



SBD
Sociedade Brasileira de
Cirurgia Dermatológica



Surgical & Cosmetic Dermatology

www.surgicalcosmetic.org.br/

Seasonal and daylight saving time fluctuations in Google searches for scalp seborrheic dermatitis

Flutuações sazonais e do horário de verão nas pesquisas do Google para dermatite seborreica do couro cabeludo

DOI: <http://www.dx.doi.org/10.5935/scd1984-8773.2021130044>

ABSTRACT

Scalp seborrheic dermatitis, or dandruff, is thought to worsen during the winter when there is later sunrise and less daylight. This study investigates trends in search engine interest for the term "dandruff" as they relate to changes in daylight, sunrise, and seasonality. We investigated the search interest in several countries of varying latitudes over a five-year period, and we explore the effect of daylight saving time on disease interest within two cities in the United States. We discuss our findings in the context of hormonal changes and skincare/behavior.

Keywords: Hair; Dandruff; Dermatitis; Hair diseases; Light; Sunlight

RESUMO

Acredita-se que a dermatite seborreica do couro cabeludo, ou caspa, piore em gravidade durante o inverno, quando ocorre o nascer do sol tardio e menos luz do dia. Neste estudo, investigamos as tendências no interesse do mecanismo de pesquisa pelo termo "caspa", visto que se relacionam com as mudanças na luz do dia, nascer do sol e sazonalidade. Analisamos o interesse de pesquisa em vários países de latitudes variáveis em um período de cinco anos e exploramos o efeito do horário de verão sobre o interesse por doenças em duas cidades dos Estados Unidos. Discutimos nossas descobertas no contexto de mudanças hormonais e cuidados com a pele/comportamento.

Palavras-chave: Cabelo; Caspa; Dermatite; Doenças do cabelo; Luz; Luz solar

Letter

Authors:

Gregory Cavanagh¹
Casey Abrahams¹
Andy Goren²
Carlos Gustavo Wambier¹

- ¹ Department of Dermatology, The Warren Alpert Medical School of Brown University, Providence (RI), United States
² Applied Biology, Inc., Irvine (CA), United States

Correspondence:

Carlos Gustavo Wambier
Email: carlos_wambier@brown.edu / Alternative E-mail: gregory_cavanagh@brown.edu

Financial support: None
Conflict of interest: None

Submitted on: 09/05/2021
Approved on: 04/06/2021

How to cite this article:

Cavanagh G, Abrahams C, Goren A, Wambier CG. Seasonal and daylight savings time fluctuations of Google searches for scalp seborrheic dermatitis. *Surg Cosmet Dermatol.* 2021;13:20210044.



INTRODUCTION

Contributing factors to scalp seborrheic dermatitis (dandruff) development are increased sebum, by-products of microorganisms like *Malassezia yeasts*, and allergic sensitivity. Dandruff is thought to worsen in severity during the winter,¹ when there is later sunrise and less sunlight. We aimed to evaluate potential seasonal fluctuations of search engine interest for “dandruff” and the possible correlation with daylight, sunrise, and DST shifts.

METHODS

We assessed the frequency of search-engine queries for scalp seborrheic dermatitis over five years (2015-2019) to investigate a possible relationship between sunlight and search interest in the United States, Brazil, South Africa, and Colombia. The United States experiences more intense sunlight in June, July, and August; while South Africa and Brazil experience more intense sunlight in December, January, and February. In Colombia, the sunlight intensity is distributed more evenly throughout the year. We selected English-speaking (United States, South Africa) and non-English-speaking countries (Colombia and Brazil). Lay terminology matching the condition and language of each country was used. Google Trends² was used to determine the search frequencies (SF) each week relative to the maximum weekly searches each year. Average monthly frequency was taken over

five years, and it was used to plot the average relative search interest in a year cycle (Figure 1). To investigate the specific effects of sunrise in the United States, we compared search trends for New York City (NYC, observes DST) and Phoenix (ST) for the year of 2018 (the most recent year without the effect of COVID-19 pandemic) (Figure 2). In the United States, searches for dandruff were estimated to be one hundred thousand to one million per month.

RESULTS

When evaluating interest as compared to daylight, it spiked in the late winter (low sunlight) of both northern (United States) and southern (Brazil, South Africa) locations (Figure 1). Dandruff interest occurred throughout the year along the equator (Colombia), with a reduced interest in the two Equinoxes (March and September). In the context of sunrise time, searches increased in the winter when sunrise was later in both NYC and Phoenix. However, searches decreased in March in NYC but peaked again in April, after “springing forward” (unexpected increase). In contrast, the peak followed a typical reduction as the winter faded in Phoenix, without a spring peak. The peaks of interest followed the sunrise time pattern (Figure 2), suggesting that luminosity in the morning might be protective for dandruff.

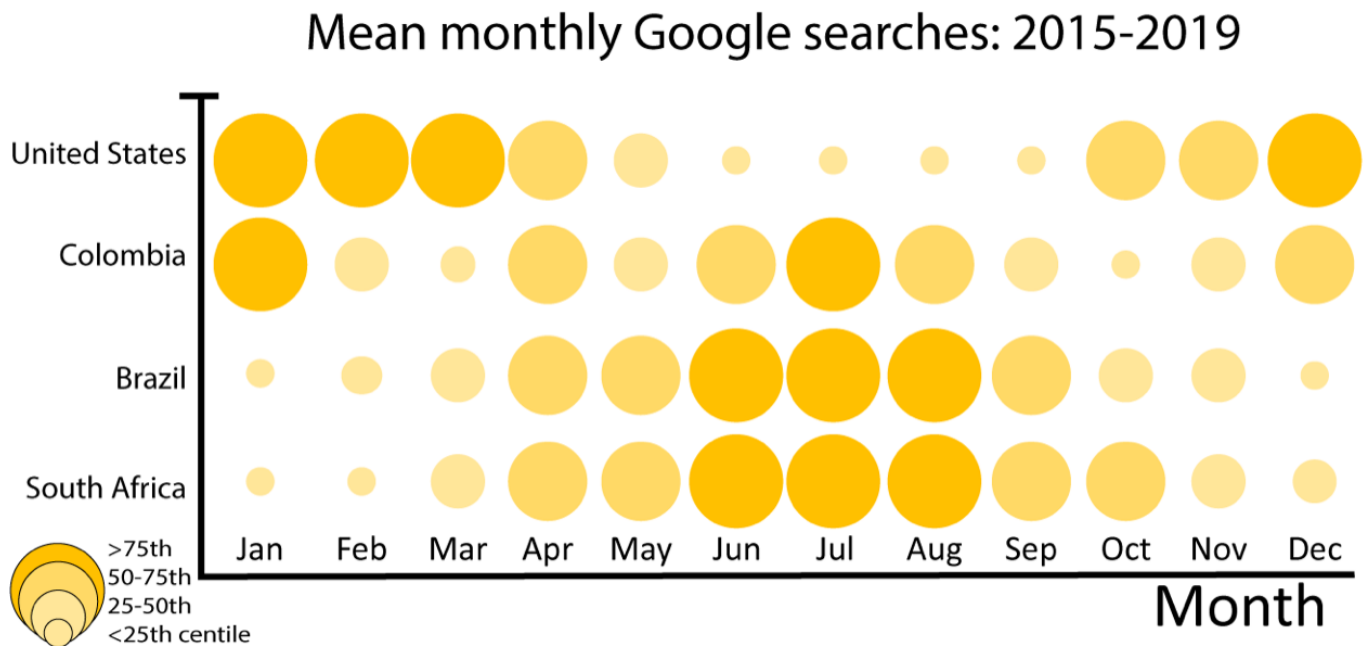


FIGURE 1: Average monthly Google search frequency (2015-2019) of terms related to scalp seborrheic dermatitis in the United States (dandruff), Brazil (caspa), Colombia (caspa), and South Africa (dandruff) over a representative one-year period. Circles are sized in quartiles to show monthly frequency relative to maximum interest.

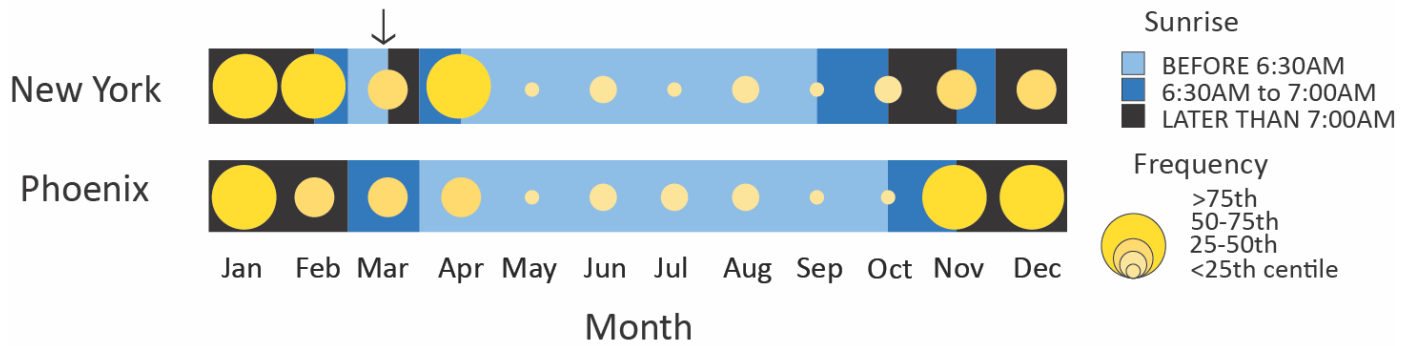


FIGURE 2: Average monthly Google search frequency of "dandruff" in New York City, NY, USA and Phoenix, AZ, USA in 2018. Background coloring represents sunrise time (two-week periods). Daylight saving time changes for New York City occurred on March 11 and November 4. Monthly search frequencies are depicted and sized in quartiles to show monthly frequency relative to maximum interest. Increased interest in dandruff is observed during later sunrise. Increased interest occurs in New York City in April, following the March 11 "spring forward" arrow.

DISCUSSION AND CONCLUSION

During daylight saving, "springing forward" simulates winter mornings, and the interest in dandruff returns to the winter trends. Natural morning light occurs earlier in the summer and later in the winter, which may influence hormone/androgen levels³ and contribute to the seasonal variations in dandruff, as increased sebum production can occur via increased androgen levels.

This research has several limitations. Our study measured interest (Google searches), not necessarily disease. Other

factors could also explain these findings, such as reduced hair washing, increased wintertime interest, or increased media advertising during particular seasons. We could not evaluate hair washing behavior or advertisement trends. Nevertheless, we observe a trend with sunrise/daylight and dandruff search interest. This study suggests that further research should be conducted to assess the correlation between sunlight, sunrise, and dandruff. It could open avenues for the development of sunlight-based therapies for dandruff. ●

REFERENCES:

1. Ranganathan S, Mukhopadhyay T. Dandruff: the most commercially exploited skin disease. *Indian J Dermatol.* 2010;55(2):130-4.
2. Google. Google Trends. 2020. Available from: <https://trends.google.com/trends/?geo=US>.
3. Moskovic DJ, Eisenberg ML, Lipshultz LI. Seasonal fluctuations in testosterone-estrogen ratio in men from the Southwest United States. *J Androl.* 2012;33(6):1298-304.

AUTHORS' CONTRIBUTION:

Gregory Cavanagh ORCID 0000-0002-8787-0599

Approval of the final version of the manuscript; study design and planning; data collection, analysis and interpretation; preparation and writing of the manuscript.

Casey Abrahams ORCID 0000-0001-6329-7209

Approval of the final version of the manuscript; study design and planning; data collection, analysis and interpretation; preparation and writing of the manuscript.

Andy Goren ORCID 0000-0002-8190-2289

Approval of the final version of the manuscript; study design and planning; data collection, analysis and interpretation; preparation and writing of the manuscript.

Carlos Gustavo Wambier ORCID 0000-0002-4636-4489

Approval of the final version of the manuscript; study design and planning; data collection, analysis and interpretation; preparation and writing of the manuscript.