Celebrity Twitter endorsement for an immunization public health campaign in Indonesia

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Sector(s): Health

Location: Indonesian Twitter network, spread across 33 provinces

Sample: Over 7.8 million unique Twitter users and 2,441 phone survey respondents

Target group: Adults

Outcome of interest: Immunization Health outcomes

Intervention type: Information Social networks Media

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Research Papers: When Celebrities Speak: A Nationwide Twitter Experiment Promoting Vaccination I...

Partner organization(s): Indonesian Government's Special Ambassador to the United Nations for Millennium Development Goals, Indonesian Ministry of Health, Australian Department of Foreign Affairs and Trade (DFAT)

Social media has allowed celebrities to take an increasing role in sharing information and potentially influencing public opinion on social issues, public health crises, and more. However, there is limited evidence on the impacts of celebrity involvement in such issues. Researchers conducted a randomized evaluation on measuring the impact of celebrity Twitter endorsement for a child immunization campaign on the public's opinion and behavior towards immunization. Celebrity endorsement increased Twitter engagement with the immunization campaign, primarily when celebrities authored messages themselves and did not explicitly cite credible public health sources. Celebrity endorsement led to increased communication and knowledge about health behaviors in individuals' communities, though there was no impact on an individual's immunization decisions for their children.

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Worldwide, social media has allowed celebrities to take an increasing role in social discourse. With millions of followers, celebrities have a channel to spread messages and influence public's opinion on various topics, including some far removed from their original reason for fame, like social issues or public health information. For example, during the Covid-19 public health crisis, many celebrities have been recruited by policymakers to share information and encourage social distancing or Covid-19 immunization. However, there is little evidence measuring how effective is celebrity endorsement to influence public opinion in a public health campaign and how to optimally design the campaign so that it would have both online and offline effects on public's knowledge and behavior.

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The evaluation took place in Indonesia from 2015-2016 in collaboration with the Indonesian Government's Special Ambassador to the United Nations for Millennium Development Goals and the Indonesian Ministry of Health. At the time, one of the government's public health priorities was to improve immunization as part of the Millennium Development Goals. For example, Indonesia's immunization coverage for DPT, which is often being used as a general immunization coverage indicator, was 79 percent in 2016 (WHO, 2019). A nationwide immunization campaign on Twitter, with a common hashtag #AyoImunisasi ("Let's Immunize"), was conducted to promote information about immunization access (e.g., immunizations are free, available at government clinics, and so on); immunization's importance (e.g., immunizations are crucial to combat child diseases); and facts to combat common myths about immunization (e.g., vaccines are made domestically in Indonesia, rather than imported).

The immunization campaign took place on Twitter, which has over 1 billion users globally, and a large presence in Indonesia. In 2021, Indonesia ranked sixth in the world for most numbers of Twitter accounts with 14.05 million Twitter accounts (Statista, 2021) and in 2012, Jakarta originated the most tweets of any city worldwide. Twitter also has useful features that enables the researchers to evaluate the online impact of the campaign, such as through observing the online "liking" and "retweeting" behavior.



A group of passengers use their phones while sitting on a train in Indonesia.

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Researchers partnered with the Indonesian Government's Special Ambassador to the United Nations for Millennium Development Goals and Indonesian Ministry of Health to conduct a randomized evaluation on the impact of celebrity Twitter endorsement for the public health campaign on the public's opinion and behavior towards immunization.

Researchers recruited 37 high-profile celebrities in Indonesia with a total of 11 million Twitter followers. The celebrities came from many backgrounds, including music stars, TV personalities, actors, motivational speakers, government officials, and public intellectuals. Researchers also partnered with nine organizations involved in public advocacy or health issues with an average of 132,300 followers each. Each celebrity and organization allowed the research team to send up to 33 tweets or retweets promoting immunization from their accounts.

In addition, the researchers also recruited 1,032 ordinary citizens, primarily Indonesian university students, who composed the tweets which were then retweeted by celebrities. The content and timing of the campaign tweets was randomly chosen from a set of 550 tweets that were approved by the Ministry of Health and included a common hashtag, #AyoImunisasi ("Let's Immunize"). Each tweet was written in Indonesian, with two versions—one using formal Indonesian, and one using casual/street Indonesian, to match the written tweeting styles of the celebrities, organizations, or ordinary citizens.

The evaluation randomly varied the tweets along three key dimensions:

1. Originator of the message: In some tweets, the celebrity or organization sent the tweet directly. In others, celebrities or organizations retweeted a message (drawn randomly from the same tweet library) sent by an ordinary, non-celebrity, user's account.
2. Inclusion of source: Some tweets explicitly cited a public health source, either with a link or reference to the source organization's Twitter handle. Others did not cite a public health source.
3. The timing period when the celebrity tweet: July and August 2015 (Phase I) or November 2015 - February 2016 (Phases II and III)

To measure the impact of the campaign, researchers observed both online and offline reactions to the campaign. First, to measure online reactions, researchers observed the number of likes and retweets of the direct followers of the celebrity to each tweet. They also measured the reactions of those who did not follow the celebrity themselves, but followed someone who followed the celebrity (a follower-of-a-celebrity-follower). Second, to measure the offline effects of exposure to the campaign, researchers conducted phone surveys of individuals who followed at least one study participant on Twitter. The survey measured their awareness of the campaign, beliefs about immunization, immunization history for children in the family, and knowledge of recent immunizations of their friends or neighbors' children.

The evaluation involved over 7.8 million unique Twitter users who followed at least one of the celebrities or organizations endorsing the campaign and published 672 total tweets. The phone survey measuring offline conversation and behavioral changes contacted 2,441 people, all of whom followed at least one of the endorsers on Twitter.

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Celebrity endorsement increased Twitter engagement with the immunization campaign, primarily when celebrities authored messages themselves and did not explicitly cite credible public health sources. The amplification of the campaign led to increased communication and knowledge about health behaviors in individuals' communities, though there was no impact on an individual's immunization decisions for their children.

Celebrity endorsement of the immunization campaign increased Twitter engagement. When a follower of a celebrity retweets a celebrity's message, others can see the celebrity's involvement since the celebrity tweeted themselves. However, if the celebrity retweeted an average person, and a celebrity's follower retweeted, others could not see the celebrity involvement (i.e. others would only see the original author of the tweet). When others could see the celebrity involvement, immunization messages were 72 percent more likely to be liked or retweeted compared to when the same message came from an ordinary user.

The large increase in followers' online response mostly came from the celebrities speaking in their own voice. The vast majority – 79 percent – of the increase in retweets and likes is due to celebrities tweeting the message themselves instead of

passing on, or re-tweeting, the message of others. Public health tweets authored by celebrities are 200 percent more likely to be retweeted or liked by their followers compared to the public health content written by ordinary user which then being retweeted by the celebrities.

When a tweet cited a public health source, followers' willingness to pass it on and like the message declined. Explicitly referring to a public health source reduced the retweet and liking rate by 26.3 percent. One possible reason behind the decline is that a follower's motivation to retweet a celebrity can be to deliver a good message, as well as to convey to their friends that they are able to recognize good information (Chandrasekhar et al., 2018).

Exposure to the public health campaign in Twitter involving celebrities raised followers' awareness about the campaign and about immunization. Seeing 15 more tweets or retweets from the campaign in one's Twitter feed over about one month led to a 20 percent increase in the probability that the user knew about the hashtag #AyoImunisasi and an 11 percent increase in the probability they had heard about immunization through Twitter.

Exposure to the public health campaign in Twitter involving celebrities improved followers' knowledge and combatted myths about immunization. Seeing 15 more tweets or retweets from the campaign in one's Twitter feed over a period of about one month led to a 12 percent increase in the probability that the user knows that vaccines are domestically produced. This knowledge is crucial to combat the common rumor in Indonesia that vaccines contain non-halal products in production, which would make them unacceptable for Muslims, who represent the vast majority of Indonesia's population. However, there were no increases in the three other dimensions of knowledge examined such as immunization access, immunization's importance and substitutability, and side-effects from immunization.

Exposure to the campaign increases offline conversation and knowledge about immunization behavior in the neighborhood. Seeing 15 more tweets or retweets from the campaign in one's Twitter feed over a period of about one month corresponds to a 23 percent increase in the probability of knowing about one's neighbors' recent immunization behavior. Knowing a neighbor's vaccination behavior is consistent with immunization practices in Indonesia, which take place each month at a Posyandu community meeting in each neighborhood (Olken et al., 2014). Those who are exposed to the campaign also were more likely to report recent immunizations among neighbors, friends, and relatives, but there were no effects on one's own immunization decision.

Although this study showed that celebrity endorsement matters in public health campaigns, there needs to be careful consideration in applying the lessons to other health context, for example a pandemic situation. This evaluation is conducted against the background of a children immunization campaign and the complexity of barriers to get people vaccinated might be different in a global pandemic like Covid-19. Given the urgency of Covid-19 vaccination, researchers recommend to consider involving expert ambassadors aside from celebrities, like doctors or other licensed practitioners who are qualified to testify on the issue. Additionally, they suggest further research should explore how this evidence could be adopted in the context of emergency situations.