

The Influence of Popular Media on Public Interest in Red Light Therapy

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Table of Contents

Original Manuscript..... 4

Supplementary Files..... 13

 Figures 14

 Figure 0..... 15

Preprint
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The Influence of Popular Media on Public Interest in Red Light Therapy

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Abstract

Background: Social media platforms, particularly TikTok, have emerged as influential sources of medical information and treatment trends. In early 2024, red light therapy gained substantial attention on TikTok for skincare applications, despite limited scientific understanding of its long-term effects and safety profile with home use.

Objective: To quantify the impact of TikTok exposure on public interest in red light therapy and compare interest trends with conventional skincare treatments.

Methods: We analyzed Google Trends data from November 2019 to November 2024 for red light therapy-related terms and control terms. Statistical analyses included trend analysis and structural break detection.

Results: Search interest for red light therapy terms showed significant increases post-February 2024 ($p < 0.001$) compared to the previous year. Linear regression revealed significant positive trends for red light therapy terms while control terms showed either no significant trends or slight declines.

Conclusions: TikTok's influence significantly increased public interest in red light therapy, surpassing traditional skincare treatments. These findings highlight social media's role in shaping healthcare trends and underscore the need for healthcare providers to stay informed about viral treatments.

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Original Manuscript

The Influence of Popular Media on Public Interest in Red Light Therapy

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Ethical statement:

This study did not require Institutional Review Board (IRB) approval from the University of Pennsylvania as it exclusively utilized deidentified, publicly available data.

Abstract

Background: Social media platforms, particularly TikTok, have emerged as influential sources of

medical information and treatment trends. In early 2024, red light therapy gained substantial attention on TikTok for skincare applications, despite limited scientific understanding of its long-term effects and safety profile with home use.

Objective: To quantify the impact of TikTok exposure on public interest in red light therapy and compare interest trends with conventional skincare treatments.

Methods: We analyzed Google Trends data from November 2019 to November 2024 for red light therapy-related terms and control terms. Statistical analyses included trend analysis and structural break detection.

Results: Search interest for red light therapy terms showed significant increases post-February 2024 ($p < 0.001$) compared to the previous year. Linear regression revealed significant positive trends for red light therapy terms while control terms showed either no significant trends or slight declines.

Conclusions: TikTok's influence significantly increased public interest in red light therapy, surpassing traditional skincare treatments. These findings highlight social media's role in shaping healthcare trends and underscore the need for healthcare providers to stay informed about viral treatments.

Introduction

The intersection of social media and healthcare information dissemination has created new challenges and opportunities for healthcare professionals. Social media platforms, particularly TikTok, have become increasingly influential in shaping public perception and interest in various medical treatments. In early 2024, red light therapy emerged as a viral skincare trend on TikTok, with influential celebrities like Kim Kardashian prominently featuring LED masks from brands such as Omnilux in their social media content. By February 2024, the hashtag "Red LED light therapy" had amassed over 70 million views on TikTok, driving substantial consumer interest in home-use devices ranging from \$100 to \$3,500 [1]. This garnered significant attention despite limited scientific understanding of its long-term effects and safety profile, especially in the context of home use [2, 3].

Red light therapy, also known as photobiomodulation or low-level laser therapy, involves exposure to red light wavelengths purported to have beneficial effects on skin health [4]. While some clinical applications of red light therapy are well-documented, the recent surge in interest has primarily focused on consumer-grade devices and home treatments, raising concerns among healthcare providers about safety and efficacy [5]. Thus, we aim to examine the impact of TikTok exposure on public interest in red light therapy and compare interest trends with conventional skincare treatments.

Methods

We analyzed Google Trends data from November 2019 to November 2024 for terms related to red light therapy ("light therapy", "red therapy", "red light masks", "red therapy benefits", "photobiomodulation", "low level laser therapy") and control terms representing traditional skincare treatments ("chemical peel", "skin care", "exfoliation"). Search terms were selected using a systematic approach based on preliminary TikTok hashtag analysis and existing literature on light therapy terminology. Red light therapy-related terms were chosen based on their relevance to both clinical applications and consumer terminology used on social media platforms. Control terms were

selected as established traditional skincare treatments with comparable market presence to provide appropriate comparison baselines.

The University of Pennsylvania’s Institutional Review Board waived approval for this study, as it exclusively utilized deidentified, publicly available data from Google Trends. Statistical analyses included trend analysis using linear regression and Mann-Kendall tests, with structural breaks identified using Chow tests. All analyses were conducted using Python 3.13.0, with significance set at $p<0.05$. AI tools were used to assist in the generation of the visual representation of search trends over time.

Results

All red light therapy-related terms, except "low level laser therapy" ($p=0.297$), showed significant increases in search volume after February 2024 with the average search volume increasing from 27.8 to 60.5 searches per term (118% increase) compared to pre-viral baseline ($p<0.001$). **Figure 1** provides a visual representation of these trends, clearly showing the dramatic increase in search interest for red light therapy terms compared to control terms. **Table 1** presents the comprehensive statistical analysis results for key search terms.

Linear regression revealed significant positive trends for red light therapy terms (slopes: 0.082-0.148, all $p<0.001$), while control terms showed either no significant trends or slight declines. Mann-Kendall tests confirmed strong upward trends for therapy-related terms (Tau: 0.384-0.684, all $p<0.001$). Structural breaks were identified in early 2024 (all $p<0.001$), coinciding with TikTok exposure (**Figure 1**).

Table 1. Analysis of Red Light Therapy Search Terms from November 2019 to November 2024

Search Term	Linear Regression Slope	R ²	Mann-Kendall Tau	Structural Break (P-value)
“Red Light Masks”	0.082	0.447	0.384	<0.001

"Light Therapy"	0.089	0.623	0.584	<0.001
"Red Therapy"	0.148	0.721	0.684	<0.001
"Skin Care"	-0.012	0.031	-0.112	N/A
"Exfoliation"	-0.019	0.042	-0.138	N/A
"Chemical Peel"	-0.008	0.009	-0.067	N/A

Discussion

Our findings demonstrate a significant shift in public interest toward red light therapy, particularly following its viral popularity on TikTok in early 2024; by February 2024, "Red LED light therapy" amassed over 70 million views on the app [1]. This rapid surge in interest presents both opportunities and challenges for dermatology practitioners and the broader medical community. The rapid adoption of consumer-grade devices, often lacking standardization and supported by inconsistent treatment protocols, raises immediate concerns about patient safety and the need for professional oversight.

The observed slight decline in search interest for traditional skincare treatments like chemical peels (average search volume decreasing from 25.8 to 25.5, -1.2% change, $p=0.089$) occurs despite the chemical peel market's projected growth, suggesting a potential shift in consumer interest toward emerging technologies rather than an absolute decline in established treatments.

Although current research supports red light therapy for targeted conditions such as wound healing, inflammatory acne, and photoaging, social media claims often amplify its benefits beyond what evidence supports [6-10]. This disparity between public enthusiasm and scientific evidence underscores the urgent need for additional randomized controlled trials, particularly studies focusing on the efficacy and safety of consumer devices.

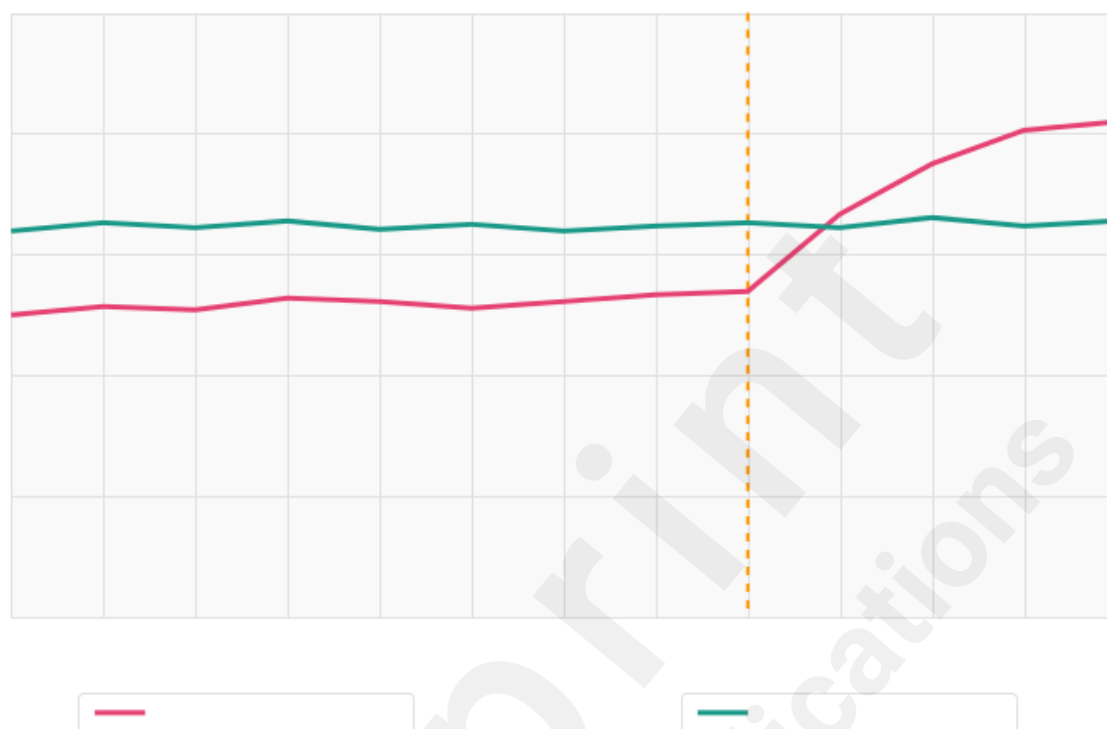
Healthcare providers face the challenge of addressing patients' growing interest in red light therapy while maintaining high standards of clinical care. This requires developing structured approaches to patient education that can effectively address common misconceptions, provide evidence-based

treatment guidelines, and help patients evaluate marketing claims seen in popular media.

The phenomenon has broader implications for public health and skincare trends. There is a pressing need for improved regulation of consumer devices, development of standardized safety guidelines, and enhanced adverse event reporting systems. Public health communication strategies must evolve to address viral trends more effectively, particularly when they involve medical devices or treatments. The rapid dissemination of medical information through social media platforms presents both opportunities and challenges for healthcare providers, highlighting the need for more agile and responsive professional education and communication strategies.

Study limitations include the inherent differences in primary applications between red light therapy keywords (which encompass both dermatological and broader applications) and control keywords (which are primarily dermatological). This discrepancy is acknowledged as a methodological limitation, though the analysis focused specifically on consumer interest patterns rather than clinical equivalence between treatments. Other limitations include the inability of Google Trends data to perfectly reflect actual treatment usage or capture detailed demographic data. Future research would benefit from incorporating sales data, adverse event reports, and clinical outcomes for a more comprehensive understanding of this phenomenon.

These findings have significant implications for the future of dermatological practice and patient care. As social media continues to influence healthcare trends, medical professionals must adapt their approaches to patient education and treatment while maintaining evidence-based practices. This may require new frameworks for evaluating and responding to viral healthcare trends, as well as improved methods for communicating scientific evidence to patients influenced by social media. The rapid rise in interest in red light therapy serves as a case study in how social media can quickly transform patient interest and treatment expectations, requiring the medical community to respond with both agility and scientific rigor.

Figure 1.

Fig

ure Legends

Figure 1. Google Trends Search Interest for Red Light Therapy versus Traditional Skincare Terms (2023-2024) illustrating the substantial increase in search interest for red light therapy terms compared to traditional skincare terms following viral TikTok exposure in February 2024. Red Light Therapy Terms: "Red Light Masks," "Light Therapy," "Red Therapy." Control Terms: "Skin Care," "Exfoliation," "Chemical Peel."

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Supplementary Files

Figures

Google Trends Search Interest for Red Light Therapy versus Traditional Skincare Terms (2023-2024) illustrating the substantial increase in search interest for red light therapy terms compared to traditional skincare terms following viral TikTok exposure in February 2024. Red Light Therapy Terms: “Red Light Masks,” “Light Therapy,” “Red Therapy.” Control Terms: “Skin Care,” “Exfoliation,” “Chemical Peel.”.

