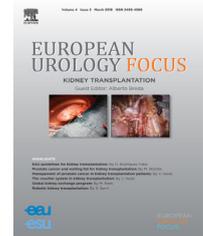


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Editorial

Asking “Dr. Google” for a Second Opinion: The Devil Is in the Details

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“Hey, let me Google it!” How familiar is this statement to you? The rapid explosion of digital health care data has resulted in more people searching on the “Internet” for topics related to health care, making it a key source for fast and comprehensive information gathering. Scientific contents tailored for lay people can broadly be disseminated using wikis, social networks, and web pages in an effective and affordable approach that overcomes knowledge barriers. It has been estimated that in 2019, there were more than 4 billion Internet users; Google is the most widely used search engine globally, with 78% of the market share, and processes almost 68 000 search queries every second, which translate to more than 5.8 billion searches per day worldwide (www.internetworldstats.com/stats.htm). Prostate cancer (PCa) is the most common tumor among males in the USA. The keyword “prostate cancer” is typed on average 368 000 times every month, and >134 000 000 000 results are available. Considering how easy Internet access is, it is natural to wonder whether people use this tool and what information they look for. As physicians, we must safeguard patient knowledge to guarantee accurate, comprehensive, evidence-based information about medical conditions and treatments to prevent patients from believing in “fake news”. A better understanding of how people search the Internet for information on PCa treatment is needed, since patients are prepared to bypass their nearest centers to undergo surgery at more distant hospitals that better meet their needs [1].

Google Trends (GT) is a free, easily accessible tool that allows the analysis of worldwide “big data” on the relative

popularity of a given search term over a specific period. Its utility has been tested in the medical field, and a few reports on urology topics are available.

Recently, Rezaee et al [2] queried GT to investigate online interest in PCa screening, diagnosis, and treatment. The authors observed that over a period between January 2004 and January 2019, the online interest in “prostatectomy” and “prostate cancer surgery” increased overall, while searches for “active surveillance” (AS) remained stable. The authors should be commended for the study. However, their findings need to be interpreted with caution. Indeed, their results contrast with current trends for PCa management [3]. Although there is no consensus on the best methodology for GT analysis [4], the unexpected conclusions provided by Rezaee et al [2] might be related to an unfitted statistical method used, such as polynomial regression. This methodology might be less sensitive in analyzing trends than other statistical methods (eg, join-point regression) since it does not allow evaluation of the annual percentage change within a specific time frame (ie, January 2004–January 2019). Instead, it assesses changes from the beginning to the end of the specific time frame, providing a cumulative “fake” trend that describes only the correlation between two variables. It is of note that even though the chart showed a decreasing trend for “prostatectomy for prostate cancer” (starting from a relative search volume of 75 in 2004 to 60 in 2019), the authors reported that interest increased over time [2]. Furthermore, the reproducibility of the search terms used is poor. For example, when we tested the keyword “active

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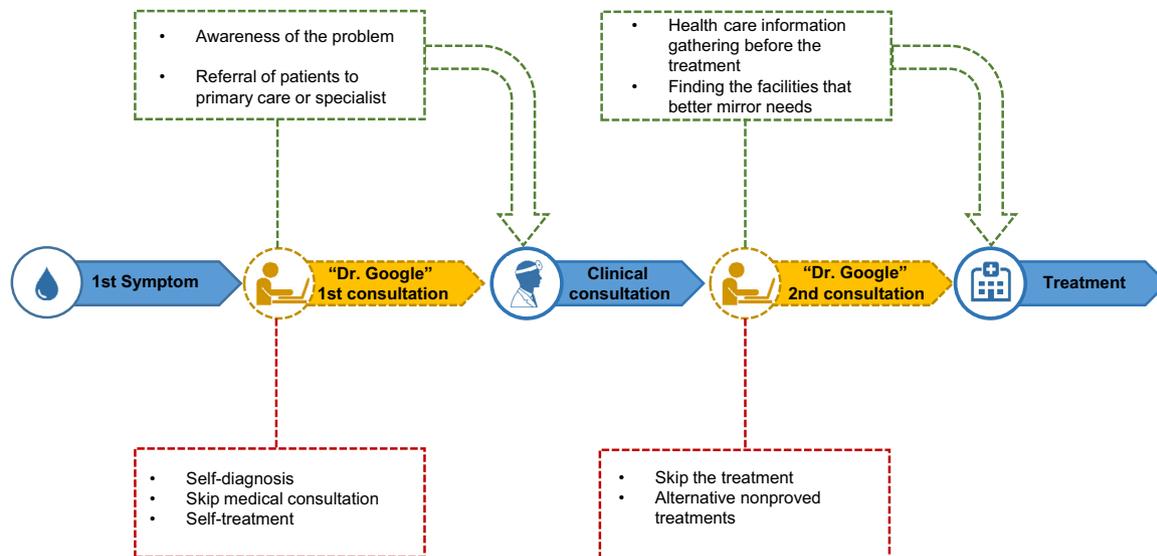


Fig. 1 – Pathway explaining how the web-engine search might be advantageous (green) or harmful (red) for the patient-doctor decision-making in health care.

surveillance for prostate cancer” as reported by the authors, the trend output was dissimilar from the one shown in the study. The same was noted for the other keywords used.

Our group presented for the first time at the 2019 American Urological Association congress and recently published [5] a GT analysis to determine worldwide public interest in PCa treatments, their penetrance and variation, and how they compare over time.

We used a join-point regression model to describe trends that are not constant over time. This methodology allows calculation of statistically significant changes (join points) in trends to delineate “increasing,” “decreasing,” or stable trends [6]. Moreover, in contrast to Rezaee et al [2], to guarantee the reproducibility of our methods, we created a website (<https://mistrends.wixsite.com/pcatrends>) where readers can check trends in a real-time fashion. Our analysis showed that overall searches for “prostatectomy” for PCa have decreased by nearly two-thirds since January 2004. Conversely, we found that interest in “active surveillance for prostate cancer” has increased approximately threefold since January 2004. The keywords were tested in both “USA-only” and “worldwide” analyses.

How can these findings translate in the real world of daily practice? Optimization of AS protocols is essential to increase adherence and avoid overtreatment [7]. Many centers have reported dramatic changes, with upsurges in AS for early cancers and local treatment of advanced disease. Urologists are embracing AS [8], and its safety and efficacy for selected patients have been reported [9]. The CAPSURE study demonstrated an increase in the use of AS for patients with low-risk PCa, from 6.7% during 1990–2009 to 40.4% in the period between 2010 and 2013 [3]. Our findings [5] mirror the trends in

management options for PCa, mostly confirming results for current national trends [3]. Nearly one-third of patients carry out a health-related search online to find information on medical issues [10].

The real-life scenario is based on the assumption that patients or relatives perform searches before and after clinical consultation, to obtain more information and make their own decision on the therapeutic indication.

GT is not a perfect tool because of underlying limitations, and appropriate examination is required to avoid misleading interpretations (Fig. 1). We have to deal with “Dr. Google” every day; proper communication with our patients is the key. The Internet can complement our daily practice, helping us comprehend the degree of knowledge that our patients have and make the difference in well-informed decision-making.

Conflicts of interest: The authors have nothing to disclose.

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