

# The Impact of Online Information and Disinformation on Clinical Practice and Biomedical Decision-Making

**Amilcar Ismael Barreto**

*Universidade Catolica Portuguesa, Portugal*

## Corresponding author

Amilcar Ismael Barreto, Universidade Catolica Portuguesa, Portugal.

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## ABSTRACT

**Background:** The widespread use of digital platforms has transformed access to biomedical and health-related information. While online information can improve knowledge dissemination and patient engagement, misinformation and disinformation represent growing challenges for clinical practice, biomedical communication, and public health.

**Objective:** This study aims to analyze the impact of online information and disinformation on clinical practice and biomedical decision-making, particularly focusing on patient behavior, doctor–patient communication, and trust in biomedical science.

**Methods:** This study uses a qualitative analytical approach combined with a narrative literature review. Scientific articles, public health reports, and academic publications related to digital health information, misinformation, disinformation, and biomedical communication were reviewed. A thematic analysis approach was used to identify key themes regarding the impact of online information on healthcare practice.

**Results:** The analysis identified five main themes: increased access to biomedical information, impact on patient behavior and expectations, impact on clinical practice, trust in biomedical science and institutions, and digital health literacy. Results suggest that online information can both improve patient engagement and create challenges when misinformation influences patient beliefs and treatment decisions.

**Conclusion:** Online information and disinformation significantly influence clinical practice and biomedical communication. Improving digital health literacy and scientific communication strategies is essential to reduce the negative impact of misinformation and disinformation in healthcare and biomedical sciences.

**Keywords:** Misinformation, Disinformation, Digital Health, Biomedical Communication, Clinical Decision-Making, Health Literacy, Online Information

## Introduction

The digital transformation has profoundly changed the way biomedical information is produced, disseminated, and consumed. Healthcare professionals increasingly rely on digital databases, online journals, and clinical decision-support tools, while patients frequently use the internet to search for health-related information before and after medical consultations. This phenomenon has contributed to greater access to information but has also facilitated the spread of misinformation and disinformation in healthcare and biomedical sciences.

Information refers to accurate and evidence-based knowledge, whereas misinformation refers to false or inaccurate information shared without the intention to deceive. Disinformation refers to deliberately false or misleading information intended to influence opinions or behaviors (Vraga & Bode, 2020). In healthcare and biomedical sciences, misinformation and disinformation can influence treatment decisions, medication adherence, vaccine acceptance, and trust in healthcare institutions.

The availability of online information has also changed the traditional doctor–patient relationship. Patients are no longer passive recipients of medical information but active participants who often arrive at consultations with prior knowledge or beliefs based on online searches. While this may improve

patient engagement and shared decision-making, it may also create challenges when patients rely on inaccurate or misleading information.

The objective of this study is to analyze the impact of online information and disinformation on clinical practice and biomedical decision-making, focusing on patient behavior, clinical communication, and trust in biomedical science.

## Methods

### Study Design

This study adopts a qualitative analytical approach combined with a narrative literature review to explore the impact of online information and disinformation on healthcare and biomedical practice.

### Literature Review

The literature review included peer-reviewed articles, scientific publications, and public health reports related to:

- Online health information
- Health misinformation and disinformation
- Digital health literacy
- Biomedical communication
- Doctor–patient communication in the digital era

Databases consulted included PubMed, Google Scholar, and journals related to healthcare communication, public health, and biomedical sciences.

### Data Analysis

A thematic analysis approach was used to identify recurring themes related to the impact of online information and misinformation in healthcare and biomedical sciences. The main themes identified included:

- Access to online biomedical information
- Patient behavior and expectations
- Clinical communication challenges
- Trust in biomedical science and institutions
- Digital health literacy

## Results

### Increased Access to Biomedical Information

The internet has significantly increased access to biomedical information for both healthcare professionals and patients. Healthcare professionals use online platforms to access clinical guidelines, scientific publications, and medical education resources, while patients use online platforms to search for symptoms, treatments, and disease-related information.

This increased access to information has contributed to more informed patients and greater participation in healthcare decision-making.

### Impact on Patient Behavior and Expectations

Online information significantly influences patient perceptions of diseases, treatments, and healthcare professionals. Patients often arrive at consultations with self-diagnoses or specific treatment requests based on information found online. Misinformation and disinformation can contribute to:

- Fear of medications
- Vaccine hesitancy
- Preference for unproven treatments

- Delays in seeking medical care
- Reduced adherence to prescribed treatments

However, when patients access reliable information, consultations may become more productive and collaborative.

### Impact on Clinical Practice

Healthcare professionals increasingly report that consultations involve discussing and clarifying online information found by patients. This increases consultation time and requires physicians to develop communication strategies to correct misinformation while maintaining trust and a positive doctor–patient relationship.

Online information has therefore transformed the role of healthcare professionals from primary information providers to interpreters and validators of information obtained online.

### Trust in Biomedical Science and Institutions

Misinformation and disinformation may reduce trust in pharmaceutical companies, scientific research, vaccines, and healthcare institutions. Social media platforms often amplify controversial or sensationalized information, which may influence public perception of biomedical science.

Healthcare professionals remain one of the most trusted sources of health information, but they increasingly need to address misinformation during clinical consultations.

### Digital Health Literacy

Digital health literacy emerged as a key factor influencing how patients interpret online information. Patients with higher digital literacy are more likely to identify reliable sources and interpret medical information correctly, while patients with lower digital literacy are more vulnerable to misinformation and disinformation.

## Discussion

The results suggest that online information and disinformation have a significant impact on clinical practice, biomedical communication, and healthcare decision-making. The digital transformation of healthcare information has changed the role of healthcare professionals, who now act not only as clinicians but also as information interpreters and educators.

Online information can improve patient engagement and shared decision-making when reliable sources are used. However, misinformation and disinformation can lead to incorrect beliefs, reduced treatment adherence, delays in medical care, and mistrust in biomedical science.

One of the most important findings of this study is the central role of digital health literacy. Improving digital literacy among patients and healthcare professionals may reduce the impact of misinformation and disinformation in healthcare.

Healthcare institutions, universities, and scientific organizations must play a more active role in communicating scientific information clearly and accessibly to the public. Scientific communication should extend beyond academic journals to digital platforms and social media, where misinformation often spreads.

Communication training for healthcare professionals is also increasingly important, as physicians need skills to address misinformation, manage patient expectations, and maintain trust [1-6].

### Conclusion

Online information has become a central component of healthcare and biomedical communication. While access to information can improve patient knowledge and engagement, misinformation and disinformation represent significant challenges for clinical practice and public health.

The impact of online information depends largely on information quality, digital literacy, and the ability of healthcare professionals to guide patients in interpreting information correctly. Improving digital health literacy, strengthening scientific communication, and promoting evidence-based information online are essential strategies to reduce the negative impact of misinformation and disinformation in healthcare and biomedical sciences.

Future research should focus on developing interventions to improve digital health literacy and evaluate strategies to reduce the spread and impact of health misinformation.

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