Cyberchondria: Prevalence of Internet based Self Diagnosis among Medical and Non-medical Urban Indian Population

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ABSTRACT

Introduction: Self-diagnosis usually starts with search engines like Google, Bing, or Yahoo, which can lead users to confusing unsubstantiated information and people with urgent symptoms may not be directed to emergency care. It can also create anxiety and a situation where there is questioning of the treating physician. In this paper we focus on understanding and evaluating how Internet based search results have affected people's health opinions and behaviour.

Material and methods: An online cross-sectional pilot study was conducted among 336 individuals. The statistical tools used to analyse the data was by using Microsoft Excel. Chi square test was used and p value <0.05 was taken as significant.

Results: A significant number of respondents have tried to self-diagnose a perceived illness with a greater average amongst the medical group and a significant value among people who believed their online diagnosis to be accurate.

Searching for health related advice online did make the participants feel more anxious with this trend being greater in the medical population and more polarised within them.

Conclusion: Cyberchondria, an adverse effect of the digital revolution, also has affected the medical system by interrupting the line of treatment, elevating anxiety levels of the participants, undermining the need for emergency care when necessary and most importantly, taking assistance of symptom checker sites in lieu of a physician's advice. In view of this, symptom checker sites should have more accountability by increasing the involvement of medical professionals.

Keywords: Cyberchondria, Self-Diagnosis, Symptom Checker, Internet Healthcare, Anxiety

INTRODUCTION

Among the general population, Internet based health information has the advantage of being cheap, easily available and anonymous in its source of access; besides it closes in on the barrier with health professionals allowing patients to not only understand common medical terms but also have a more active participation in their treatment.

This is particularly seen in urban areas where time and distance constrictions lead to working class from delaying or foregoing medical intervention.[1]

While there is a wealth of online resources, self-diagnosis usually starts with search engines like Google, Bing, or Yahoo.[2] These can lead users to confusing and sometimes unsubstantiated information, and people with urgent symptoms may not be directed to seek emergency care.[3,4,5,6]

Excessive reliance on this method of health care creates unnecessary uncertainty and anxiety causing a situation where the virtual advice could lead to the questioning of the treating physician.[7,8,9] Also, when people in a state of concern about their health rely on the Internet for reassurance there is no guarantee about the response and their perception of it since, web based results are not designed to offer reassurances to their users. Often the worst-case scenarios offered in order to be detailed are not accurate but this cannot always be kept in mind by the worried searcher.[10]

This is particularly pertinent with more sophisticated symptom checker programs. On examination, the correct diagnosis was listed first in 34% of standardized patient evaluations on these sites.[11] These are the software that patients rely on for potentially emergent care such as symptoms of chest pain.[2,3]

Hence, there is a need of examining this growing concern and by understanding who is more likely to use the Internet as a health information tool we can understand how the Internet is transforming medical care.[12]

Among health-related Internet behavior, "cyberchondria" is excessive or repeated health-related searches on the Internet that are distressing and anxiety-provoking and has been cited as an emerging risk of the negative consequences of technological advancement.[10]

In this paper we focus on understanding this insidious medical concern through examination of the knowledge, awareness and practices between two groups- medical and non-medical populations to evaluate how Internet based search results have affected their health opinions and behavior.

Current study was aimed at finding the prevalence of Internet based self-diagnosis among urban population, comparing the nature of this dependence between medical and non-medical individuals and evaluating how online self-diagnosis affects the response to the primary advice from a treating physician.

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MATERIAL AND METHODS

An online cross-sectional pilot study was conducted among 336 random urban students in Maharashtra, primarily classifying them as medical and non-medical individuals. The survey was anonymous. Ethical considerations were taken in accordance with the Declaration of Helsinki 2008. The duration of the study lasted three months. Both closed and open ended questions were asked. Also, symptoms of common diseases were found, and checked for proper diagnosis on WebMD. All data to the questions was entered into a spreadsheet and reviewed for accuracy before analysis. The statistical tools used to analyze the data were done by using Microsoft Excel software. Chi square test was used and p value <0.05 was taken as significant.

RESULTS

Out of 336 individuals who participated in the study, 195 (58%) were medical students while 141 (42%) were non-medicos. A significant number of respondents have tried to self-diagnose a perceived illness (70.8%, p<0.0001) with a greater average amongst the medical group than non-medical group (79.5% vs. 58.9%, p<0.0001) and a significant number of people believed their online diagnosis to be accurate (75.60%, p<0.0001). (figure 1)

While checking if participants used Internet based searches as a primary tool to diagnose and treat their illnesses an interesting trend was found. As compared to medicos, a greater reliance was seen in non-medicos on the internet as the primary tool of diagnosis (59.60% vs. 26.60%, p<0.0001). (figure 2)

With regards to how their cyberchondria affected the treatment they received from a health professional, a significant majority would still consider a second opinion from a physician (83.00%, p<0.0001) with a notable response seen in the medical group as opposed to non-medicals (86.60% v 78%, p<0.03). A unanimous majority felt that symptom checker sites do not provide a diagnosis equivalent to that of health professional (72.00% v 28.00%, p<0.0001). (figure 3)
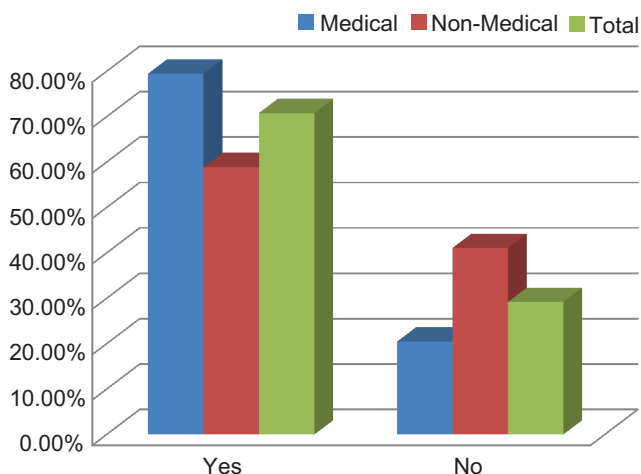
Response	Medical	Non-Medical	Total
Yes	65.60%	55.30%	61.30%
No	34.40%	44.70%	38.70%

Table-1: Has searching for health-related information online ever made you feel more anxious about a perceived medical condition?

Response	Medical	Non-Medical	Total
Internet (websites, apps)	68.20%	69.50%	68.80%
Newspaper articles, printed media, advertisements	20.50%	19.90%	20.20%
Family members	43.10%	46.80%	44.60%
Friends	20.00%	19.10%	19.60%
Others	7.10%	2.10%	5%

Table-2: Which of these resources are you most familiar with for a self-diagnosis?

Response	Medical	Non-Medical	Total
Headache	64.60%	69.50%	66.70%
Stomach pain	52.80%	46.80%	50.30%
Fever	53.80%	44.70%	52.40%
Body pain	42.10%	39.70%	41.10%
Cough and cold	55.40%	51.80%	53.90%
Fatigue	24.10%	27.70%	25.60%
Constipation/diarrhoea	37.40%	27.70%	33.30%
Genital issues	12.80%	10.60%	11.90%
Heart burn	15.40%	7.80%	12.20%
Other	3.10%	4.30%	3.60%
Headache	64.60%	69.50%	66.70%
Stomach pain	52.80%	46.80%	50.30%

Table-3: Common symptoms that you have tried to self-diagnose:

Response	Medical	Non-Medical	Total
WebMD	57.60%	37.60%	165 (49%)
Mayo clinic	30.10%	24.10%	94 (27.9%)
Family Doctor	27.00%	36.20%	104 (30.9%)
Isabel Healthcare	3.60%	9.90%	21 (6.2%)
NHS UK	7.70%	12.10%	32 (9.5%)
Everyday Health	13.30%	24.80%	61 (18.1%)
Health Direct	21.90%	27%	81 (24%)
Your Diagnosis	15.30%	13.50%	49 (14.5%)
Medicinenet	19.40%	9.90%	52 (15.4%)
Patient Info	9.20%	8.50%	30 (8.9%)
Other	6.10%	10.60%	27 (8%)

Table-4: Which of the following sites are you familiar with for providing diagnosis of symptoms?

Figure-1: Have you ever tried to diagnose yourself on a perceived medical symptom?

When it came to bringing their own research to a physician, most participants in both groups felt that they would (62.50%, p<0.0001) and this opinion was similar amongst the two groups (61.50% vs. 61.10%, p=0.9 not significant). In general searching for health related advice online did make the participants feel more anxious (61.30%, p<0.0001)
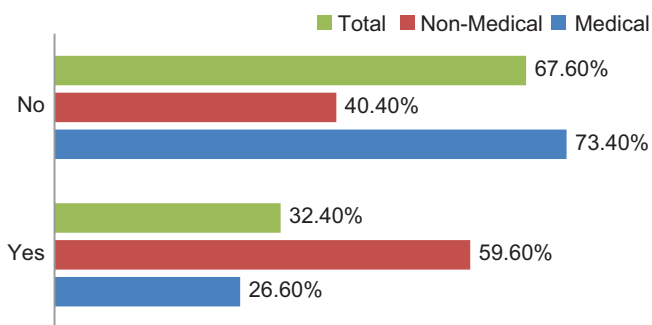
Figure-2: Do you rely on web searches as a primary tool to diagnose your symptoms/basic medical conditions?
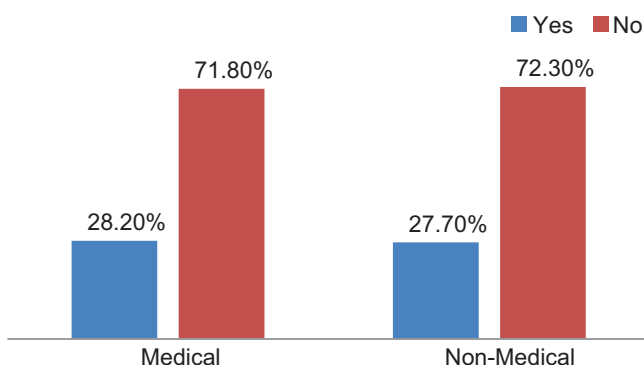

Figure-3: Do you feel symptom checker sites provide a diagnosis equivalent to that of a medical practitioner?
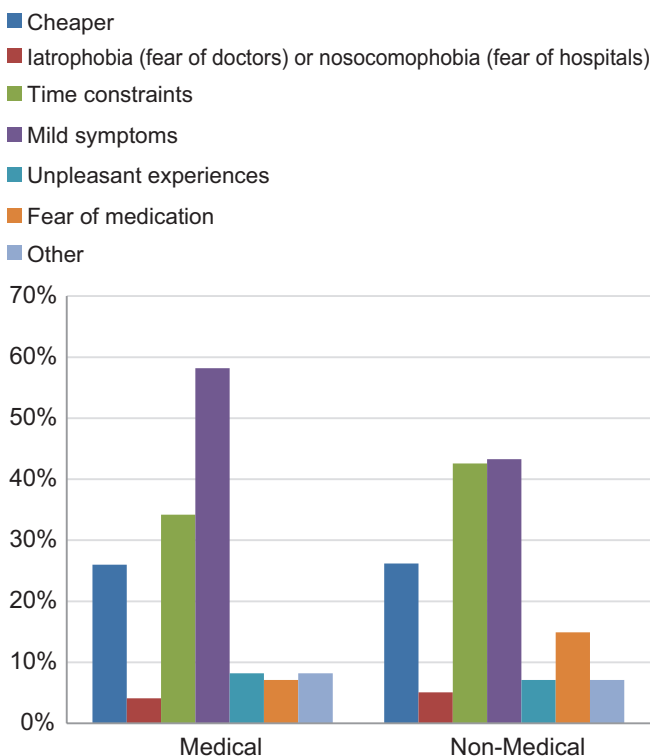

Figure-4: Why would you prefer relying on web searches for a self diagnosis over visiting a General Practitioner?

with this trend being greater in the medical population (65.60% vs. 55.30%, p=0.0561) and more polarized within them (65.50% vs. 34.50%, p<0.001) than in the non-medical population (55.30%, p=0.0756 not significant).(table 1)
The general consensus was that symptom checker site should

be held accountable for misdiagnosis (62.50% vs. 37.50%, p<0.0001) though greater response was seen in medicos (65.60%, p<0.001) than in the non-medical group (58.20%, p=0.006).

The means most commonly used to conduct a self- diagnosis was the Internet followed by family members, newspaper and friends (68.80%, 44.60%, 20.20%, 19.60%). (table 2)

As to understanding why participants preferred web based searches over visiting a general practitioner, the most common reason overall was the belief that the symptoms were too mild to warrant a doctor's visit (53.10%) and this was significantly more cited among medical students (58.20% vs. 43.30%, p=0.007). (figure 4)

In general, participants relied on online diagnosis quite often to occasionally (33.80%-28.80%) and the commonest symptoms diagnosed were headache with heartburn being more commonly addressed amongst the medical group (15.40% vs. 7.80%). (table 3)

When it came to symptom checker sites often used, WebMD was the commonest accessed site wherein medicos more significantly used it (57.60% vs. 37.60%, p=0.0003). (table 4)

DISCUSSION

All our findings show a significant dependence on web based self-diagnosis and shift towards this Internet healthcare as the immediate practitioner.

In our study, we found that 71% of individuals attempted to diagnose themselves at some point. This was comparable to previous reports of 60-80% Internet consumers seeking health information online.[2] A further stunning 77% of this group believed their self-diagnosis to be undeniably true.

61% of all participants developed anxiety after researching their symptoms online and this was significantly more in the medical population, probably due to their closer understanding of the consequences of any disease process. It helps to understand that patients researching health conditions online are chiefly motivated by fear. Based on a study, people awaiting the results of a medical test or diagnosis recorded the highest scores on self-report measures of anxiety[13] and further the listing of concerning diagnoses by symptom checkers could contribute to hypochondriasis and "Cyberchondria,"[9,14,15,16]

Our study targets the red flags that have been raised with the advent of Cyberchondria and how it affects the patient-practitioner relationship. An alarming 60% of our non-medical participants rely on symptom checker sites as a primary tool for investigating their illness, thus depending on these sites before approaching a physician and another 22% of these participants would not take a second opinion at all.

38% participants believed that these sites needed no accountability. Another study showed that on average, symptom checkers provided the correct diagnosis within the first 20 listed in 58% of standardized patient evaluations.[17] This lack of liability could sustain an inadequate yet detrimental system, causing a shift in the patient's treatment

timeline and a delay in intervention.

In our study, it was observed that in spite of the significant majority practicing health information seeking, 83% participants would not share the healthcare information they found online. One way of understanding such practice is to see it, as "a weapon of the weak" in a context where one party (the patient) significantly lacks the power to determine the actions of another (the practitioner).[18] According to a 2006 study of Internet users, over 73% used the web chiefly for health advice, support and/or in preparation for an appointment.[19] Considering the time constraints that occur during a consultation to the extent that the average general practitioner consultation lasts eight minutes, it has led to increased online health-related search behaviour.[20]

Amongst the symptom checker sites, the most commonly used by 38% of non-medical and a staggering 58% of medical participants was WebMD. This is concerning considering a paper stated that WebMD provides an inaccurate diagnosis 50% of all cases[21] and another study found that WebMD, as in the case of most symptom check sites, provided the incorrect diagnosis first 50-80% of the time.[11] There is also the risk involved with depending on these sites for assessing acute symptoms and falling short in case of emergency situations.[3,4,5,6]

A large-scale study found surprisingly high rates of linkage between rare diseases, such as brain tumors, to common symptoms, such as headache.[9] Ranking algorithms used by search engines create a false hierarchy based largely on frequency of 'diagnosis', without considering the actual incidence of the condition.

In our research, the most common reason for relying on online diagnosis, cited by over 53% participants was the perception that the symptoms were too mild to warrant a physician's consultation and yet correlating with the above it is these mild symptoms that get extrapolated to the worst possible case scenario by a symptom checker site's working algorithm, fuelling patient's health anxiety and leading to further cyberchondria. This has led to a state where cyberchondria has become a formal diagnosis.[22]

A study found that 10% participants became frightened by the medically grave nature of the information they encountered online.[2] Given the increasing move to have patients participate and take responsibility for their own health, the Internet may be considered a useful resource but can also cause considerable anxiety to susceptible individuals.[2,9,22,23]

Though, a reassuring 83% individuals would still consider a physician's opinion after their online researching and 72% believe that their web based self-diagnosis does not compare to that of a health professional, yet it is important for medical practitioners to be vigilant about their patient's online health seeking behavior. 35% participants stated that the health information sourced online affected decisions regarding medical consultation.[2] This is particularly concerning given the nature and quality of online medical content. Studies show that exposing non-medical personnel to complex medical terminologies and descriptions puts them at a risk of self-diagnosis and/or self-treatment.[24]

The limitations of our paper are that only urban section population was studied and within that younger individuals were questioned. More closed ended questions were asked.

CONCLUSION

When people in a state of concern about their health rely on the Internet for reassurance there is no guarantee the nature of the response and their perception of it since, web based results are not designed to offer reassurances to their users. Cyberchondria, an adverse effect of the digital revolution, has affected the medical system by interrupting the line of treatment, elevating anxiety levels of participants, undermining the need for emergency care when necessary and most importantly, taking assistance of symptom checker sites in lieu of a physician's advice.

In view of that, symptom checker sites should have more accountability by increasing the involvement of professionals. Patients should restrict themselves from making drastic changes in their existing treatment plan in spite of being advised by these sites. Accordingly, doctors should encourage patients to share their research without hesitation and guide them for every misinterpretation.

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