

Systematic literature review: The spread of health-related misinformation on social media

November 19 2019



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Contemporary commentators describe the current period as "an era of fake news" in which misinformation spreads rapidly. In order to uncover the current evidence and better understand the mechanism of misinformation spread, we report a systematic review of the nature and potential drivers of health-related misinformation. This project has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie Grant Agreement No 721402.

Contemporary commentators describe the current period as "an era of fake news" in which misinformation, generated intentionally or unintentionally, spreads rapidly. Although affecting all areas of life, it poses particular problems in the health arena, where it can delay or prevent effective care, in some cases threatening the lives of individuals. While the spread of misinformation dates back to the earliest days of scientific medicine, the growth of the internet, by allowing instantaneous communication and powerful amplification, has brought about a quantum change. In democracies where ideas compete in the marketplace for attention, accurate scientific information, which may be difficult to comprehend and even dull, is easily crowded out by sensationalized news. In the health arena, much concern has focused on the spread of misinformation on immunization, with social media acting as a powerful catalyst for the anti-vaxxer movement. In order to uncover the current evidence and better understand the mechanism of misinformation spread, we report a systematic review of the nature and potential drivers of health-related misinformation.

There is a limited understanding of why individuals and some segments of the population are vulnerable to misinformation about health, and it is imperative for healthcare workers and policy makers to understand the potential interventions. We searched on five different scientific databases to identify relevant methodological and empirical articles published between 2012 and 2018. A total of 57 articles were included

for full-text analysis.

Overall, we observed an increasing trend in published articles on health-related misinformation and the role of social media in its propagation. The most extensively studied topics involving misinformation relate to vaccination, Ebola and Zika Virus, although others, such as nutrition, cancer, fluoridation of water and smoking also featured. Overall, the studies found that existing misinformation is abundant and is often more popular than accurate information. Several of the studies address areas where state action challenges individual autonomy. The classic example is vaccination, where effective protection of the population requires achievement of levels of uptake sufficient to achieve herd immunity. This review confirms that misconceptions about MMR vaccine and autism, in particular, remain prevalent on social media. Other topics share scientific uncertainty, with the authorities unable to provide confident explanations or advice, as with newly emerging virus infections such as Ebola and Zika viruses. Studies adopted theoretical frameworks from psychology and network science, while co-citation analysis revealed potential for greater collaboration across fields. Most studies employed content analysis, social network analysis or experiments, drawing on disparate disciplinary paradigms.

Future research should examine susceptibility of different socio-demographic groups to misinformation and understand the role of belief systems on the intention to spread misinformation. The severity and the [deleterious effects](#) it may pose on the society is hardly quantifiable, but evidence abounds that we need more research on the identification of susceptible populations, and on the understanding of socio-demographic and ideological asymmetries in the intention to spread [misinformation](#).

Provided by CORDIS

Citation: Systematic literature review: The spread of health-related misinformation on social media (2019, November 19) retrieved 19 April 2024 from <https://medicalxpress.com/news/2019-11-systematic-literature-health-related-misinformation-social.html>

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