

# PREDATORY JOURNALS, FAKE CONFERENCES AND MISLEADING SOCIAL MEDIA: THE DARK SIDE OF MEDICAL INFORMATION

## PLENILSKE REVIJE, LAŽNE KONFERENCE IN ZAVAJAJOČA DRUŽBENA OMREŽJA: TEMNA STRAN MEDICINSKIH INFORMACIJ

*“Everyone is entitled to his own opinion, but not to his own facts.”  
(Daniel Patrick Moynihan)*

Suzana KERT<sup>1,2\*</sup>, Igor ŠVAB<sup>3</sup>

<sup>1</sup>Community Health Centre dr. Adolfa Drolca Maribor, Ulica talcev 5, 2000 Maribor, Slovenia

<sup>2</sup>University of Maribor, Faculty of Medicine, Department of Family Medicine, Taborska ulica 8, 2000 Maribor, Slovenia

<sup>3</sup>University of Ljubljana, Faculty of Medicine, Department of Family Medicine, Poljanski nasip 58, 1000 Ljubljana, Slovenia

Received: Feb 21, 2021

Accepted: Feb 22, 2021

Invited editorial

### ABSTRACT

#### Keywords:

fake medicine, infodemic, misinformation, predatory journals, evidence-based medicine

We live in an age of information revolution, where trends in informing physicians and the lay public bring new challenges that must be faced by healthcare professionals. Predatory journals and fake conferences are common. Social media is full of false information, which results in serious public health damage. Therefore, it is important that health professionals communicate properly with the public and patients and that they address the education of both the public and other health professionals.

### IZVLEČEK

#### Ključne besede:

lažna medicina, infodemija, zavajajoče informacije, plenilske revije, na dokazih temelječa medicina

Živimo v dobi informacijske revolucije, kjer trendi v informiranju zdravnikov in laične javnosti prinašajo nove izzive, s katerimi se morajo soočiti strokovnjaki na področju zdravstvene oskrbe. Pojavljajo se plenilske revije in lažne konference. Družbena omrežja so polna lažnih vesti, kar ustvarja pomembno javnozdravstveno škodo. V taki situaciji je pomembno, da strokovnjaki ustrezno komunicirajo z javnostjo in pacienti in da se lotijo izobraževanja tako javnosti kot zdravstvenih strokovnjakov.

\*Corresponding author: Tel. + 386 70 668 898; E-mail: [suzana.kert@zd-mb.si](mailto:suzana.kert@zd-mb.si)

## 1 INTRODUCTION

We are living in an era of information revolution (1), characterized by the rapid growth of globally shared information. Never in the history of mankind has there been so much scientific information available to the public (2, 3). Extensive communication brings a problem, however, as lies are as readily available as the truth (2). We are thus faced with what can be called an “infodemic”: a virtual tsunami of data and advice, where clear and trustworthy messages are mixed with misinformation and lies, confusing the public (4). We must now deal with fake news (5), misinformation, and disinformation (6). We are experiencing a “post-truth” situation, where facts have a lesser effect on public opinion than beliefs and emotions (7). Paradoxically, the truth has become the biggest victim of the modern era, as misinformation is more popular than the truth, creating fear, anxiety and distrust of authorities. This is why fake news and misinformation have become a serious cause for concern (8).

There are two main pathways through which misinformation appears in public: fraudulent scientific papers and conferences, and social media.

## 2 THE SCIENTIFIC PATHWAY: JOURNALS AND CONFERENCES

The foundation of medical science is scientific publication. The editorial process of scientific journals exists to ensure that the information they provide is trustworthy (9). Despite this, sometimes a paper which is not scientifically sound is published. Fortunately, such cases are relatively rare, but they may have long-term negative consequences, with one well-known example being a publication that claimed there is a link between the MMR vaccine and autism (10).

The trend toward open science and open access journals has created new possibilities for misleading the public, with the rise of predatory journals have appeared (11). Their aim is to gain money by charging scholars and researchers for publication of papers without using a proper peer review process. Some of these journals also serve as agents for special interest groups to promote their ideas under the guise of publishing scientific papers. Fake or predatory conferences are also becoming more and more frequent. They follow the same goal of profit as predatory and fake journals (12). They are characterized by aggressive marketing, luxury locations, vague content and little or no peer review of abstracts (13).

## 3 SOCIAL MEDIA

Social media is one of the main venues for distributing misleading information to the general public. Information about health issues is always popular (14), but unfortunately much of the information available on the internet is not trustworthy (15). It is essential that people who use medical information online know how to differentiate between objective facts and personal opinions. Unfortunately, this is often not the case: conspiracy theories are very common and widely believed, with at least half of the population believing at least one of them (16).

## 4 RECOMMENDATIONS

In order to cope with these issues, it is important to devise strategies to address them.

Scientists who receive invitations to submit papers and their research can avoid sending their work to a predatory journal for publication by following a strategy of: “Think. Check. Submit” (17). Sometimes the simplest way to avoid fake conferences is just to delete invitations to conferences which we receive via email (18). Meanwhile, transparency is an excellent strategy to deal with misinformation. This is why open science should be promoted.

Dealing with the public is another matter. On an individual level, appropriate communication between health professionals and patients is extremely important (19). It is of key importance that the professional maintains a position of evidence-based medicine and to admit that this has its limits. It is wrong to try to ridicule or be aggressive towards a person who is misinformed. A non-judgmental approach is the best strategy, and sometimes just accepting the fact that patients have different beliefs is the only viable solution (20).

Scientists also have to learn how to communicate with the general public. Science must be made understandable without being oversimplified. The task of finding an appropriate level for communication of scientific findings is a difficult one, and needs collaboration between medical science and the media. Strategic partnerships between experts in different fields need to be established to deal with this challenge. The role of professional organizations in this respect is of utmost importance, and experts from other fields are also needed (6).

The general public must learn about “digital hygiene”: how to recognize, understand and avoid misleading information. Medical students should learn about evidence-based medicine in their study curriculum (21). They should know how to navigate the internet, how to assess information, how to become familiar with digital tools (22), so that they can help patients distinguish between fact and fiction when they enter the practice of medicine.

## 5 CONCLUSION

Misinformation has become one of the biggest public health challenges today, and the problem cannot be solved by legislation alone. Developing and applying methods and strategies to combat misinformation is one of the key challenges for professional and scientific organizations in every field, at every level.

## CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist with regard to this work.

## FUNDING

The study had no funding.

## ETHICAL APPROVAL

The study is in accordance with the Declaration of Helsinki.

## REFERENCES

- McKee M, van Schalkwyk MCI, Stuckler D. The second information revolution: digitalization brings opportunities and concerns for public health. *Eur J Public Health*. 2019;29(Suppl 3):3-6. doi: 10.1093/eurpub/ckz160.
- Fernández-Luque L, Bau T. Health and social media: perfect storm of information. *Healthc Inform Res*. 2015;21(2):67-73. doi: 10.4258/hir.2015.21.2.67.
- Fox S, Duggan M. 2013. Health online 2013. Pew Res Cent Internet Technol. Accessed January 2nd, 2021 at: <https://www.pewinternet.org/2013/01/15/health-online-2013/>.
- World Health Organization. An ad hoc WHO technical consultation managing the COVID-19 infodemic: call for action, 7-8 April 2020. Accessed January 19th, 2021 at: <https://www.who.int/teams/risk-communication&publication=9789240010314>.
- Allcott H, Gentzkow M. Social media and fake news in the 2016 election. *J Econom Perspect*. 2017;31(2):211-36. doi: 10.1257/jep.31.2.211.
- Wardle C, Derakhshan H. Information disorder: toward an interdisciplinary framework for research and policymaking. Council of Europe report DGI (2017) 09:5.
- Lewandowsky S, Ecker U, Cook J. Beyond misinformation: understanding and coping with the "post-truth" era. *J Appl Res Memory Cognition*. 2017. doi: 10.1016/j.jarmac.2017.07.008.
- Flintham M, Karner C, Bachour K, Creswick H, Gupta N, Moran S. Falling for fake news. Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems. 2018:1-10.
- The BMJ. Evidence based publishing. Accessed January 15th, 2021 at: <https://www.bmj.com/about-bmj/evidence-based-publishing>.
- DeStefano F, Shimabukuro TT. The MMR vaccine and autism. *Annu Rev Virol*. 2019;6(1):585-600. doi: 10.1146/annurev-virology-092818-015515.
- Švab I, Makivić I. Predators and hijackers in academic publishing. *Eur J Gen Pract*. 2015;21(2):95-6. doi: 10.3109/13814788.2015.1037270.
- Sharma H, Verma S. Predatory journals: the rise of worthless biomedical science. *J Postgrad Med*. 2018;64(4):226-31. doi: 10.4103/jpgm.JPGM\_347\_18.
- Mercier E, Tardif P-A, Moore L, Le Sage N, Cameron PA. Invitations received from potential predatory publishers and fraudulent conferences: a 12-month early-career researcher experience. *Postgrad Med J*. 2018;94(1108):104-8. doi: 10.1136/postgradmedj-2017-135097.
- European Commission. European citizen's digital health literacy. Brussels: European Commission, 2014. Accessed January 2nd, 2021 at: [https://ec.europa.eu/commfrontoffice/publicopinion/flash/fl\\_404\\_en.pdf](https://ec.europa.eu/commfrontoffice/publicopinion/flash/fl_404_en.pdf).
- Armstrong PW, Naylor CD. Counteracting health misinformation: a role for medical journals? *JAMA*. 2019;321(19):1863-4. doi: 10.1001/jama.2019.5168.
- Oliver JE, Wood T. Medical conspiracy theories and health behaviors in the United States. *JAMA Int Med*. 2014;174(5):817-8. doi: 10.1001/jamainternmed.2014.190.
- Think.Check.Submit. Accessed January 17th, 2021 at: <https://thinkchecksubmit.org/>.
- Richtig G, Berger M, Lange-Asschenfeldt B, Aberer W, Richtig E. Problems and challenges of predatory journals. *J Eur Acad Dermatol Venereol*. 2018;32(9):1441-9. doi: 10.1111/jdv.15039.
- Wu JT, McCormick JB. Why health professionals should speak out against false beliefs on the internet. *AMA J Ethics*. 2018;20(11):E1052-8. doi: 10.1001/amajethics.2018.1052.
- Baron RJ, Berinsky AJ. Mistrust in science - a threat to the patient-physician relationship. *New Eng J Med*. 2019;381(2):182-5. doi: 10.1056/NEJMms1813043.
- Kukulja Taradi S, Taradi M, Dogas Z. Croatian medical students see academic dishonesty as an acceptable behaviour: a cross-sectional multicampus study. *J Med Ethics*. 2012;38(6):376-9. doi: 10.1136/medethics-2011-100015.
- Kanekar AS, Thombre A. Fake medical news: avoiding pitfalls and perils. *Fam Med Community Health*. 2019;7(4):e000142. doi: 10.1136/fmch-2019-000142.