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Informational Quality of Retinol Content on Social Media – A Cross-Sectional Analysis

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Abstract

While social media is a popular tool to disseminate dermatologic information, the informational quality of the available retinol content has not been assessed. We conducted a cross-sectional study by querying for Instagram posts about retinol on January 24th, 2023, and analyzed ninety-seven posts using the DISCERN metric, a validated instrument for judging the quality of written consumer health information. The majority of assessed posts had a DISCERN score under 2 (out of 5), with an average score of 1.27/5 (SD of 0.56). This study highlights the lack of high-quality information on the topic of retinol on Instagram and the importance of consumer caution when seeking information online.

Keywords

Retinol, Social Media, Information Quality, Acne, Photoaging

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Instagram, a social media platform, has emerged as a dominant source for the consumption of dermatologic information, with retinol as a popular search topic [1]. Retinol, a nonaromatic Vitamin A derivative, is converted through a series of enzymatic reactions to its biologically active form, retinoic acid [2]. Retinoic acid activates nuclear retinoic acid response elements, implicated in cellular growth, differentiation, and apoptosis [3]. Because of its properties influencing collagen synthesis, fibroblast activity, and inhibition of matrix metalloproteinases, retinol products have long been used by both dermatologists and the public to target many dermatologic concerns, including acne vulgaris and photoaging, such as facial wrinkles, facial skin roughness, or hyperpigmentation [2].

Colloquially, "retinol" often encompasses nonprescription vitamin A derivatives found in over-the-counter skincare products, such as retinaldehyde, retinyl esters, retinyl palmitate, and others [1]. The market for retinol products continues to expand, with consumers presented with many different formulation and combination options [3]. Unfortunately, lack of education may leave consumers ill-equipped to navigate safe retinol usage and manage potential side effects, such as skin irritation and photosensitivity [4].

An Instagram search under the hashtag #retinol yields 828,000 posts as of January 2023. Despite this abundance, the quality of informational content has not been systematically evaluated. Our study aims to analyze retinol content on Instagram and assess the quality of information available to consumers.

We searched Instagram using the hashtag, #retinol on January 24th, 2023, and analyzed the top 97 posts recommended by Instagram's search algorithm. Inclusion criteria comprised picture posts in English about retinol, excluding duplicates, non-English posts, non-image posts, and unrelated posts. Descriptive statistics, including likes, post type (product recommendation, educational, advertisement, or humorous content), and authorship (physician or non-physician), were tabulated. The informational quality content was determined by two independent reviewers, using the DISCERN metric, a validated instrument for judging the quality of written consumer health information, using a 1-5 scale [5]. Weighted Cohen's kappa was calculated to assess interrater reliability.

The top 97 posts tagged #retinol had a combined total of 213,362 likes. The average content quality was 1.27/5 (SD of 0.56, with a substantial level of interrater reliability - weighted Cohen's kappa of 0.788), indicating serious or extensive shortcomings in informational content based on the DISCERN categorization. Notably, 95 posts were authored by non-physicians, while 2 were by dermatologists (one post with an average score of 1, the other - a score of 4).

Educational posts, focusing on aspects such as how to use retinol or benefits, comprised 43.3% of the content, with an average DISCERN score of 1.58. Product recommendations, forming 38.1% of the dataset, had an average score of 1.02. Advertisements constituted 11.3% of posts, with an average score of 1.09. Humorous posts, making up 7.2% of the content, had an average score of 1 (Table 1 Overleaf).

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Table 1. "Statistics of Analyzed Retinol Content on Instagram Based on Post Type"

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Category of post	**Number of posts**	**Mean number of likes**	**Mean DISCERN score**	**Number of posts by physicians**
Educational	42 (43.3%)	4606	1.58	2 (4.8%)
Product recommendations	37 (38.1%)	961	1.02	0
Advertisements	11 (11.3%)	552	1.09	0
Humorous	7 (7.2%)	409	1.00	0

The low DISCERN ratings indicate that Instagram may not be a reliable source of information about retinol, despite its use popularity. Contributing factors to low ratings include lack of source citation, insufficient risk discussion, and failure to explain treatment mechanisms. Furthermore, scarcity of physician-authored posts highlights a potential deficiency and encourages dermatologists to have an active role sharing informative content on social media.

While limitations are present, including the dynamic nature of recommended posts on Instagram and the exclusion of non-image content, this study emphasizes caution required when relying on social media for information. Overall, user discretion should be exercised when using Instagram as an educational source about retinol.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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