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Infodemics and dentistry: Managing misinformation for trust, truth, and oral health

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Abstract
Objective: This review explores the phenomenon of infodemics in dentistry, focusing on how misinformation affects patient decision-making, professional credibility, and oral health outcomes, while proposing evidence-based strategies to counter its effects.
Background: An infodemic—a blend of "information" and "epidemic"—describes an overabundance of accurate and inaccurate information during health crises. In dentistry, false beliefs surrounding fluoride safety, dental implants, and do-it-yourself (DIY) treatments proliferated during the COVID-19 pandemic, creating confusion and mistrust.
Summary: Misinformation spread through digital media discourages patients from seeking care, fosters anxiety, and erodes confidence in evidence-based dentistry. Effective infodemic management requires identifying misinformation sources, promoting digital health literacy, and strengthening communication between dental professionals and the public.
Conclusion: By integrating proactive communication, fact-checking, and patient education, dental professionals can mitigate misinformation's effects and rebuild trust in oral healthcare systems—ensuring that truth in dentistry prevails over digital distortion.

Keywords: Infodemic, misinformation, dentistry, covid-19, oral health, fluoride, dental implants, digital literacy, patient education, evidence-based practice

Introduction

The explosion of information during health crises has transformed how patients access, interpret, and act upon dental knowledge. The World Health Organization (WHO) defines an infodemic as an excessive amount of information—accurate or not—that makes it hard for people to find trustworthy sources and reliable guidance [1]. In dentistry, misinformation about fluoride safety, dental amalgam toxicity, and implant reliability has spread rapidly through digital channels [2]. Such myths deter individuals from seeking professional care, creating barriers to prevention and treatment [3]. This review aims to examine the scope, causes, and consequences of infodemics in dentistry, highlighting mitigation strategies for professionals and policymakers.

Infodemic and IDIOT Syndrome

The term Internet-Derived Information Obstructing Treatment (IDIOT) syndrome describes patients abandoning professional advice after trusting unverified online information[4]. As smartphones and social media become primary health resources, patients increasingly self-diagnose, often misinterpreting medical or dental conditions [5].

Healthcare professionals experience heightened stress as they counter misinformation, manage misconceptions, and attempt to restore trust.

While IDIOT syndrome reflects individual-level effects of misinformation, the role of social media platforms explains how these distortions spread at the community level.

Role of Social Media

Social media is both a driver and amplifier of health misinformation. Platforms like Facebook, YouTube, TikTok, and Instagram allow rapid content dissemination, often without verification[6]. Algorithms designed to maximize engagement inadvertently promote sensational or misleading content [7].

Research indicates that during the COVID-19 pandemic, social media propagated conflicting messages about dental safety, viral transmission through aerosols, and unproven home remedies [8]. Despite attempts at moderation, the immense data volume and monetized algorithms limited success.

To mitigate this, transparency in algorithmic curation, media literacy campaigns, and partnership between professional associations and social platforms are essential.

Table 1: Common Sources and Types of Dental Misinformation on Social Media

Platform	Type of Misinformation	Impact on Public
YouTube	DIY whitening, "coconut oil cures cavities" videos	Damaged enamel, delayed care
Facebook/WhatsApp	Anti-fluoride campaigns, viral false claims	Reduced preventive compliance
TikTok	Aesthetic hacks using unsafe materials	Oral burns, self-harm
Instagram	Celebrity "detox toothpastes" promotions	Misleading commercial influence

Infodemic and Oral Health

The infodemic has compounded oral health challenges globally. During the pandemic, misinformation about aerosol transmission led to widespread fear of dental clinics [9]. Similarly, myths regarding fluoride toxicity and dental implant failures persist, especially in low- and middle-income settings [10].

Unchecked dissemination of such claims contributes to delayed treatment, worsened oral disease burden, and erosion of trust. Public health communication must therefore ensure accurate and timely dissemination of verified dental information.

Table 2: Common Dental Myths versus Evidence

Myth	Scientific Evidence / Reality
Fluoride causes cancer	WHO and CDC confirm fluoride in recommended doses is safe and prevents caries[11]
Root canal therapy spreads infection	Clinical studies show RCT is effective and safe with sterilized technique[12]
Dental implants are unsafe	Success rates exceed 95 % in healthy patients[13]
Laser dentistry is experimental	Proven adjunct in soft-tissue procedures and caries removal[14]

Role of Public Health

Public health dentists serve as credible messengers bridging scientific knowledge and community awareness. Through outreach programs, digital literacy initiatives, and health promotion, they can dispel myths and empower populations with evidence-based understanding [15].

Collaboration with schools, local authorities, and online communities ensures that preventive oral health messages reach diverse audiences. Public health campaigns should focus on three pillars

1. **Education:** Promote oral health literacy.
2. **Engagement:** Use community-driven social media communication.
3. **Empowerment:** Enable informed decision-making.

Preventive Measures

Combating infodemics requires integration of science communication with behavioral and digital strategies. Bautista *et al*. [16] proposed a two-step framework: (1) identify false information, and (2) correct it respectfully and publicly.

Chou *et al*. [17] emphasized collaboration among medical professionals, media, and influencers to debunk misinformation, while Walter *et al*. [18] confirmed that corrections are most effective when delivered by domain experts.

Preventive Communication Framework

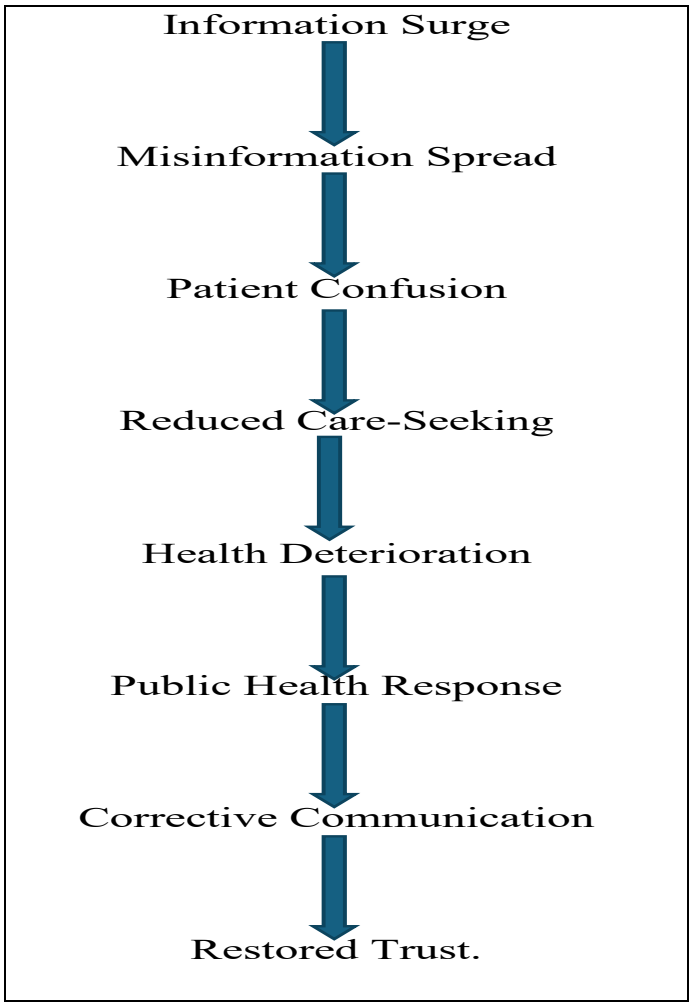
1. **Detection:** Identify false narratives (social listening).
2. **Verification:** Cross-check through authoritative sources (WHO, ADA).
3. **Correction:** Provide empathetic, evidence-based clarification.
4. **Engagement:** Collaborate with digital influencers for accurate outreach.
5. **Evaluation:** Monitor public perception and behavioral outcomes.

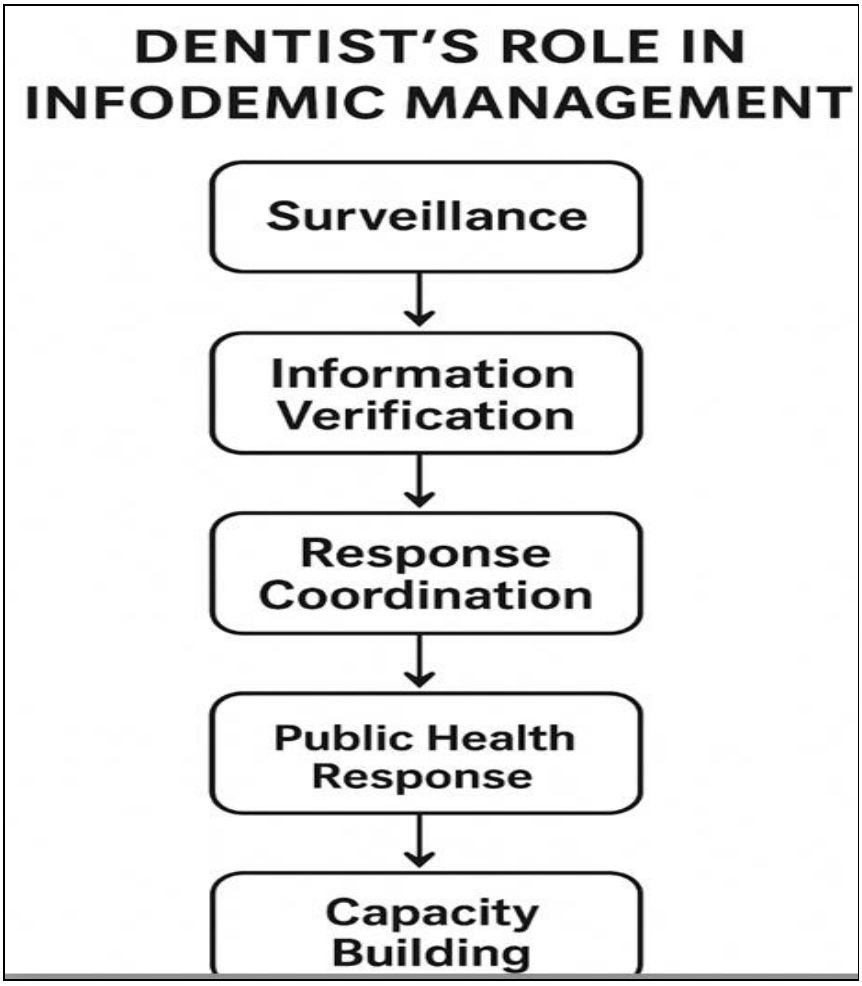
Management

Effective infodemic management requires an ecosystem approach—combining surveillance, communication, and community trust building. WHO's infodemic management model includes four pillars [19]

1. **Social Listening:** Track emerging misinformation trends.
2. **Information Verification:** Partner with health authorities to validate claims.
3. **Response Coordination:** Disseminate corrected content through credible messengers.
4. **Capacity Building:** Train dental professionals in crisis communication.

Infodemic Cycle In Dentistry





Discussion

Although the digital age offers unparalleled access to information, it simultaneously increases susceptibility to misinformation. Gaps remain in research on how dental misinformation spreads, its psychological impact on patients, and the effectiveness of correction strategies. There is limited integration of infodemiology—the study of information patterns—into dental curricula or continuing education. Introducing modules on digital health literacy, patient communication, and misinformation management can enhance resilience among dental professionals.

Furthermore, most correction strategies remain reactive; proactive "pre-bunking" approaches (inoculation theory) are underused in dentistry [20]. Future research should focus on quantifying misinformation's behavioral effects, developing AI-based social listening tools for dental health, and establishing interdisciplinary infodemic management frameworks.

Conclusion

Infodemics represent an emerging threat to oral health systems by undermining trust and distorting public understanding. Dentists, educators, and policymakers share responsibility for promoting accurate, transparent, and compassionate communication.

By cultivating digital literacy, applying evidence-based engagement, and embracing proactive information management, the dental profession can shield communities from misinformation's harm.

in the era of viral misinformation, dental truth must trend faster than the lie.

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