Letter to the Editor
The Frequency of Pro-fluoride Verses Anti-fluoride Posts on Instagram

Saber Babazadeh[1], Taraneh Movahhed[2], Fatemeh Esmaeilzadeh[2*]

1. Department of Oral Health and Community Dentistry, School of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran.
2. Department of Pediatric Dentistry, School of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran.

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Citation Babazadeh S, Movahhed T, Esmaeilzadeh F. The Frequency of Pro-fluoride Verses Anti-fluoride Posts on Instagram. Journal of Research & Health. 2023; 13(4):237-240. http://dx.doi.org/10.32598/JRH.13.4.2122.1

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Dear Editor

Fluoride is currently accessible in various forms, including water, toothpaste, mouth rinses, and professional fluoride therapy at dental clinics. A body of data supports the use of systemic and topical fluoride from various sources to prevent dental caries. Fluoride ions are absorbed by the enamel before tooth eruption and produce fluorohydroxyapatite, which is more resistant to acid attack than hydroxyapatite crystals [1]. Fluoride ions also aid in the early caries lesion remineralization process. As a result of the two mechanisms outlined above, fluoride strengthens enamel teeth against organic acids and dental caries.

Studies showed that excessive fluoride intake causes tooth discoloration known as fluorosis, reduced insulin secretion and resistance to insulin [2], bone injuries [3], and decreased fertility by up to 33% [4]. Furthermore, some investigations showed complications, such as dose-dependent fluoride neurotoxicity [5], and cytotoxicity [6].

Social media platforms have a large number of subscribers and can influence their viewers' lifestyles. A direct correlation was found between lifestyle and social media surfing time and platform type. Instagram is one of the most popular social media platforms. More than 69% of Iranians currently use their cellphones and Instagram has more than 32 million users in Iran.

This letter to the editor discusses the frequency of pro-fluoride vs. anti-fluoride messages on Instagram in 2021. Data was gathered three times, two months apart, in the spring and summer of 2021 from the Instagram social network using relevant hashtags, such as #fluoride, #fluoride-water, #fluoride-therapy, #fluoride-toothpaste, #do-not-use-fluoride, #fluoride-chemical-agents, #fluoridetherapy, and #fluoridetherapy-children. Fluoride-related content was identified in 1565 of the 16475 posts. After removing duplicate posts, the text, pictorial, and video contents of 400 fluoride-related posts were assessed. The data was saved in separate files for each hashtag (Table 1).

A total of 282 posts supported the use of fluoride, while 118 opposed it. Data were collected at three times intervals with two months apart, spring and summer of 2021. Data were collected from the Instagram social network using the relevant hashtags, including #fluoride, #fluoride_water, #fluoride_therapy, #fluoride_toothpaste, #do_not_use_fluoride, #fluoride_chemical_agents, #fluoridetherapy, and #fluoridetherapy_children. Of 16475 posts, 1565 posts had fluoride-related content. After

*** Corresponding Author:**
Fatemeh Esmaeilzadeh, DMD.
Address: *Department of Pediatric Dentistry, School of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran.*
Phone: *+98 (51) 38829501*
E-mail: *esmaeilzadehf991@mums.ac.ir*

Table 1. Frequency of posts by hashtag

Hashtag	Total Number of Posts	Number of Posts Related to Fluoride	Number of Related Posts After Removing Duplicates
Fluoride	9250	213	57
Fluoride_water	123	41	24
Fluoride_therapy	2320	410	238
Fluoride_toothpaste	276	172	4
Do_not_use_fluoride	315	78	1
Fluoride_chemical_agents	561	184	20
Fluoridetherapy	1220	150	9
Fluoridetherapy_children	2410	317	47
Total hashtags	16475	1565	400

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eliminating duplicate posts, the text, pictorial, and video contents of 400 fluoride-related posts were evaluated. The data were saved in the separate files for each hashtag (Table 1). A total of 282 posts advocated the use of fluoride, and 118 posts were against the use of fluoride.

Anti-fluoride posts discussed the negative consequences of fluoride without citing any scientific evidence. These posts emphasized on adverse effects of fluoride on health (teeth, brain, and its components, fertility). Anti-fluoride posts had contradictory content. Some posts suggested that fluoride destroys tooth enamel. Some of them claimed that fluoride did not affect strengthening enamel and dental caries prevention. Some posts exaggerated the fluoride risks by expressing statements, such as “using fluoride is even more harmful than using uranium”, “fluoride is the poison of governments, and they try to poison people with fluoride”, or “fluoride is found in cockroach poison”. Eventually, posts favoring fluoride use was more than posts against fluoride use.

Ethical Considerations

Compliance with ethical guidelines

No ethical considerations were considered in this research.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

Conceptualization and study design: Saber Babazadeh and Taraneh Movahhed; Data collection: Taraneh Movahhed; Literature review, Manuscript preparation and Submission: Fatemeh Esmaeilzadeh.

Conflict of interest

The author declared no conflict of interest.

Acknowledgments

The authors wish to thank, the research deputy of Mashhad University of Medical Science for providing support to do this work.

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