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NAVIGATING ONLINE HEALTH: A CROSS-SECTIONAL STUDY OF SELF-DIAGNOSIS AND SELF-MEDICATION AMONG STUDENTS IN BENGALURU

Public Health

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ABSTRACT

Introduction: Self-diagnosis, which is defined as diagnosing one's health issues without professional medical guidance, has become increasingly prevalent worldwide. This study aims to estimate the proportion of students in Bengaluru who use the internet for self-diagnosis and self-treatment, evaluate their reasons for doing so, and assess their perception of the accuracy and satisfaction with online health information. **Materials and Methods:** A cross-sectional survey was conducted among students over 18 years old with internet proficiency in Bengaluru, Karnataka. The study excluded individuals with a medical background. The estimated sample size was 227, based on an 82% proportion of smartphone users. Data collection involved a self-administered questionnaire distributed via Google Forms to participants who met the inclusion criteria. The questionnaire included sociodemographic details, frequency of internet use for self-diagnosis, reasons for using the internet, perceptions of accuracy and satisfaction, conditions sought for self-diagnosis and self-medication practices. Ethical approval and online consent were obtained, and the data were analyzed using SPSS version 26. **Results:** The study surveyed 229 students, with a mean age of 22.8 years; 53.7% were male, and 43.3% were female. About 48% of participants used the Internet for self-diagnosis. The primary reasons included personal convenience (26%), laziness (25%), and long waiting times (17%). Conditions frequently researched online were hair fall (47%), headaches (33%), and colds (28%). While 79% of participants were satisfied with their self-diagnosis, only 27% self-medicated. Some of the participants (16%) argue with doctors based on their online diagnoses, and 68% recommended internet self-diagnosis to others. However, only 2% believed the internet was 100% accurate for self-diagnosis, with the majority rating accuracy at 50% or less. **Conclusion:** The study highlights the high prevalence of internet use for self-diagnosis among students in Bengaluru, driven by factors like convenience and cost. Despite the satisfaction reported by users, the accuracy of online health information remains questionable. This underscores the need for better public education on the risks of unsupervised drug use and the importance of professional medical advice. Health professionals should guide and caution patients in safely navigating online health information to mitigate potential health risks associated with self-diagnosis and self-medication.

KEYWORDS

Self-diagnosis, Self medication, internet

INTRODUCTION

The advent of the internet has significantly altered the landscape of medical practice, providing patients unprecedented access to health information.[1] Self-diagnosis is the diagnosis of one's health problems, usually without direction or assistance from a physician.[2] It has become increasingly common worldwide. Various factors, including the accessibility of over-the-counter medications, the rising cost of healthcare, and the widespread availability of health information on the internet have influenced this trend.

With the recent digital revolution, the internet penetration rate in India is 52.4 % at the start of 2024.[3] Digital literacy in India is relatively higher in urban areas at 61% as compared to 25% in rural areas[4]. A recent study in Maharashtra found that overall, 59.8% of responders used the internet to obtain health information and self-medication, of these, 54.47% took medications without consulting the doctors[5]. Educated people practiced self medicatin more that the uneducated people. In Punjab, the prevalence of self-medication was 73%.[6]

Several other studies in developing countries have documented the prevalence and patterns of self-medication. For example, a study in Ethiopia found that 35.9% of participants practiced self-medication, often due to perceptions of illness as mild or because they had previous similar symptoms and wanted to avoid healthcare costs.[7] Another study during the COVID-19 pandemic found that 62.7% of participants from ten Arab countries engaged in self-medication. Painkillers, fever-relieving pills, and vitamins were the most commonly used drugs without medical supervision during the pandemic.[8] Urge of self-care, feeling of sympathy toward family members in sickness, lack of time, lack of health services, financial constraint, ignorance, misbeliefs, extensive advertisement, and availability of drugs in other than drug shops are responsible for the growing trend of self-medication.[9] A systematic review on self-medication with antibiotics revealed that it is rampant in low and middle-income countries and could be a reason for the increase in resistance to antimicrobial agents in these countries[10].

Efforts to mitigate the risks of self-medication include public education about the dangers of unsupervised drug use, stricter regulations on the sale of medications, and improved access to affordable healthcare. Health professionals are critical in providing accurate information and guiding safe medication practices. Overall, while self-medication can offer convenience and quick relief, it is essential to approach it with caution and seek professional advice whenever possible to avoid potential health risks.

The present research hopes to estimate the proportion of students in a metropolitan city in India who use the Internet for self-diagnosis and self-treatment, to evaluate the reasons for using the Internet for self-diagnosis as a source of health information, to assess the participant's perception of accuracy of health information sought and their satisfaction with the same.

METHODOLOGY

A Cross-sectional survey was done among students more than 18 years old with working knowledge of the internet and those who can understand the English language in Bengaluru, Karnataka. People with a medical background were excluded from the study.

The estimated sample size was 229 based on the proportion of

smartphone users i.e. 82%.[11] Data was collected after getting approval from the institution's ethics committee and online consent of participants . Data collection was done using a self-administered questionnaire. Google form was created and the web link was sent to students who fulfilled the inclusion criteria.

The questionnaire included items on the sociodemographic profile of the participants, two items on proportion and frequency of internet use for self-diagnosis; three items to evaluate the reasons for usage of the internet; three items to assess the perception of accuracy, satisfaction, and dependency of internet usage for self-diagnosis, eight items on conditions for which self-diagnosis was sought and three items on self-medication. The questionnaire was pilot-tested by sending the link to five people who fulfilled the inclusion criteria, for language comprehension and assessing the time taken to fill the questionnaire. Anonymity and confidentiality were maintained. Names of the participants were not included in the survey and the information and opinions provided were accessible only to the researchers. The data was analyzed using SPSS version 26. Results are presented in tables and graphs as percentages, chi-square test was done for associations, with p value less than 0.05 considered as significant.

RESULTS

A survey was done on the use of internet for self –diagnosis and medication among students of Bengaluru with a sample size of (n=229), the following are the results obtained. The mean age of the participants was 22.8± 5.5 years. 53.7 were males 43.3% females. 63% of the participants were more than 22 years.

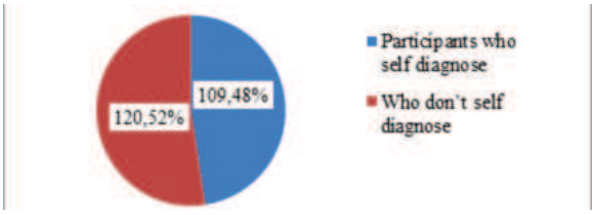

Figure 1: Participants Who Use Internet For Self-diagnosis (n=229)

Participants who use internet for self -diagnosis were 48% as seen if figure 1.

Figure 2: Reasons For Using Internet For Self-diagnosis(n=109)

Majority of the Participants used internet for diagnosing personal reasons (26%), laziness(25%),due to any other inconvenience(22%), waiting time(17%), high consultation fee(15%),unavailability of appointment(5%).

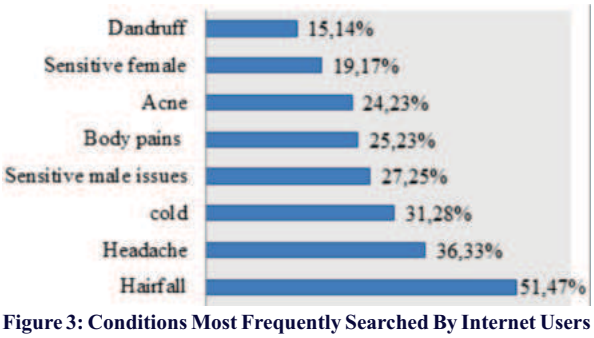

Figure 3: Conditions Most Frequently Searched By Internet Users (n=109)

As seen in figure 3. majority of the internet users searched the internet for conditions like hair fall(47%), headache (33%), cold (28%), sensitive male issues(22%), body pains (23%), acne(23%), sensitive female issues (17%), dandruff(14%).

Table 1 Perceptions Of Internet Users For Self-diagnosis Using The Internet (n=109)

Variable	Number	Percentage
Satisfaction among users		
Satisfied	86	79%
Unsatisfied	23	21%
Self-treatment after self-diagnosis		
Yes	29	27%
No	80	73%
Argues with doctors based on online diagnosis		
Yes	17	16%
No	92	84%
Recommends internet use for self-diagnosis to others		
Yes	35	32%
No	74	68%
Use of internet for diagnosis in family and friends		
Yes	56	51%
No	53	49%
Frequency of internet usage for self-diagnosis		
Every time you are ill	29	27%
Only occasionally	80	73%

Table 1 shows that the majority of the participants are satisfied on their self- diagnosis using internet (79%), however only 27% of them self-medicate. Majority of the participants (84%) who use internet for self -diagnosis don't argue with doctor based on their online diagnosis, whereas 16% of the participants argue. Among the internet users for self-diagnosis, majority of the participants (68%) recommend usage of internet to others also. Half of the individuals who use internet for self-diagnosis, use internet for diagnosing illness in family and friends (51%). Most of the patients (73%) use internet occasionally where as 27% of them use internet for self-diagnosis every time they fall sick.

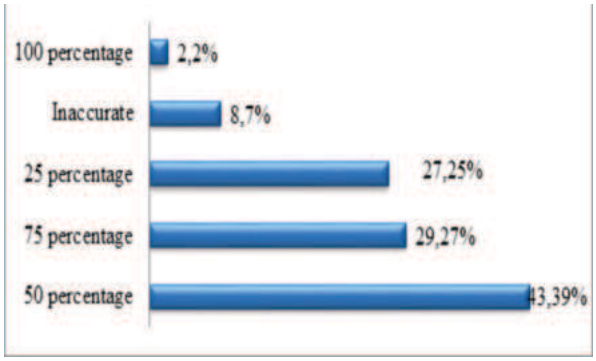

Figure 4: Perception Of Accuracy Of Usage Of Internet For Self Diagnosis (n=109)

Among the internet users for self -diagnosis, only 2 of them feel that the internet usage is 100% accurate, 29 feel it is 75% accurate 43 feel it is 50% accurate, 27 feel it is 25% accurate and 8 feel it is totally inaccurate.

DISCUSSION

The primary source of health information today is the Internet, typically accessed through online health searches, a practice colloquially referred to as "Dr. Google." The empowering impact of online health search has been made possible by easy access to previously hard-to-find health information. But it can also become troublesome and result in cyberchondria.[12]

The use of the Internet by Bengaluru adults for self-diagnosis and self-medication was assessed in our study based on several factors. Approximately 47.5% of the adult participants in our study self-diagnosed online. This high value may be explained by the fact that our inclusion criteria included those with some level of internet proficiency. Self-medication, however, is more prevalent among students taking health-related courses; studies have shown that this

percentage ranges from 60% to 80%.[13,14,15] In the general population, self-medication is estimated to be between 30% and 35%, and only for minor illnesses.[16]

With the Internet being easily accessible, laziness, personal reasons, increased waiting time, and high consultation fees were the main reasons for choosing the Internet over consulting a physician. A study by Fiksdal AS found that easy and free access to health information on the internet and long waiting times for an appointment with the health care provider who charges a high fee were some of the reasons for self-diagnosis.[17] Other studies found that accessibility and speed were key benefits of online self-diagnosis and the internet allows 24-hour access, whereas obtaining an appointment with a healthcare practitioner can be difficult.[18,19,20]

Participants commonly used the internet to diagnose non-emergency conditions and sensitive male or female issues, hair fall, headache, body aches, acne, and dandruff. However a study by Ayers SL found a greater association with those with chronic illnesses.[21]

Conditions such as sensitive male and female issues, hair-fall, headache, and cold were the most commonly referred by internet users; a study by Annemarie Jutel[22] lists self-diagnosis of these conditions as both reliable and desirable. 39% of participants feel that self-diagnosis using the internet is accurate only half the time and 27% feel it is accurate three-fourths of the time, only 2% think it is accurate all the time. This finding could be because they use the internet for self-diagnosis of minor ailments such as colds, hair-fall, and headaches, which do have a higher accuracy, a study done in the U.S by Meghan A Gass reports that twenty-nine percent of participants thought the internet to be reliable.[23]

In our study majority of the participants (79%) report being satisfied with their diagnosis and alarmingly more than half of them are even dependent on the internet for the diagnosis (57%) which could be an extension of overall dependency on the internet, which makes raising awareness about the possible fallacies of the internet necessary. Their trust in the internet extends to diagnosing their family and friends (51%) and even recommending others (68%) to utilize the same, this could be due to their positive experiences in diagnosing minor problems. While most of them are unaffected or confident about their self-diagnosis, a significant number of people reported being anxious (22%), scared (15%), and even depressed (2%). A study by R. White and E. Horvitz reveals that half of the participants report self-diagnosis reduces anxiety while two in five reported interactions with the web increase medical anxiety. These should be given due consideration and addressed if they subsequently see a physician, as searching for a single symptom can show hundreds of differential diagnoses, from the common cold to cancer.[24]

With the use of the internet being increasingly prevalent, patients are well informed even before they meet up with a physician, 16% of participants in our study admitted they argue with their physician about their diagnosis. More than a quarter of the participants report self-medicating (27%) themselves after self-diagnosing using the internet; this has the potential to be dangerous to the patient not only by allowing the disease to fester but may also hinder subsequent diagnosis by a physician.

While the majority of people rate the accuracy of the internet at 50% or higher, a study by Hannah L et al. on symptom checkers based on standardized patient vignettes found that only 34% of evaluations listed the correct diagnosis first, underscoring the need to caution internet users. Since the online trend is here to stay, it becomes crucial to monitor, enhance, and improve internet tool interfaces and algorithms.[25] Programs for prevention must first define what is and is not possible on the Internet. It is crucial to dispel erroneous beliefs, such as the notion that the Internet possesses the answers to every health-related question.[12] A general practitioner poll revealed concerns that the "worried well" might make more appointments as a result of self-diagnosing online. Additionally, it has been proposed that internet self-diagnosis could scare clinicians.[26] Limitations of the study include limited sample size and form one city using convenience sampling which affects the generalizability of the study.

CONCLUSIONS

Almost half of the study participants practiced self-diagnosis for themselves and for their family members. Almost three-fourths of the participants felt very satisfied with the help they received on the Internet. An interesting finding is that 16% of those who used the Internet for self-diagnosis argued with their doctors based on their knowledge acquired from the Internet. This result implies that students need more awareness regarding self-medication. Therefore, it is advised that a comprehensive strategy be used to prevent this issue. First of all health care should be made easily accessible and reasonably priced. Stringent laws should govern pharmaceutical advertising and regulations should be in place to prevent pharmacies from dispensing drugs without prescription. Another crucial strategy is raising community awareness of self-medication and its adverse consequences

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