

## Internet use by orthopaedic patients: a survey of patients in three teaching hospitals in Southwestern Nigeria

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### Abstract

**Background:** Patients use the Internet increasingly for information about their medical problems.

**Objective:** To evaluate Internet use among patients attending the orthopaedic clinics of three teaching hospitals in southwest Nigeria.

**Methodology:** An anonymous survey was distributed to patients attending the orthopaedic clinics of the Obafemi Awolowo University Teaching hospitals Complex, Lagos University Teaching Hospital and Ekiti State University Teaching Hospital, Ado-Ekiti. The survey elicited information regarding demographics, health-related Internet use, and how the information obtained impacted their relationship with their orthopaedic surgeon.

**Results:** A total of 475 respondents returned the completed questionnaire out of which 16 did not meet the inclusion criteria. Of the 459 patients that met the inclusion criteria 69.5% has accessed the internet in the previous one year, and 39.2% sought health related information, but only 11.5% has ever e-mailed their health provider about health related problems. More of the patients were looking for information regarding their illnesses followed by information about health and nutrition. About 90% found the information useful. Those with post-secondary education, Christians, and patients who sought for treatment at LUTH, Lagos were more likely to seek health related information from the internet. Ethnicity and gender showed no statistically significant difference in predicting online health information seeking behavior among the patients.

**Conclusion:** While not as high as reported usage from the developed countries, the online health information seeking behaviour of orthopaedic patients in this study should justify investment into providing online, health information whose contents are targeted at orthopaedic patients in our environment.

**Keywords:** *Health-related internet use.*

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### Résumé

**Contexte:** Les patients utilisent de plus en plus l'internet pour obtenir des informations sur leurs problèmes médicaux.

**Objectif:** Évaluer l'utilisation d'Internet chez les patients fréquentant les cliniques orthopédiques de trois hôpitaux universitaires du sud-ouest du Nigeria.

**Méthodologie :** Un sondage anonyme a été distribué aux patients fréquentant les cliniques orthopédiques des Complexes Hospitaliers d'Enseignement Universitaire d'Obafemi Awolowo, de l'Hôpital d'Enseignement Universitaire de Lagos et de l'Hôpital d'Enseignement Universitaire de l'Etat d'Ekiti, Ado-Ekiti. L'enquête a permis d'obtenir des informations sur la démographie, l'utilisation de l'internet liée à la santé et la manière dont les informations obtenues ont eu un impact sur leur relation avec leur chirurgien orthopédique.

**Résultats:** Au total, 475 répondants ont renvoyé le questionnaire rempli, dont 16 ne répondaient pas aux critères d'inclusion. Parmi les 459 patients qui répondaient aux critères d'inclusion, 69,5% avaient consulté l'internet au cours de l'année précédente et 39,2% cherchaient des informations sur la santé, mais seulement 11,5% ont auparavant envoyé un courrier de message électronique à leur fournisseur de soins pour des problèmes de santé. Un plus grand nombre de patients cherchaient des informations sur leurs maladies suivies d'informations sur la santé et la nutrition. Environ 90% ont trouvé l'information utile. Ceux qui ont une éducation postsecondaire, les chrétiens et les patients qui ont demandé un traitement à LUTH, Lagos étaient plus susceptibles de chercher des informations liées à la santé sur l'internet. L'ethnicité et le sexe n'ont montré aucune différence statistiquement significative dans la prédiction du comportement de recherche d'information de santé en ligne parmi les patients.

**Conclusion:** Bien qu'il ne soit pas aussi élevé que celui des pays développés, le comportement de recherche d'information en ligne des patients orthopédiques dans cette étude devrait justifier un investissement dans la fourniture d'informations sanitaires en ligne dont le contenu cible les patients orthopédiques dans notre environnement.

**Mots clés:** *Utilisation de l'internet liée à la santé.*

**Introduction** Patients acquire medical information from many sources, inclusive of which are: healthcare professionals, advertisements, the media, the internet and other lay persons. However, since the turn of the century, the internet has grown to be a major source of medical information for patients in both developed and developing countries. Studies have shown that the internet ranked second only to healthcare professionals as the preferred source of medical information for patients[1, 2].

In some instances, such as when patients sought for information on support for rare or chronic diseases or needed to know other people's experiences, the internet was the preferred source of medical information.[1]. The Bupa Health Pulse 2010 international healthcare survey of online healthcare information seeking habit in twelve countries showed that 60% of the respondents had assessed the internet to search for medical information[2]. The survey also found that due to the relatively high cost of personal consultation with healthcare professionals, a significant proportion of the respondents have resorted to conducting online searches for health information[2].

At the turn of the century, access to online information in Africa was very poor. In 2000, the ratio of those with internet access to those without was 1 to 5000 in Africa, while in the United States and Europe the ratio was 1 to 6[3]. However, with the advent of cellular networks and cheap phones with internet capabilities, the situation is rapidly changing[4]. A recent study from Nigeria (In press) showed that more than 90% of orthopaedic surgeons and their trainees practicing across the country have encountered patients with internet medical information at consultations. However, there had been no study in Nigeria, and very few from Africa on the experience of patients seeking medical information from the Internet.

The present study was carried out to determine the nature of Nigerian orthopaedic patients' experience with internet medical information, and how this affects their subsequent interactions with their healthcare providers.

#### **Patient and method**

The setting was the orthopaedic outpatient clinic of three teaching hospitals in southwest Nigeria, namely the Obafemi Awolowo University Teaching Hospitals complex and Ekiti State University Teaching Hospital situated in Ile-Ife and Ado-Ekiti respectively. Both Ile-Ife and Ado-Ekiti are semi-urban university towns with a large population of students and civil servants. The main mode of

Internet access in both towns is by cellular data. The third centre was the Lagos University Teaching Hospital in Lagos, commercial capital of Nigeria. This is a cosmopolitan city with broadband access to the internet. A convenient sampling technique was used and this was a questionnaire based study which lasted for 6 months.

#### *The questionnaire*

This had two sections: Section one contained socio-demographic questions. Section two is an 18-item questionnaire about patients' experience of using Internet derived medical information.

#### *Procedure*

During the waiting period, the research assistant (house officer, resident doctor or medical students) randomly selected a patient and enquired from the patient whether he or she had participated in the study in a previous visit. If the patient had not, the research assistant would then explain the purpose of the study to the patient. He or she would also be informed that he or she had the right to decline to be a part of the study, and that such decision would have no effect whatsoever on their subsequent treatment. If the patient agreed to be a part of the study, then he or she was served the questionnaire and pertinent explanations regarding the aims and objectives of the study given. After the patient had filled the questionnaire, the research assistant would scan the document for errors or missing variables. If any was discovered, the patient's attention would be brought to the item for it to be corrected. Thereafter, the patient was asked to sign the proforma, and this was taken as the signed consent.

All adult patients (15years and above) attending orthopaedic clinics of the participating hospital who had completed secondary education, and can read and write were eligible for inclusion in the study. The study was conducted in accordance with the principles of Helsinki declaration.

#### *Statistical analysis*

There were two outcome measures. One was whether or not the patient had used the internet to access medical information within the last one year, and the second was whether or not the patient has used e-mail to communicate with his healthcare professional within the last one year. We used Student's t-test and Pearson's chi-square to compare outcomes when the predictor variables were continuous and categorical respectively. We considered any P-value less than 0.05 as statistically significant. We used IBM SPSS version 20 for all analysis.

## Results

We collected four hundred and seventy-five completed questionnaires from the patients. However, 16 (3.4%) were discarded because they had primary school educations (having less than secondary school education was an exclusion criteria). Of the remaining 459 respondents, 207 (45.1%) were from OAUTHC, Ile-Ife, 160 (34.9%) were from LUTH, Lagos while the remaining 92 (20.0%) were from EKSUTH, Ado-Ekiti. Table 1 summarizes the characteristics of the patients.

Table 1: Demographic characteristics of respondents

Variable	Frequency (%)
<i>Gender</i>	
Male	225 (50.2)
Female	223 (49.8)
<i>Tribe</i>	
Yoruba	353 (78.6)
Igbo	61 (13.6)
Others (Hausa, Benin, Idoma, Effik)	35 (7.8)
<i>Marital status</i>	
Single	183 (42.0)
Married	234 (53.7)
Widowed	19 (4.4)
<i>Education</i>	
Secondary School	134 (29.2)
University/Polytechnic	273 (59.5)
OND/Technical Education	25 (5.4)
Others	27 (5.9)

Table 2: Nature of internet use among medical information seekers

Variables	n(%)
<i>Device Used</i>	
Phones	263 (58.1)
Personal Computers	118 (26.0)
Tablets	19 (4.2)
<sup>2</sup> Non-personal devices	53 (11.7)
<i>How frequent was the Internet search for health information?</i>	
At least once a day	75 (41.9)
At least once a week	63 (34.7)
At least once a month	14 (8.4)
At least once in the past one year	25 (15.0)
<i>Who was the information for?</i>	
Patient	206 (85.1)
Wife/Children	12 (4.9)
Parents	4 (1.7)
Others	20 (8.2)

<sup>1</sup>Many respondents used multiple devices

<sup>2</sup>Includes office PC, library, cyber café and devices belonging to acquaintances

Table 3: Respondents' characteristics and decision to use internet for medical information.

Variable	Search for health information		P-Value
	Yes n(%)	No n(%)	
<i>Gender</i>			
Male	85 (43.1)	112 (56.9)	0.184
Female	92 (50.0)	92 (50.0)	
<i>Religion</i>			
Christian	132 (46.6)	151 (53.4)	0.459
Muslim	22 (40.7)	32 (59.3)	
<i>Ethnic group</i>			
Yoruba	136 (44.0)	173 (56.0)	0.140
Igbo	31 (58.5)	22 (41.5)	
Others	10 (50.0)	10 (50.0)	
<i>Education</i>			
Secondary	22 (27.5)	58 (72.5)	<0.05
OND/Tech	9 (42.9)	12 (57.1)	
Univ/Poly	138 (56.1)	108 (43.9)	
Others	7 (29.2)	17 (70.8)	
<i>Marital status</i>			
Single	80 (48.2)	86 (51.8)	0.335
Married	88 (46.3)	102 (53.7)	
Widowed	5 (29.4)	12 (70.6)	
<i>Hospital</i>			
LUTH	76 (57.1)	57 (42.9)	<0.05
OAUTHC	72 (40.9)	104 (59.1)	
EKSUTH	32 (38.6)	51 (61.4)	

## Internet use

Three hundred and nineteen (69.5%) patients have accessed the internet for information in the past one year preceding the study. Of these 180 (56.4%) did it to obtain health information. As indicated in table 2 the majority of the patients accessed the information on their phones and most searches were personally by the patients. The table also showed that about 75% of the patients who used the internet for health information used it at least once a week in the past one year. Table 3 shows that those with university/polytechnic education were significantly more likely to have accessed the Internet for medical information than other educated group ( $P < 0.05$ ). Similarly, the patients visiting LUTH used the Internet more frequently than those in EKSUTH and OAUTHC, which were located in semi-urban towns ( $P = 0.006$ ). However, demographic characteristics such as age, gender, religion and ethnicity were not significantly related to using the Internet to access medical information.

## E-mail communication with healthcare professional

Fifty three patients (11.5%) had communicated with their healthcare providers via the e-mail one year

period prior to the study. Fifteen (29.4%) had done it only once, 25 (49.0%) had done it less than 5 times while the remaining 13 (21.2%) had done it more than 5 times. Most of the communications were initiated by the patients. Tables 3 and 4 show that patients with post-secondary education were significantly more likely to communicate with their doctors than patients with secondary school education ( $P=0.009$ ). Similarly significantly larger proportion of patients in LUTH communicated with their doctors using e-mail compared their counterparts in OAUTHC, Ile-Ife and EKSUTH Ado-Ekiti ( $P=0.039$ ). Age, gender, ethnicity or religion had no significant effect on whether or not patients communicated with their practitioner with e-mail (Table 4).

**Table 4:** Respondents' characteristics and exchange of e-mails with healthcare providers.

Variable	Exchange e-mail with practitioner		P value
	Yes n(%)	No n(%)	
Gender			
Male	26 (13.3)	170 (86.7)	0.920
Female	26 (13.6)	165 (86.4)	
Religion			
Christian	35 (12.2)	253 (87.8)	0.266
Muslim	9 (17.6)	42 (82.4)	
Ethnic group			
Yoruba	34 (11.3)	267 (88.7)	0.111
Igbo	11 (19.6)	45 (80.4)	
Others	6 (20.7)	23 (79.3)	
Education			
Secondary	7 (10.8)	58 (89.2)	<0.05
OND/Tech	8 (38.1)	13 (61.9)	
Univ/Poly	34 (13.1)	225 (86.9)	
Others	2 (8.7)	21 (91.3)	
Marital status			
Single	24 (14.0)	148 (86.0)	0.720
Married	7 (14.1)	165 (85.9)	
Widowed	21 (6.7)	14 (93.3)	
Hospital			
LUTH	28 (19.0)	119 (81.0)	<0.05
OAUTHC	16 (10.2)	141 (89.8)	
EKSUTH	9 (9.8)	83 (90.2)	

### Internet sites visited and type of health information obtained

One hundred and twenty (65.2%) visited internet sites providing general medical information, 63 (34.2%) visited disease specific sites maintained by individuals, universities, hospitals, support groups and other organizations. 28 (15.2%) visited retail sites offering or selling some kind of therapy while 19 (10.3%) visited online fora and chat rooms. One

hundred and eighty four (70.8%) of the patients flagged off their internet search by using a general search engine such as Google, Yahoo and Bing. Only eight (3.1%) got their source from their healthcare provider. Table 5 shows the type of medical information obtained by the patients from the Internet.

**Table 5:** Types of health information obtained by patients

Type of health information	n(%)
Information about illness	132 (54.5)
Information on nutrition or fitness	67 (14.6)
Information about specific doctors, hospitals or drug	18 (3.9)
Information on alternative medicine	13 (2.8)
Information on experimental treatment	11 (2.4)
* Multiple responses	

### Patients' assessment of the Internet Health information

Ninety percent of the patients found the information they obtained from the Internet either very useful or somewhat useful. In addition, 89.1% of the patients learnt something new about their illnesses when they accessed the internet for health information. However only 35.5% discussed the information obtained with their healthcare professionals while the remaining 64.5% never bothered to discuss their findings about their findings with their healthcare professional. One hundred and forty nine 149/459 (32.4%) patients came to a new decision as a result of their internet browsing for medical information (Table 6).

**Table 6:** Access to internet medical information and patients' subsequent actions regarding their illnesses

Decision based on internet medical information*	n(%)
Asked new questions about their illnesses or seek second opinions regarding the illness	70(36.3)
Change the way patient coped with illness	49(25.4)
Caused patient to see the doctor	40(20.7)
Modify treatment	34(17.6)
Did not take any new decision	31(17.2)

\*Multiple responses

### Discussion

Historically, most patients would have consulted many sources including books, family members and friends before deciding on the need to consult a physician. The Internet has been added to the patients' domestic armamentariums, enabling them to seek more information about their illnesses. For

obvious reasons, this empowerment has been more pronounced in the developed world than in the developing world. However, as this study has shown, the Internet has become an important source of medical information among patients in the south western Nigeria[5]. In this study, about two out of every five patients in this study had accessed the internet for medical information within the past one year. We did not ask the respondents to compare the frequency with which they accessed the internet for medical information with their other online activities such as using e-mail, social media or checking for sport information. However, the fact that the patients who specifically used the Internet for seeking health information were more than 50% of those who accessed the internet showed that seeking health information is one of the frequent online activities among Nigerian orthopaedic patients.

The most common device for accessing the internet for medical information among the patients were smartphones. Internet penetration in Nigeria grew from a paltry 0.06% in 2000 to 33% in 2012[6 7]. The major driving force behind this growth are the mobile telecommunication companies. Most urban and semi-urban cities in Nigeria now have 3G services, while most rural communities have EDGE cellular technology. Broadband technology is still limited to urban centres like Lagos, Abuja and Port-Harcourt. 2013 data showed that about 74% of the 56 million active Internet users in Nigeria use their phone to access the Internet [4].

A significant proportion of patients accessed the internet for medical information and obtained useful significant information [8]. This is a cause for concern among health policy workers. Patients, unlike healthcare providers, are not trained to manage medical information. Consequently it is difficult to differentiate good and bad medical information [9].

Thus, the Internet information they assumed to be "useful" may in actuality be harmful. For example, Nadam et al. in 2005 evaluated the quality of information available on websites about clubfoot using a scoring system [10]. The average score of the websites was an abysmal 26 (maximum obtainable score was 100). The authors concluded that "This may result in misleading information and the real possibility that patients may be misinformed before they reach the consultation stage (e.g. web sites with poor individual experiences can adversely affect the decisions taken by patients)" [10].

In this study, more than four out of every five patients who had Internet medical information came to new decisions as a result. Such information empowered patients to take more active roles in

decision making about access and treatment modality. On the other hand, patients are also in danger of being overwhelmed by the information deluge which does not pass through traditional editorial process [8]. The physician must play the role of a shepherd, guiding the patient through the information wilderness the Internet has turned out to be. Thus physicians themselves should know websites with appropriate medical information suitable for patient education. Many studies have shown academic websites to be the most reliable sources of medical information on the Internet. Physicians should inform patients about such sites [10-12].

Most repositories of acceptable medical information on the internet are maintained by institutions based in developed countries of North America and Europe, these are mainly focused on issues considered important to those countries. Currently, none of the medical websites maintained by Nigerian based organizations provide the same level of quality of information that institutions such as the Mayo Clinic or American Academy of Orthopaedic Science (AAOS) provide for the American patient. There is a need for academic institutions in Nigerian to start providing reliable, locally relevant internet medical information for patients in Nigeria.

As with similar studies conducted in other countries, patients with post-secondary school education were more likely than those with secondary school education to use the Internet for medical education as well as communicate with their healthcare providers through e-mail. Similarly patients in Lagos, the commercial capital of Nigeria were more likely to carry out these activities than their counterparts in Ado-Ekiti and Ile-Ife, where there are more limited access to internet.

In conclusion, this study has established that a sizable proportion of patients attending the orthopaedic clinics in urban and semi-urban cities in Nigeria access the internet for medical information consistently. There is a need for medical practitioners in the Nigeria and indeed, other developing countries to take advantage of this fact by directing the patients to reliable repositories of medical information on the Internet Furthermore, academic and medical institutions should also begin to provide medical information on the internet that is locally relevant and culturally acceptable to their clientele. For as stated Edejer: "the way forward (for healthcare providers) is to exploit the full interactivity of the internet, which allows rapid feedback and change to continuously mould information into useful knowledge"[13].

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