Reliability of "Google" for obtaining medical information

Mihir Kothari, Samita Moolani[1]

Internet is used by many patients to obtain relevant medical information. We assessed the impact of "Google" search on the knowledge of the parents whose ward suffered from squint. In 21 consecutive patients, the "Google" search improved the mean score of the correct answers from 47% to 62%. We found that "Google" search was useful and reliable source of information for the patients with regards to the disease etiopathogenesis and the problems caused by the disease. The internet-based information, however, was incomplete and not reliable with regards to the disease treatment.

Key words: Evaluation of Google, information on internet, medical information, patient counseling, patient information, web content

The World-Wide-Web or internet has become an important source of information including medical information globally. Many patients or their relatives, especially in an urban area have an easy access to the internet and routinely make use of it to obtain medical information. Various investigators have critically evaluated the websites and the patient-oriented medical information on internet in the past and found them scientifically inaccurate, incomplete and biased.[1-5] Nevertheless, patients as well as professionals around the world continue to rely on the internet for deriving important information regarding their health conditions and its management. Despite such a popular trend, there is no study that has evaluated the impact of the internet on the patient's knowledge so far.

In this study, we have found a few advantages and limitations of using internet for obtaining the medical information by the patient. The data presented in this study would would help the clinicians inform their patients on what to rely and how much to rely on the internet for their health needs.

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Department of Ocular Motility, Jyotirmay Eye Clinic and Ocular Motility Laboratory, Thane, [1]Department of Pediatric Ophthalmology and Adult Strabismus, Aditya Jyot Eye Hospital, Mumbai, Maharashtra, India

Correspondence to: Dr. Mihir Kothari, Jyotirmay Eye Clinic for Children and Adult Squint, Ocular Motility Lab and Pediatric Low Vision Center, 205 Ganatra Estate, Khopat, Thane West, Thane - 400 601, Maharashtra, India. E-mail: drmihirkothari@jyotirmay.com

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Methods

The study was performed between 31st March, 2012 and 30th Jun, 2012. The parents of children with a squint and amblyopia, having an access to internet at home and/or office and who would access the internet on daily basis were given a questionnaire [Table 1]. Only those parents who had not visited an ophthalmologist prior to this visit and who had not done an internet search relevant to the study were included. The parents were first informed that the child had a significant strabismus and required further evaluation three days later. The child was prescribed atropine eye ointment for 3 days for cycloplegic refraction as was the routine protocol of the clinic.

The parents were given a questionnaire and explained the purpose of this study. After an oral consent, the parents were recruited in the study.

Completely filled questionnaire was returned on the follow-up visit that was scheduled within a week. Each answer was scored (0 for no/wrong answer and +1 for the correct answer), and cumulative scores were analyzed. Paired *t*-test was performed to compare the total score before and after the Google Search. $P < 0.05$ was considered as statistically significant.

Sample size calculation

For 80% power, 5% level of significance, 3.0 standard deviation and 20% effect size we needed $n = (Z_{1-\alpha/2} - Z_{1-\beta})^2 S_d^2/d^2$ that is, 18 patients.[6]

Results

Twenty-one consecutive parents were recruited in the study. About 48% were graduates and 52% were postgraduates. About 52% respondents were mothers, rest 48% were fathers. Mean total score before Google Search was 3.8 out of a maximum

Table 1: Questionnaire used in the study

Reliability of internet based information (squint)		
Step 1: Please read each question carefully and tick the correct answer in column number 1 (before Google Search)		
Step 2: Perform a Google Search and collect the necessary information to answer the same questions		
Step 3: Tick the answers again in column number 2 with the new information that you gained from Google Search		
Step 4: Submit your form back to us at your next		
	Before Google Search	After Google Search
What is a squint?		
Squeezing of eyes		
Misalignment of eyes		
Blinking of eyes		
Rubbing of eyes		
Do not know		
What can cause a squint in a child?		
Far sightedness		
Poor vision in one eye		
Lack of co-ordination of eye muscles		
All of the above		
Don't know		
What defects can occur due to a squint?		
Vision loss		
Cosmetic problem		
Loss of three-dimensional vision		
All of the above		
Do not know		
Correction of squint may need		
Patching/eye drops		
Glasses		
Operation		
All of the above		
Do not know		
Squint operation is done to		
Get rid of glasses		
Improve vision		
Align both eyes		
Get rid of patching		
Do not know		
Timing of operation depends upon		
Age of patient		
Severity of the squint		
Constant/frequent squint		
All of the above		
None of the above		
What is the approximate success rate of the squint surgery?		
100%		
95%		
70%		
≤50%		
Do not know		
What is an ideal age of treatment for a patient with squint?		
6 months to 2 years of age		
Between 2 and 7 years of age		
After 7 years of age		
Earlier the better		
Do not know		
Contact No.:_____		
Education level: ≤12th grade/graduate/postgraduate/doctor (medical)		

8 (standard deviation 1.9, range 0–7). Mean total score after Google Search was 5 (±2.1, 1–8). This difference was statistically significant ($P = 0.003$).

Before Google Search, the lowest awareness about the squint was found to questions 3 and 7. About 76% parents were not aware of the potential defects that occur due to a squint or aware of the correct success rates of the squint surgeries [Fig. 1]. Highest positive impact of Google Search was seen on question 3 (47%) and 2 (39%). In 1 patient, negative impact of Google Search was seen on question 5 [Fig. 2].

Discussion

Google Search engine is frequently accessed by the patients coming to our clinics for obtaining relevant medical information. Many patients would have either visited multiple websites prior to meeting us or browse through them after we have informed them about the medical diagnosis. Despite multiple studies reporting the lack of accuracy and reliability of internet for obtaining the information,[1-5] we believe this trend of referring to internet will continue. The medical fraternity needs to provide unbiased and scientific guidelines to their patients on what to rely and what not to rely when using the internet.

In this study, we found that Google Search had a positive impact on the knowledge of the patients regarding the disease. However, the information was incomplete and many times biased with regards to the treatment protocols and outcomes. The study demonstrated that the internet was a reliable source of information for the etiopathogenesis and the defects due to the disease. That information remained unbiased, was obtained from the books and authentic research papers, and there were no commercial interests in that information. However, the information regarding the treatment was controversial and had a major commercial angle to it when the contents of the websites were evaluated by the co-author from the first 10 websites on "Google" search engine for the keywords "squint" using Table 2.

Conclusion

We encourage the patients to use internet to know more about their disease albeit with the knowledge that the information on the etiopathogenesis and the disease associated handicap would be reliable. The information about the treatment could be incomplete, frequently written by nonexperts and with the commercial objectives.

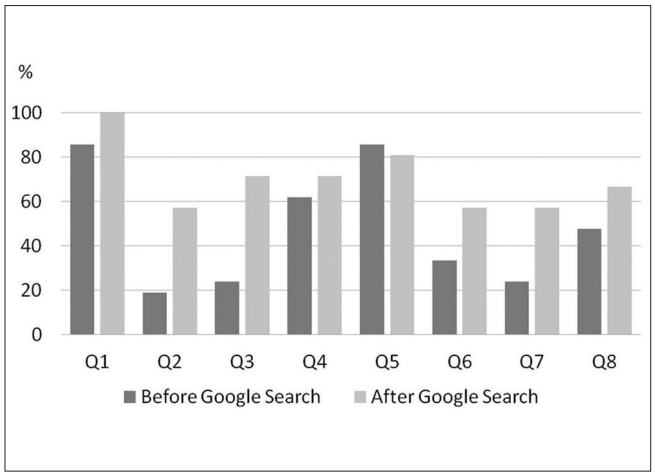

Figure 1: The number of correct responses to the questionnaire before and after "Google" search

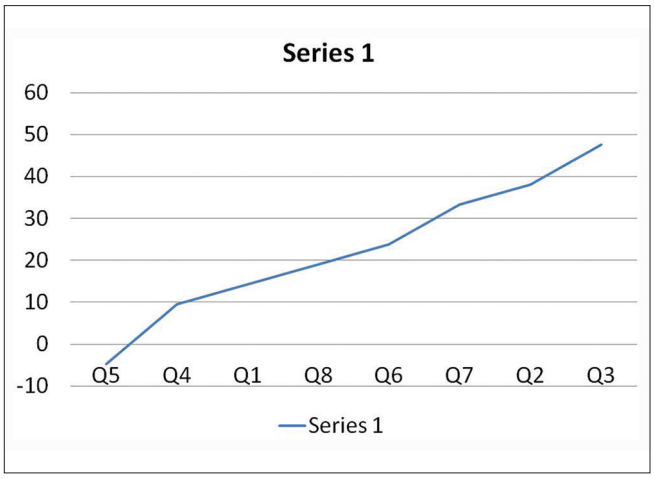

Figure 2: The percentage improvement in the correctness of the responses for each question

Table 2: The scoring system and the results of the evaluation of the top 10 of the "Google" search engine

Parameters assessed	The results (from the first 10 websites for the keyword "squint")
Authenticity	3 websites were unrelated, 1 was just a dictionary meaning, out of 6 others, 4 websites had the information written by the experts. One website did not have information about the author
Updation	Out of 6 relevant websites, 4 websites had the updated information (<6 months), 1 had 1-year old information and one didn't have any information regarding the update
Accuracy of data	This meant the correct answers for the questions mentioned in Table 1. It ranged from 50% to 88% (mean 67%)
References given	Only 1 website out of 6 had the references for their data
Comprehensiveness	The understandability of website was graded as 10th grade level for 2, 12th grade for 3 and one had the literature that could be understood only by highly educated/graduates only
Spurious information	The wrong/misleading information was found in 2 websites out of 6. Both the misleading information was about the treatment of the squint
Commercial interests	Half of the websites had direct commercial interest in its viewers
Completeness of the information	None of the websites provided answers to all the 8 questions mentioned in the questionnaire in Table 1

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