Search frequencies of some medical terms in internet: Google trends analysis

İnternette bazı tıbbi terimlerin aranma sıklığı: Google trends analizi

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Abstract
Background: Google is one of the most used search engines in internet. Its sub-service Google Trends analyze the search trends. We aimed to evaluate the web users' search trends of health information in this study.
Methods: The terms of "AIDS, diabetes, depression, pregnancy, and headache" were analyzed with Google Trends from January 2004 to January 2011.
Results: The most searched term was pregnancy. AIDS search has peaked on "World AIDS Day" every year, but has lost its impact for the following years.
Conclusions: Trend analysis may be useful for providing health information in internet.
Keywords: AIDS, internet, pregnancy, Google Trends

Özet
Amaç: Google, internette en sık kullanılan arama motorlarından biridir. Alt servisi Google trends arama eğilimlerini analiz etmektedir. Bu çalışmada web kullanıcılarının sağlık bilgisi için arama eğilimlerini değerlendirmeyi amaçladık.
Materyal ve metod: "AIDS, diyabet, depresyon, gebelik ve başağrısı" terimleri Google Trends ile Ocak 2004'den Ocak 2011'e kadar analiz edildi.
Bulgular: En fazla aranan terim gebelik idi. AIDS aramaları her yıl Dünya AIDS Günü'nde pik yapmakta fakat yıllar içerisinde etkinliğini kaybetmekteydi.
Sonuç: Trend analizi internette sağlık bilgisinin sunumunda kullanışlı olabilir.
Anahtar kelimeler: AIDS, internet, gebelik, Google Trends

Introduction

Internet search engines such as Google process billions of websites in a matter of milliseconds to produce a hierarchical arrangement of "hits" that match the search criteria . The internet is increasingly used as a source of health-care information . Eysenbach found that 4.5% of all search terms used in search engines were classified as health-related . Even some other medical purpose for Google use (i.e. as a diagnostic tool) was discussed in medical literature . Studies suggest that more than 95% of consumers use a search engine rather than going directly to a Web site when confronted with specific health-related questions .

Google Trends analyzes a portion of Google web searches to compute how many searches have been done for the terms entered, relative to the total number of searches done on Google over time (google.com). It can help improve forecasts of the current level of activity for a number of different economic time series, including automobile sales, home sales, retail sales, and travel behavior . It is used in health studies for tracking diseases and epidemiological research, as well . However, a general evaluation or medical terms has not been made. In this study we aimed to analyze some of the diseases by Google Trends to find out the search rating of specific terms.

Methods

Google Trends web site (http://www.google.com/trends) was visited on February 22, 2011. Permission from Google was obtained before. The terms of "AIDS, diabetes, depression, headache, and pregnancy" and their search frequencies were analyzed with Google Trends from January 2004 to January 2011 limited to U.S.A. The terms were selected by authors according to general public interest. Search

frequency graphics were obtained from the same web site. News reference volume regarding each search term is illustrated below the search frequency graphic.
The Google (http://www.google.com) main page was also visited on that day and search results for those terms were also noted. The numbers of the search results (hits) were used for as a raw indicator of being widespread of knowledge regarding that topic.

Results
The most searched term was pregnancy and the search trend remained relatively constant and high (figure 1). Diabetes and depression had similar search frequencies throughout seven years. Headache had the smallest search frequency. Although AIDS had similar search patterns with diabetes and depression it clearly peaked once a year. However, the search peaks on that day became smaller for the following years and disappear in 2009 and 2010.
Although the volume of the news peaked on World AIDS day, people searched less on the internet year by year. News about depression and diabetes begin to increase from the mid of 2008, but it does not seem to influence the search trends.

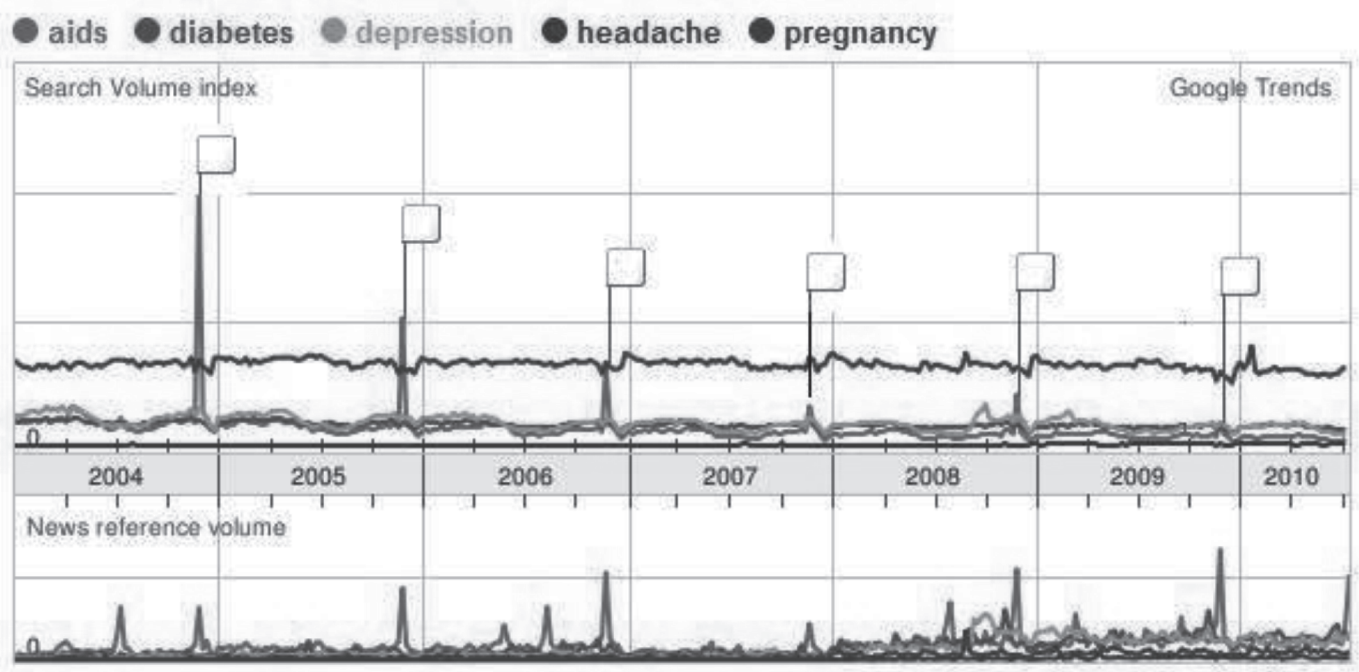

Figure-1: Search frequencies of the medical terms

Discussion
Our first finding is the relatively constant and high search frequency of pregnancy (figure-1). There are 60 million women and girls of childbearing age (15 to 44) and are approximately 6 million pregnancies every year throughout the United States . Wide access to internet may lead to higher search frequencies in pregnancy. Margareta studied internet search behavior of the Swedish speaking pregnant with a survey and found that 84 % percent of the participants used internet to retrieve information, most often in their early stages of their pregnancy . On the other hand, most of the participants (70%) did not discuss the information they had retrieved from the internet with their health professional in that study. The trustworthiness and reliability of the health information at the internet is always questionable .

Our next finding is the similar search trends of diabetes and depression (figure-1). Depression is one of the major causes of disease burden and produces great decrement in health compared to diabetes . The health news provided by the internet for depression and diabetes begin to increase in the recent three years but this does not appear to impact the search frequencies. Relatively low search frequencies of diabetes and depression may be related with the prevalence of those diseases.
Our last finding is peaks in AIDS search (figure-1). Remaining other days, the search frequency was relatively similar to those other words such as depression and diabetes. In one study, the researchers found that health-related Internet use was associated with HIV disease knowledge, active coping, information-seeking coping, and social support among persons who were using the Internet .

However, the peaks cannot be attributed to the HIV (+) individuals since this topic have gained wide public interest. “Disease specific days” may have important role for public awareness of that disease. In our study World AIDS day drew attention of public and Google search rates increased. However, as years passed AIDS is searched less in World AIDS Day. There may be several reasons for this: Since 1988, World AIDS Day is observed, but in 2004 it became an independent campaign . We do not have the data of before 2004 but it is clear that the campaign gained interest in internet world. Since 2009, the search frequency did not peak on that day. Gradual decrease might be related with campaign policies or people's normalization of the events.

There are some limitations regarding the study: The search terms may not actually reflect the information demand on that topic. The hits of the terms may not solely reflect being the widespread of information and quality of the information, but it does reflect a broad popularity of that topic.

To the best of our knowledge, this is the first Google Trends based study evaluating general medical terms. A better understanding of how individuals actually use the internet and how internet searches effects other help-seeking behavior is needed.

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