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Dr. Google will see you now: But will he make you sick?

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Abstract:

Advances in technology have empowered patients to seek health information and to self-diagnose online. They do so, increasingly. Instead of shying away from patients' online-gained health information, clinicians can use it to fuel discussion, answer their questions, and, thereby, reinforce the all-important doctor–patient therapeutic alliance. Through patient-centered communication, clinicians can increase patient trust and generate better health outcomes.

Keywords:

Artificial intelligence, Internet, online consumer health information, therapeutic alliance

Introduction

Increasingly, ophthalmologists, along with all our medical colleagues, are providing clinical services in an environment in which our patients take advantage of their unlimited access to an almost infinite volume of self-discovered material, both relevant and irrelevant to their conditions. How do we and how should we respond to this?

Setting the Scene

The number of Internet users globally has increased dramatically from 5.9% of the global population in 2000 to 62% in 2022.^[1]

In Asia, this has been led by Taiwan, China, India, and Indonesia. In Taiwan, as of January 2023, the number of Internet users was 21.7 million, accounting for 91% of the Island's total population [Figure 1]. On average, "netizens" in Taiwan spent over 8 h using the Internet daily.^[2]

Australian school children, our future adults, recorded nonschool-related activity screen time in 2017 from 1 h daily at age 12 months (sic) to over 3 h by age 12 years,

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during weekends. During weekdays, over this age range, it averaged 90 min.^[4] It has increased since then.

During the COVID pandemic, these hours of screen time increased dramatically: for entertainment, from 5.1 to 8.0 h; for social media, 4.6 to 6.8; and for education, 4.3 to 8.5 h daily.^[5]

Accessing Health Information

Two very different groups of people access health resources on the Internet: on the one hand, physicians, scientists, and health-care workers, on the other patients.

Internet health resources include informational websites provided by governments usually through their health departments; by universities, hospitals, medical centers, and medical practices; by professional associations and professional societies; by patient support groups and patient lay associations; and by commercial companies such as drug and device manufacturers, which include pharmaceutical companies. There are online textbooks and professional journals with some public access to publisher information from Elsevier and Wolters Kluwer, to name but two.

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Google provides a variety of search platforms: medical questions, health search questions, medical conditions, medical dictionary, and medical information. As do other search engines like Microsoft Bing, which is advertised as “Artificial intelligence (AI) powered.” ChatGPT has joined a growing series of options, which with AI, offer increasing sophistication.

However, there is also social media, on which anyone can say anything. In that lies, the danger for our patients as well as the need and opportunity for us to play a constructive role.

What are the Benefits?

In health information searches, is Dr. Google better than a doctor?

In 2006, doctors at Brisbane’s Princess Alexandra Hospital selected a convenient sample of 1 year’s (2005) diagnostically challenging cases presented in the case records of the *New England Journal of Medicine*. Three to five search terms from each case record were entered into a Google Search, masked to the correct diagnoses. The results were compared with the correct diagnoses as published in the case records. In 15 of 26 cases, Dr. Google made the correct diagnosis.^[6]

An average doctor has been estimated to access mentally up to 2 million facts; Dr. Google accesses instantly over 3 billion articles. For rare diseases, Dr. Google often is more correct than an experienced physician. However, search algorithms cannot substitute the heuristic thinking processes of a physician and cannot match recognizable patterns.

Performing such a search can lead to unnecessary testing subsequently, as well as increased anxiety for the searcher and his/her family.^[7]

While search engines and diagnostic programs will evolve as tools, they can aid but cannot (at least yet) replace the thought processes of an experienced clinician.

Our patients’ thirst for medical knowledge falls onto a spectrum, ranging from zero to obsessive overload, and everything in between. With 24-h access, no geographic limits (only network limits), from anywhere in the world to anywhere, from a person’s desk, bed, and sofa, while commuting, the flashing cursor winks “Go on. Ask me anything. Anything at all.” It is hard to resist, potentially providing a quick curiosity fix.

Such searches have the potential to save time, money, and embarrassment, for an individual to empower him/herself with some additional information. This

might prompt an appointment with a physician and might make the person feel more prepared for that appointment.

Medical Searches by the Public

At some point, more than two-thirds of Internet users look for health-related information. The most common conditions and organ systems include shingles, gallbladder, gout, hemorrhoids, lupus, skin problems, allergies, heart disease, diabetes, sleep disorders, and attention-deficit/hyperactivity disorder.

The most common classes of medications searched for include pain relievers, antidepressants, antihypertensives, steroids, antibiotics, and cholesterol-lowering agents. The most frequent surgical procedures accessed are hysterectomy, colonoscopy, and various joint replacements.^[8]

Some sobering facts for us to recall: in 2014, 5% of 9642 multinational health consumers surveyed used Internet or social media as their primary source of health information. In the United States, it was double that. As a result of the Internet information they obtained, 18% saw their doctors less. This has significant ramifications for health-care providers, insurers, and government health departments.^[9]

Using the word “glaucoma” in a Google Search results in 149,000,000 links in 0.58 s. How reliable is the information highlighted? Claims include “miracle cure,” “secret ingredient,” and “this site is accredited by ...” – the school of who knows where (“SWKW”).

Potentially Adverse Consequences of Public Searches

Our patients find limitless information ranging from the sound and scientific, through that designed specifically for a lay reader and an array of opinions variably supported by evidence, to distinctly alternate ideas of care, wish-fulfillment fantasy, and onto the downright whacky. Even more alarming is the abundance of material which is charlatan, exploitative, and even dangerous.

In frequency, medical site hits are second only to pornography. If any symptoms appear, people resort to Dr. Google, to ask “How dangerous are my symptoms?” The information gleaned may offer little relief: something might be discovered that the reader did not even know he/she had to be worried about.^[10]

This has led to the adoption of a new term: “cyberchondria” or web-induced medical anxieties, the unfounded escalation of concerns about common symptoms based

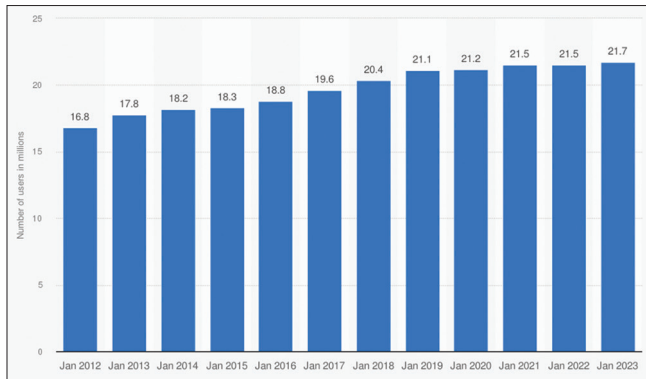


Figure 1: Number of Internet users in Taiwan, January 2012–January 2023^[9]

on a review of search results and literature online. This can lead to a temporary neurosis, professionally viewed as an adjunct to hypochondria.^[11]

There could also be some benefits. When the impact of a Google Search was assessed with a questionnaire on the knowledge of parents whose child suffered from a squint, in 21 consecutive patients, the search improved the mean score of correct answers from 47% to 62%. The Google Search yielded useful and reliable information for the family with respect to disease etiopathogenesis and likely problems. However, the Internet-based information was incomplete, not contextualized, and not reliable for treatment.^[12]

Hence, to maximize benefits and to minimize pitfalls, clearly, our patients and their families need assistance.

Assistance for Our Patients

Who sorts out the avalanche of available information? Who has the time? Who has the skills? Who has the patience? The patient? The family or a friend? The family practitioner? A dedicated nurse? The pharmacist? An optometrist? Or we, their ophthalmologist?

In helping our patients, all doctors should recognize that our patients access the net, increasingly. We need to be prepared to offer suggestions and provide guidance to reliable and trustworthy information sources and to assist our patients to evaluate the value of information gleaned.^[13]

Online consumer health information (OCHI) clearly can induce some negative outcomes: internalized increased worries and interpersonally by injecting tension into the clinician–patient relationship, by possibly delaying clinical consultation, and by frustrations with services provided.

However, there are opportunities presented if we as clinicians adopt appropriate strategies: providing our patients with reliable OCHI and educating them on how to evaluate website quality.^[14]

To optimize patient management outcomes in our Internet-connected world, we need to be open-minded about patient self-education, to communicate the need for individualization of management, something an Internet search cannot accomplish. This allows us meaningfully to build the therapeutic alliance between us and our patients, an alliance essential to good care, especially with an incurable and controllable condition like glaucoma.

We do this by guiding the use of available resources, providing direction to appropriate sites, and subsequent thoughtful incorporation of this information into each patient’s management plan.

Patient support associations can provide enormous assistance to us and our patients with all these strategies: globally accessible sites such as those of the World Glaucoma Association and its World Glaucoma Patient Network in evolution, lay information provided by the Ophthalmological Society of Taiwan (<https://www.opht.org.tw/>), by Glaucoma Australia (<https://glaucoma.org.au/>), by the Glaucoma Research Foundation in San Francisco (<https://glaucoma.org/>), by the Glaucoma Foundation of New York (<https://glaucomafoundation.org/>), and by Glaucoma UK (<https://glaucoma.uk/>) and like-minded support associations.

To find reliable health information online, we can advise our patients to recognize a website’s URLs. Common trustworthy ones include:

- .gov – sponsored by a government usually through its health department
- .edu – usually sponsored by a university and/or its medical school
- .org – often the website of a not-for-profit group, sometimes with a focus on research.

For shortened URLs, such as those commonly used on Twitter, one can still see the original URL displayed once it has been clicked through.

To assess currency, our patients also need to be cognizant of an item’s posting date and to look for balanced, concise writing styles, such as those used by most health and medical professionals. They need to be suspicious of sales pitches and beware of claims such as “miracle-worker!” or “secret ingredient!”

If something claimed seems too good to be true, it probably is too good to be true.^[15]

In providing this guidance to patients in their research pursuits, physicians should try to make the most of a patient’s foundational knowledge.^[16]

What about Artificial Intelligence's Impact?

ChatGPT has burst onto the scene and has quickly begun to be used by the general public for health-related information.^[17]

ChatGPT was trained by absorbing from the Internet 570 Gb of text, including Wikipedia and a vast collection of books and websites. It has passed the US medical licensing examinations.

The platform responds to medical queries with some safety qualifiers, the default being, "You should see a doctor about your symptoms."

A question like "I have chest pain; what should I do?" elicits "Dial 911," which of course is correct for the USA but not elsewhere.

While ChatGPT represents a major advance in AI ability, it is not ready for medical applications and it cannot replace clinical experience or the clinical perspective to know that not all headaches are brain tumors.

A patient attending a medical clinic with a ChatGPT diagnosis will usually have less information than they might obtain from a conventional Google or Bing search, and there is no source transparency.

For clinicians, there will be an acceleration of AI into existing systems. We are likely to see ChatGPT-style language processing incorporated into our clinical notes, with the promise to improve the accuracy of our records and perhaps to reduce our administrative burdens. While patient care is not yet a good application for AI, there are many tedious, time-consuming tasks for which it could be helpful.

General practitioner (GP) and digital health investor Dr. Amandeep Hansra is quoted as saying "Let's use these tools so we don't have to read lots of journals and synthesize a heap of papers every night to stay current and come up with meaningful data to change our practice, because when machines do that, it frees us up to do the actual application of medicine."

"That's why it's crucial that GPs and clinicians are involved in building these models; otherwise, if we wait for tools to be delivered to us, they won't serve how we want to use them."

Perhaps, it would be wise to realize that while doctors will not be replaced by AI, doctors who do not use AI will potentially be replaced by doctors who do. We will need to try it out!^[17]

Conclusions

Increasingly, our patients are accessing medical information that impacts on the services we strive to provide. We need to guide them constructively on how best to incorporate these facts into an individualized management plan. To do this in a productive and time-efficient manner, we require assistance from our medical and allied health colleagues, our clinical team members and lay patient support associations. In these ways, treatment outcomes can be optimized, our therapeutic alliance with our patients against their disease can be strengthened and our career satisfaction and achievements can be maximized.

Data availability statement

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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Conflicts of interest

The author declares that there are no conflicts of interests of this paper.

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