trust
 - Asian Development Bank
 - USAID and similar agencies
 - Social media platforms

STEP 3: BUILD CONSENSUS AND PRIORITIZE

- **Planning:** Include targeted social media strategies in immunization planning (new introductions, campaigns, and routine)
- **Training:** Train frontline health workers on key questions about vaccines (e.g. questions frequently raised by parents, misinformation frequently circulating on social media) and how to effectively address them
- **Landscape:** Assess local drivers of hesitancy and identify partners with existing social media capacity

Policy and Implementation

- **RCTs:** Conduct randomized controlled trials to assess the effectiveness of interventions
- **LMIC support:** Support and collaborate with researchers—especially early career or next generation researchers—in low- and middle-income countries, and amplify research being conducted in these settings

Research and Training

- **Integration:** Incorporate a targeted social media component in Gavi applications and communications plans
- **Guidance:** Conduct training and support country-led implementation of social media interventions, accompanying vaccination campaigns and routine introductions

Cross-Cutting Support

- **Targeted funding:** Establish funding streams—including small grants programs—to support research and implementation of social media interventions for vaccine hesitancy
- **LMIC funding:** Prioritize funding to low- and middle-income country institutions, partners, researchers, and implementers
- **Integration:** Include social media tools and strategies to build vaccine acceptance in

Funding and Financing

STEP 4: IMPLEMENT AND EVALUATE

REACH

The absolute number, proportion, and representativeness of individuals who are willing to participate in a given initiative, intervention, or program. *How do I reach the targeted population with the intervention?*

EFFECTIVENESS

The impact of an intervention on important outcomes, including potential negative effects, quality of life, and economic outcomes. *How do I know my intervention is effective?*

ADOPTION

The absolute number, proportion, and representativeness of settings and intervention agents (people who deliver the program) who are willing to initiate a program. *How do I develop organizational support to deliver my intervention?*

IMPLEMENTATION

At the setting level, implementation refers to the intervention agents' fidelity to the various elements of an intervention's protocol, including consistency of delivery as intended and the time and cost of the intervention. At the individual level, implementation refers to clients' use of the intervention strategies. *How do I ensure the intervention is delivered properly?*

MAINTENANCE

The extent to which a program or policy becomes institutionalized or part of the routine organizational practices and policies. Within the RE-AIM framework, maintenance also applies at the individual level. At the individual level, maintenance has been defined as the long-term effects of a program on outcomes after 6 or more months after the most recent intervention contact. *How do I incorporate the intervention so that it is delivered over the long term?*



Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. Am J Public Health. 1999 Sep;89(9):1322-7.

Thank you!

This work was conducted by JHSPH IVAC in partnership with the Sabin Vaccine Institute (PI: R. Limaye).

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