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Changes in Google search for “sunburn” during the COVID-19 pandemic

To the editor,

Changes in the incidence of sunburn and ultraviolet (UV) damage during the COVID-19 pandemic are not well described; however, sunburn prevention remains important for the general public as UV exposure exacerbates a variety of dermatologic conditions, most importantly cutaneous cancers.¹ Google (Mountain View, California, USA) searches have been used to uncover patient interest in dermatologic conditions, including in the COVID-19 era.^{2,3} Google search for the term “sunburn” has been suggested as a proxy for sunburn incidence due to its seasonality and geographic patterns consistent with peak UV indices.⁴ Given the potential health consequences of sunburn, monitoring public interest in sunburn during the COVID-19 pandemic is helpful to anticipate how dermatologists predict and meet new patient care needs.

We used Google Trends to analyze Google searches for “sunburn” in the United States (USA) during the peak months of the American COVID-19 pandemic (March-September 2020) compared with the same period in previous years. Primary measurement was average daily search volume index for “sunburn.” Google Trends uses a scale of 0-100 to compare relative search term popularity, with low search volumes appearing as 0.

Results in Table 1 show that although overall search volume during March 12-September 10 was slightly higher in 2020 compared with the same period in 2016-2019, this difference did not reach a statistically significant difference ($P > .05$). However, results of the periods of stay-at-home orders (March 12-April 30) and the general easing of stay-at-home orders (May 1-September 10) show a significantly lower search for “sunburn” during March 12-April 30 in 2020 compared with the prior 4 years (<0.001 for all years). In contrast, during the period of May-September, search volume was statistically significantly higher in 2020 compared to the months of May-September in the previous 4 years.

Google searches for “sunburn” during the COVID-19 pandemic suggest that the events of the COVID-19 pandemic may have influenced interest in sunburn, and may have caused an increased incidence of sunburn in the United States. Significantly decreased searches of sunburn during March-April 2020 aligned with most states' COVID-19 stay-at-home orders, and coincided with travel

restrictions and outdoor public space closures. Contrastingly, significantly increased search for “sunburn” during May-September 2020, corresponding to a period of easing stay-at-home orders, might reflect “quarantine fatigue” experienced by many individuals seeking activities outside the home that also permit social distancing. The timing of the American COVID-19 outbreak itself may have increased sunburn risk as well, as UV acclimatization typically occurs in the spring, when Google searches for “sunburn” were unusually low.

The COVID-19 pandemic and its residual effects continue to reveal potential risks and challenges for dermatologic patients worldwide. Higher search volumes of “sunburn” amid COVID-19 may not be isolated to only the United States, as many countries instituted stay-at-home orders and social distancing measures. Given our study findings, skin cancer and sunburn prevention agencies may want to increase messaging about UV protection during future easing of lockdowns in anticipation of the general public's potential increased sun exposure. These agencies may consider harnessing Google Trends or similar search technologies to further understand public interest in different UV protection methods to make public education about sunburn prevention more contemporary. For example, mineral and tinted sunscreens have outpaced interest in chemical-based sunscreens according to Google Trends, which may prompt an increase in public messaging about UV protection featuring these products.⁵

It should be stressed that Google search volume for “sunburn” may not accurately reflect the actual incidence of sunburn. However, the results of this study indicate that in the COVID-19 era, there is a concern for sunburn among Google users, signifying that continued photoprotection education needs to be emphasized.

CONFLICT OF INTEREST

None declared.

DATA AVAILABILITY STATEMENT

Data availability can be accessed through trends.google.com. Details of data analysis supporting the findings of this study are available from the corresponding author upon reasonable request.

TABLE 1 Summary of Google search index of “sunburn” from dates of March 12 to September 10 2016-2020

| | 2020 | | | 2019 | | | 2018 | | | 2017 | | | 2016 | | |
|-----------------------|------|------|---------|------|------|---------|------|------|---------|------|------|---------|------|------|---------|
| | Mean | Mean | P-value |
| March 12-September 10 | 37.8 | 36.2 | .5 | 33.9 | 33.9 | >.05 | 32.7 | 32.7 | >.05 | 34.1 | 34.1 | >.05 | 34.1 | 34.1 | >.05 |
| March 12-April 30 | 13.0 | 22.2 | <.001 | 16.7 | 16.7 | <.001 | 20.1 | 20.1 | <.001 | 19.0 | 19.0 | <.001 | 19.0 | 19.0 | <.001 |
| May 1-September 10 | 47.1 | 41.5 | .038 | 41.5 | 41.5 | .044 | 41.1 | 41.1 | .001 | 41.2 | 41.2 | .006 | 41.2 | 41.2 | .006 |

Note: Average Google Trends daily search volume for the term “sunburn” in the United States, from March 12 to April 30 and May 1 to September 10, during years 2016-2020. No significant differences were detected for dates in total from March 12 to September 10. Significantly lower search volumes were observed in 2020 from March 12 to April 30, and significantly higher search volumes were observed from May 1 to September 10. All significance calculations utilized a two-sided Student's t test.

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