Our Infected Information Ecosystem, How It Fell Ill, and How We Treat It

Nathan Ruhde[1]

[1] Department of Population and Quantitative Health Sciences, Case Western Reserve University School of Medicine, Cleveland, OH

ABSTRACT The COVID-19 pandemic has shown how susceptible to misinformation people can be. In the USA, trust in institutions is at an all time low, and that has adverse consequences for the spread of misinformation. Even worse off are social media consumers in foreign countries who navigate a landscape of less policing of misinformation and sometimes faster spreading conspiracy theories and lies. This article suggests that, rather than only focusing on cracking down on misinformation, experts should also think about how providing easier access to medically sound information might help curb misinformation, particularly in the medical arena. Further, this article suggests that medical doctors are best positioned to counter currently rampant misinformation because of the elevated trust they have with the general public.

KEY WORDS medical misinformation, social media, trust, global health, public health

INTRODUCTION

"In 2020, online lying literally killed," (Bulletin of the Atomic Scientists, 2021). These startling words describing the grave threat medical misinformation poses came from the Bulletin of the Atomic Scientists at the beginning of 2021. Medical misinformation should be concerning to all because its spread has become easier and it could impact the capability for individuals to care for themselves. Further, the care providers in our communities may already have part of the solution at their fingertips.

What Role Has Social Media Played?

Spreading medical misinformation has become easier and more pressing than ever thanks in large part to social media. Social media's rise has blurred the line between reputable sources and misinforming sources (CBS Sunday Morning, 2021; Rosenberg et al., 2020). The blur between reputable and misinforming sources has become more pressing in current times because people are more reliant on social media for their information (Suciu, 2019). When the information ecosystem within social media becomes so polluted, many people have a hard time knowing what to believe. Nearly half of adults in a recent survey said discerning truth on social media is at least "somewhat hard," (Rainie et al., 2019). When people can not trust the most readily available information to them, it makes deliberately false information appear closer to reality (CBS Sunday Morning, 2021), hindering the ability of individuals acting in good faith from making sound decisions for their own well-being.

Such an inability to make informed decisions is an even more pronounced issue in communities outside of the United States. Misinformation remains a larger problem in these communities because of the nature of the

platforms that people prefer. Specifically, WhatsApp, a free social media platform that allows more than 2 billion people worldwide to call and message across boundaries (WhatsApp, 2021a), appears more popular outside of the United States. While WhatsApp has done wonders for connecting people around the globe, its end to end encryption setup has made combating disinformation more challenging. End to end encryption, the process by which only the sender and receiver of a message can see the contents of the message (WhatsApp, 2021b), can make the spread of misinformation easier because of the trust built between the sender and receiver and the sense of security provided by the encryption (Gursky and Woolley, 2021, p. 1). As such, WhatsApp has recently come under harsh criticism for the role it plays in allowing misinformation to spread. Researchers from the BBC in 2018 found that the ease with which WhatsApp users can share information in many groups combined with the lack of fact checking due to an overflow of information leads to an increased spread of misinformation (Waterson, 2018).

Not only has the problem continued since then, but it also appears to be affecting some people's opinions on receiving the COVID-19 vaccine. One respondent in a study on attitudes towards the COVID-19 vaccine described how the flurry of information in WhatsApp groups can cause her to tune out both misinformation and legitimate information alike, saying, "There's like all WhatsApp groups and things, there was just stuff flying around on that and videos and all sorts and it was just like awful, what is the truth, what's not…" (Lockyer et al., 2021, p. 1163). When the toxicity of unchecked misinformation meets the issue of vaccines, getting people to make decisions in the interest of their own health becomes challenging. The 2021 Opinions and Lifestyle Survey from the Office of National Statistics of Great Britain showed that young people ages 16-29, a generation more likely to view anti-vaccine content on social media, are also more likely to be hesitant about the vaccine (Davis et al., 2021, p. 3; Stokes, 2021). These recent developments suggest that medical misinformation should concern citizens who might trust information on social media to make medical decisions as well as the medical and public health community.

Why More Doctors Should Intervene

The question concerning public health practitioners should not be whether or not to intervene. Rather, the more pressing question should be how to intervene. We need changes that reach those targeted by misinformation with correct information from reputable sources. If we don't have one of those three things, the efficacy of the message will be diminished.

I believe that using social media to make the advice of medical doctors more widely available is the correct approach because scientists and doctors are already trusted messengers for much of the public. While the studies on the trust placed in providers may be somewhat limited, the information present is incredibly promising. In 2010, Gallup's Health and Healthcare Survey found that 70% of respondents trust the information their provider gives them (Gallup, 2021). Similarly, scientists earned about 70% of public trust in a recent Pew study, with majorities from both left-wing and right-wing leaning respondents (Rainie et al., 2019). So, medical doctors and scientists seem like ideal messengers to combat disinformation.

Based on how the COVID-19 pandemic played out, encouraging doctors/public health professionals to build their own platform and cultivate community virtually seems to have potential. In a world where so much medical/public health information can come at people so quickly, having direct communication with trusted messengers regarding the most important updates can be helpful for the lay public (Gottlieb and Dyer, 2020). Some medical professionals are already cultivating such a following. For example, Dr. Esther Choo increased her follower count by roughly 80,000 followers between early 2020 and the end of 2021 (Gottlieb and Dyer, 2020; Choo, 2021). While the experience of one provider cannot represent what the experience of other providers would be like in a similar situation, the jump in following shows a potential opportunity for other providers to build on the trust they have with their patients and provide reliable information more quickly in the face of profuse misinformation/disinformation.

However, in order for this strategy to mute medical misinformation/disinformation more broadly, the information coming from medical doctors and scientists needs to be more widespread and coming from more voices. Previous studies on physician social media use vary in their conclusions on the proportion of physicians on social media, with estimates anywhere between 9.5% and 65% (Usher, 2011, p. 315; Cooper et al., 2011, p. 961). While that is a majority of physicians surveyed, multiple avenues for improvement exist. First, the incentives necessary to encourage those who do not yet use the platforms should be considered. While each individual physician might have different reasons for not joining, a couple of commonly cited concerns regarding the idea

of doctors joining include privacy and potentially poor professional ramifications for derogatory posts (McCartney, 2012; Ventola, 2014; Lambert et al., 2012, pp. 42-44). Other doctors who might have been on social media previously might be able to give guidance to those starting off regarding best practices for engaging. Also, given the particular focus on countries like the United States and Australia in leading studies on the issue (Cooper et al., 2012; Usher, 2011; Benetoli, 2018, p. 440), it is unclear whether or not physician social media use has been studied worldwide. Given the unique risk posed to communities outside the United States, more specific research into this topic could be useful in identifying potential gaps between patients and physicians in these areas. Such findings might be instrumental in addressing gaps in information between patient and provider.

By encouraging more doctors/public health professionals to build social media platforms and proactively answer questions in the public interest, more people will be reached with accurate medical information on demand. In an ideal world, people could search for the information that *their* primary care provider gives. This approach has two benefits. First, it bypasses some trust issues some partisans have in government agencies and government officials (Rainie et al., 2019). Second, the trust built in this constant communication could correlate to citizens feeling better about their health, as one meta-analysis suggests (Birkhauer et al., 2017). Transparency remains an important element of physician communication to build trust among patients (Thom and Campbell, 1997, as cited in Lee and Lin, 2009, p. 256), and social media gives physicians more opportunities to communicate with their patients on a more consistent basis about developments that may affect their health and/or well-being. Obviously, this idea would need to be tested on a broader scale before the positive impacts can be fully understood. But given the already tremendous opportunity cost of medical misinformation and the erosion of trust in common information sources, at least experimenting with building a social media presence to answer common questions/concerns of their communities should be a worthwhile tradeoff for doctors and/or public health professionals.

CONCLUSION

Doctors and public health professionals should accelerate a transition to communicating with patients over social media if they want to make a dent in the medical misinformation problem. If these professionals make this transition, these individuals can more quickly spread accurate information before faulty information infects decision making instead of reacting after the damage has already been done (Del Vicario et al., 2016, Shu et al., 2020). Given the success of doctors who have already ventured in this direction and the tremendous opportunity cost of inaction, expanding social media outreach about pertinent public health matters appears to be a low-hanging fruit. Such an expansion could help those already overwhelmed trying to combat misinformation make meaningful strides forward.

REFERENCES

1. Benetoli, A., Chen, T. F., & Aslani, P. (2018). How patients' use of social media impacts their interactions with healthcare professionals. *Patient Education and Counseling, 101*(3), 439–444. https://doi.org/10.1016/j.pec.2017.08.015
2. Birkhäuer, J, Gaab J, Kossowsky J, Hasler S, Krummenacher P, Werner C, and Gerger H. (2017). *Trust in the Health Care Professional and Health Outcome: A Meta-Analysis.* PLOS ONE 12(2). https://doi.org/10.1371/journal.pone.0170988.
3. Bulletin of the Atomic Scientists' Science and Security Board (2021, January 27). *Current Time - 2021.* Bulletin of the Atomic Scientists. https://thebulletin.org/doomsday-clock/current-time/.
4. Choo, E (@choo_ek). (2021). "Esther Choo MD MPH." Twitter, https://twitter.com/choo_ek.
5. CBS Sunday Morning [CBS Mornings]. (2021, June 15). Dangers and Risks of Medical Misinformation. [Video]. YouTube. https://www.youtube.com/watch?v=fXMRn7RcxKo&t.
6. Cooper, C. P., Gelb, C. A., Rim, S. H., Hawkins, N. A., Rodriguez, J. L., & Polonec, L. (2012). Physicians who use social media and other internet-based communication technologies. *Journal of the American Medical Informatics Association, 19*(6), 960–964. https://doi.org/10.1136/amiajnl-2011-000628
7. Davis, J., White, E., Shine, C., and Lewis, B. (2021). Coronavirus and vaccine hesitancy, Great Britain: 13 January to 7 February 2021. Office of National Statistics of Great Britain. https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthan
8. dwellbeing/bulletins/coronavirusandvaccinehesitancygreatbritain/13januaryto7february2021
9. Del Vicario, M, Bessi A, Zollo F, Petroni F, Scala A,
10. Caldarelli G, Stanley H. E, and Quattrociocchi W. (2016, January 19). *The Spreading of Misinformation Online. Proceedings of the National Academy of Sciences* 113(3): 554–59. https://doi.org/10.1073/pnas.1517441113.
11. Gallup. Healthcare System. (2021). Gallup, https://news.gallup.com/poll/4708/healthcare-system.aspx.
12. Gottlieb, M, and Dyer S. *Information and Disinformation: Social Media in the COVID-19 Crisis.* (2020, May 31). *Academic Emergency Medicine* 27(7): 640–41. https://doi.org/10.1111/acem.14036.
13. Gursky, J., & Woolley, S. (June 2021). *Countering disinformation and protecting democratic communication on encrypted messaging applications.* Brookings Institution, https://www.brookings.edu/wp-content/uploads/2021/06/FP_20210611_encryption_gursky_woolley.pdf
14. Lambert, K. M., Barry, P., & Stokes, G. (2012). Risk management and legal issues with the use of social media in the healthcare setting. *Journal of Healthcare Risk Management, 31*(4), 41–47. https://doi.org/10.1002/jhrm.20103
15. Lee, Y.-Y., & Lin, J. L. (2009). Trust but Verify: The Interactive Effects of Trust and Autonomy Preferences on Health Outcomes. *Health Care Analysis, 17*(3), 244–260. https://doi.org/10.1007/s10728-008-0100-1
16. Lockyer, B., Islam, S., Rahman, A., Dickerson, J., Pickett, K., Sheldon, T., Wright, J., McEachan, R., Sheard, L., & Group, the B. I. for

H. R. C.-19 S. A. (2021). Understanding COVID-19 misinformation and vaccine hesitancy in context: Findings from a qualitative study involving citizens in Bradford, UK. *Health Expectations*, *24*(4), 1158–1167. https://doi.org/10.1111/hex.13240

17. Rainie L, Keeter S, and Perrin A. (2019). *Trust and Distrust in America*. Pew Research Center, https://www.pewresearch.org/politics/2019/07/22/trust-and-distrust-in-america/.

18. Rosenberg, H., Syed, S., & Rezaie, S. (2020). The Twitter pandemic: The critical role of Twitter in the dissemination of medical information and misinformation during the COVID-19 pandemic. *CJEM*, *22*(4), 418–421. https://doi.org/10.1017/cem.2020.361

19. Shu, K., Bhattacharjee, A., Alatawi, F., Nazer, T. H., Ding, K., Karami, M., & Liu, H. (2020). Combating disinformation in a social media age. *WIREs Data Mining and Knowledge Discovery*, *10*(6), e1385. https://doi.org/10.1002/widm.1385

20. Stokes, R. *Why Vaccine Hesitancy Is Rising Among Young People*. (2021, April 15). Vice News. https://www.vice.com/en/article/4avg5w/why-vaccine-hesitancy-is-rising-among-young-people.

21. Suciu, P. (2019). *More Americans Are Getting Their News From Social Media*. Forbes. https://www.forbes.com/sites/petersuciu/2019/10/11/more-americans-are-getting-their-news-from-social-media/

22. Usher W. Types of social media (Web 2.0) used by Australian allied health professionals to deliver early twenty-first-century practice promotion and health care. *Soc Work Health Care* 2011;50:305–29

23. Ventola, C. L. (2014). Social Media and Health Care Professionals: Benefits, Risks, and Best Practices. *Pharmacy and Therapeutics*, *39*(7), 491–520.

24. Wagner, K. (2017, July 17). *How Many People Use Twitter Every Day?* Vox. https://www.vox.com/2017/7/27/16049334/twitter-daily-active-users-dau-growth-q2-earnings-2017.

25. Waterson, J., & editor, J. W. M. (2018, November 12). WhatsApp struggling to control fake news in India, researchers say. *The Guardian*. https://www.theguardian.com/technology/2018/nov/12/whatsapp-struggling-control-fake-news-india-bbc-study-hindu-nationalism-cheap-mobile-data

26. WhatsApp. *About WhatsApp*. (2021). WhatsApp. https://www.whatsapp.com/about

27. WhatsApp. *WhatsApp Help Center—About end-to-end encryption*. (2021). WhatsApp. https://faq.whatsapp.com/general/security-and-privacy/end-to-end-encryption/?lang=en