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Primary Care Patients' Internet Use in a Part of Middle-belt Region of Nigeria

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ABSTRACT

Background: Internet use among primary care patients has continued to attract global attention. **Aim:** This study is designed to determine the percentage of primary care patients that use the internet and to investigate how many of the primary care patients use internet to obtain health information in a part of middle-belt region of Nigeria. **Methods and Materials:** This was a cross-sectional descriptive study that was carried out in Makurdi; it involved 282 primary care patients. **Results:** A total of 282 patients were recruited for the study. These were aged 18-80 years with a mean age of 40.3years and a standard deviation of 14.3. Females were 163(57.8%), while the males were 119(42.2%). More than half 154(54.6%) of the patients reported to have used the internet, while 128(45.4%) has never used it. About a third 53(34.4%) of the participants that used the internet indicated using it to obtain health information. **Conclusion:** The percentage of the primary care patients that used internet in this study is 54.6%. Only 34.4% used the internet to obtain health information. Public health awareness should be encouraged so that patients can reap the health benefits of internet.

Keywords: Internet use, Middle-belt region, Nigeria, Primary care patients.

Introduction

The Internet is the world's largest network of information, communication and services.[1] The use of the Internet as a source of information has become increasingly popular with more people now seeking health knowledge using the webs.[1] In the United States of America; Americans are increasingly using the Web for information retrieval and personal communication, as well as understanding and managing illness.[1] The National Telecommunications and Information Administration reports indicate that in the year 2000, 44% of individuals had access to the Internet; this percentage increased to 54% in 2002[2] and was projected to exceed 80% by 2005.[3]The number of Internet users is estimated to be between 122 million and 166 million.[4] Nigeria has also witnessed tremendous increase in internet accessibility. For instance, the Nigerian Communications Commission, NCC, reported that the number of internet users on the Global System for Mobile communications (GSM) networks has increased from 76,322, 802 in 2014 to 81,892,840 in January 2015.[5] While this report was been commended and celebrated by critical stake-holders in telecommunication, the Nigerian Communication Commission issued fresh report in February 2015. The report indicated that the number of internet users had increased to 83, 362, 814. [6]The global increase in internet accessibility has prompted experts in medical research to come up with research questions on internet use by patients. This has led to some publications on the percentage of internet use by some patients. For instance, in a study on Internet use by Primary Care Patients in Columbia, Robin et al., found that 78% of the studied population were internet users.[7] The study identified chronic diseases, lack of computer access and not knowing how to use Internet as the common barriers to internet use. In a similar work, patients in three Urban Primary Care Clinics were interviewed about their internet use; it was discovered that 53% of the studied population indicated to have used Internet in the past.[8] In the study, it was observed that attending college was associated with greater online searching for information, while respondents of black race were less likely to use the Internet to search for information.[6] Furthermore, Richard *et al.*, in a study on Internet use among Primary Care Patients with Type 2 Diabetes Mellitus, opined that 34% of the studied populations

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were internet users.[9] The study revealed that older and less educated diabetes mellitus Primary Care Patients are less likely to use Internet.. The authors clarified further that non internet users had greater morbidities and that the patients used the internet to achieve many goals. Different people use internet resources for different purposes; these include e-mail, research, social network, transactions, communication, entertainment and health information.[7] Health information technology (HIT) for consumers, such as personal health records, secure electronic messaging, and transmission of medical data from home-based devices, can enhance both patient-provider communication and patient-centered care.[10] Whether in the context of the patient-centered medical home (PCMH),[8] accountable care organizations, or meaningful use, according to the 2010 Accountable Care Act,[10,11] Internet-based health IT for patients is increasingly considered essential. Consumer health IT can encompass a variety of functions, including secure electronic mail (email) communication between patients and providers, online appointment scheduling, prescription refill requests, importing clinical data collected outside the provider's office (for example, home blood pressure monitoring), providing web links to a variety of patient education materials, viewing all or portions of a patient's medical record, and allowing patients to add information to their record. [5, 12, 13]Computer-literate patients are seeking to take more control of their health by using the Internet to seek out information related to illness and treatment.[14,15,16] The information provided on the Web helps patients to better manage illness and to make informed choices, and ultimately changes the dynamics of the patient–provider relationship. Despite concerns expressed about the integrity of health information on the net, many Primary Care Patients are increasingly using the web to retrieve health information. [5, 17]Even though experience has shown that Nigerians now use internet to obtain knowledge, but the extent to which Primary Care Patients access the Internet and use the resource to obtain health information has not been specifically documented in Nigeria. The present study will attempt to address this gap and lay the foundation for future research in this field. The study set out to determine the percentage of primary care patients that used the internet and to investigate how many of these patients use internet to obtain health information in a part of middle-belt region of Nigeria.

Materials and methods

The study area is Makurdi. Makurdi, the state capital of Benue State is located in middle-belt region of Nigeria. It lies between latitude 7.730 and 8.320. It has a population of about 300,377 people (NPC 2006). [18] The study was conducted in Benue State University Teaching Hospital, which is a 300-bed hospital located in Makurdi. It was commissioned in March 2012 and commenced clinical activities in May 2012. The hospital has 15 clinical departments with over three hundred healthcare workers. It currently serves a population of over four million people in the middle-belt region of Nigeria. The present study was a cross-sectional study designed to determine the percentage of primary care patients that use the internet and to investigate how many of the primary care patients use internet to obtain health information in Benue State University Teaching Hospital, Makurdi, Nigeria. The study was carried out between November 2014 and April 2015. The primary care patients were recruited on work days using a well-structured interviewer-administered questionnaire after a signed consent had been obtained from them. The instrument (questionnaire) was validated through a pretest conducted on 10 subjects. To avoid the error of multiple recruitments of subjects, the folders of the recruited subjects were tagged with the word "internet". A minimum sample size of 263 subjects was calculated using the best estimate of population prevalence obtained from literature review, which is 78% [7]; however, a total of 296 questionnaires were administered through simple random sampling technique. Out of this number, 282 were completely filled, 14 were incompletely filled. The incompletely filled questionnaires were excluded from the study. The questionnaire evaluated their socio-demographic characteristics (such as age, marital status, residence, educational level, occupation) and other variables like the use of internet, what the internet resource was used for, as well as the type of internet search engine(s) explored. In this study, primary care patient was defined as the patient that is seen at General out Patient Clinic (GOPC) of Benue State University Teaching Hospital. The patients are often seen by the primary care physicians (the Family Physicians). The inclusion criteria for the participants include being a primary care patient at Benue State University Teaching hospital and consenting to participate in the study. Approval for the study was obtained from the Research and Ethical Committee of Benue State University Teaching Hospital, Makurdi. Collated data were analyzed using Statistical Package for Social Sciences for Windows version 18.0 (SPSS, Inc., Chicago, Illinois).

Sample size estimation

The sample size was determined using the formula below [19].

$$n = \frac{(Z_1 - a)^2 \quad P(1-P)}{d^2}$$

Where:

n	=	Minimum sample size
z1-a	=	Constant at 95% confidence interval from two tables which is 1.96 for two-tailed study.
P	=	Best estimate of population prevalence obtained from literature review, which is 78%[9].
d	=	Precision which at 95% confidence interval is 5%.

$$n = \frac{(1.96)^2 \quad X \quad 0.78(1-0.78)}{(0.05)^2} = 263$$

However, 282 primary care patients were recruited for the study

Results

A total of 282 primary care patients were recruited for the study. These were aged 18-80years with the mean age of 40.3 years and a standard deviation of 14.3. The majority of the participants were below the of 30 years. Few of the participants were aged 70 years and above. Table 1: Shows the age distribution of the subjects. The socio-demographic profile of participants showed that the majority of the participants were females 163(57.8%), while the males were 119(42.2%). The married participants were the majority 196(69.5%), while separated couples accounted for only1 (1.4%). Almost all the participants 277(98.2%) were Christians, while Muslims were 5(1.8). The Tiv accounted for the majority of the ethnic group 209(74.1%) while the Hausas were only 5(1.8%).The occupation of the majority of the participants was civil service 119(42.2%), while those that were applicants were 13(4.6%). On the educational attainment of participants, those with primary education were the least 23(8.2%), while those with tertiary education were the majority 172(61.0%), secondary education accounted for 61(21.8%), and those that had no formal education were 26(9.2%). Table 2: Shows the socio-demographic characteristics of primary care patients. Internet use by primary care patients showed that more than half 154(54.6%) used the internet resource, while 128(45.4%) has never used it. Table 3 and Figure 1: shows the distribution of internet use by primary care patients. About a third 53(34.4%) of the participants indicated using internet services to source for health information, while the majority101 (65.6%) had not used it to obtain health information prior to the study. Table 4 and Figure2: shows the distribution of primary care patients who used internet to obtain health information.On the reason for the use of internet resource, majority of the respondents 124(30.7%) indicated that they used the service to send e-mail, while others used it for research 101(25.1%), social network 85(21.1%), entertainment 25(6.2%), and business transactions 15(3.7%). Table 5: shows the distribution of reasons for using internet by primary care patients.The respondents that had used internet services utilized different search engines; google was used by more than half 144(55%) of the respondents, while others used yahoo 92(35.1%), hinari 10(3.8%), pubmed 09(3.4%), and only 7(2.7%) used AJOL. Table 5 and Figure 3: shows the distribution of internet search engines used by the primary care patients.

Table 1: Distribution of age(years) group of primary care patients

Variables	Frequency	Percentage
<30	78	27.7
30-39	61	21.6
40-49	67	23.8
50-59	43	15.2
60-69	22	7.8
70 and above	11	3.9
Total	**282**	**100**

Table 2: Socio-demographic distribution of primary care patients

Variables	Frequency	Percentage
Sex:		
Males	119	42.2
Females	163	57.8
Total	**282**	**100**
Marital status:		
Married	196	69.5
Single	65	23.0
Separated	1	0.4
Divorced	4	1.4
Widowed	16	5.7
Total	**282**	**100**
Religion:		
Christianity	277	98.2
Islam	5	1.8
Total	282	100
Residence:		
Urban	231	81.2
Rural	51	1.8
Total	**282**	**100**
Ethnic groups:		
Tiv	209	74.1
Idoma	24	8.5
Igede	11	3.9
Igala	15	5.3
Hausa	5	1.8
Ibo	10	3.6
Yoruba	8	2.8
Total	**282**	**100**
Occupation:		
Civil servants	119	42.2
Self employed	103	36.5
Applicants	13	4.6
Students	47	16.7
Total	**282**	**100**
Education:		
Tertiary	172	61.0
Secondary	61	21.8
Primary	23	8.2
No formal education	26	9.2
Total	**282**	**100**

Table 3: Distribution of internet use by primary care patients

Variables	Frequency	Percentage
Have you ever used internet?		
Yes	154	54.6
No	128	45.4
Total	**282**	**100**

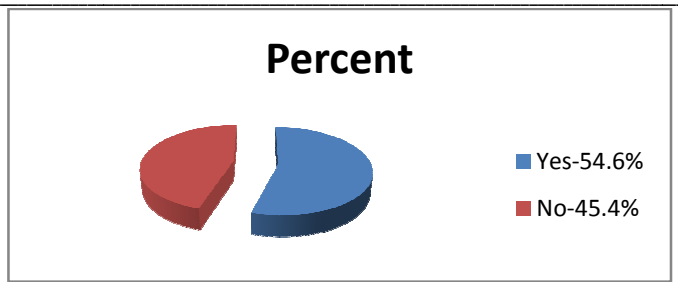

Figure 2: Distribution of internet use by primary care patients

Table 4: Distribution of internet use by primary care patients to obtain health information

Variables	Frequency	Percentage
Have you ever used internet to obtain health information?		
Yes	53	34.4
No	101	65.6
Total	**154**	**100**

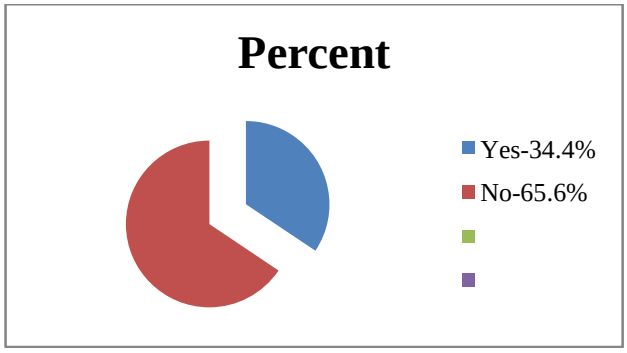

Figure 3: Distribution of internet use by primary care patients to obtain health information

Table 5: Reasons for using internet resource

Variables	Frequency	Percentage
E-mail	124	30.7
Research	101	25.1
Health information	53	13.2
Social network	85	21.1
Entertainment	25	6.2
Business transactions	15	3.7
Total	**403**	**100**

Table 6: Distribution of Internet search engine used by the primary care patients

Variables	Frequency	Percentage
Google	144	55
Yahoo	92	35.1
Hinari	10	3.8
Pubmed	9	3.4
AJOL	7	2.7
Total	**262**	**100**

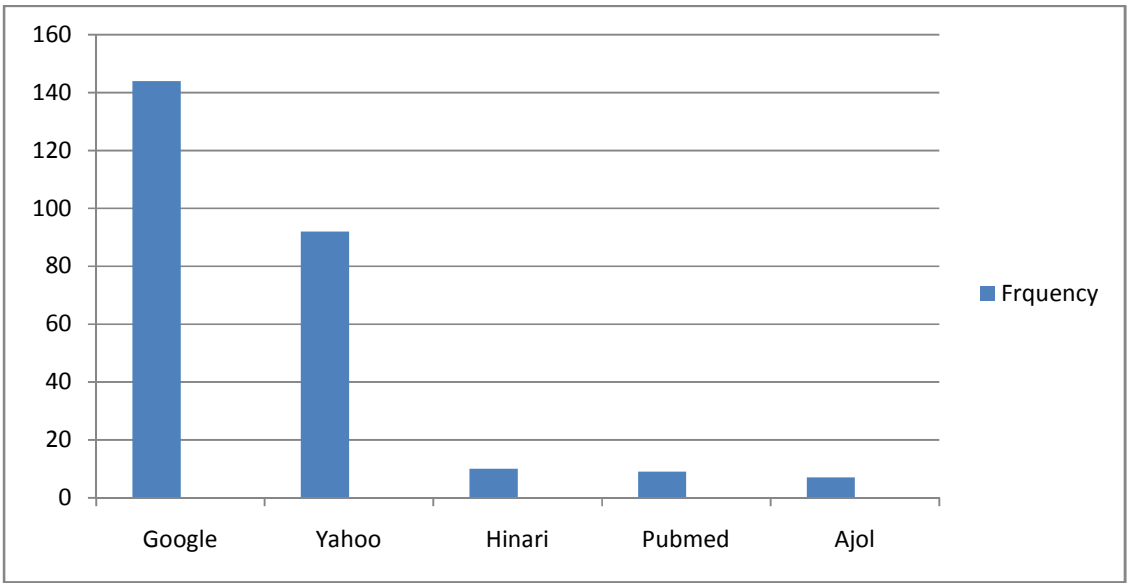

Figure 4: Distribution of Internet search engine used by the primary care patients

Discussion

The world is fast becoming a global village due to a rapidly growing rate of internet resource use. Many people including patients now use internet service to obtain information. The knowledge acquire by using internet resource is improving the quality of life of many people including the sick.[5] Unfortunately, little or nothing is known about internet use by primary care patients in Nigeria. In the current study the percentage of primary care patients that used internet was 54.6%. This figure is comparable to 53% reported among patients in three urban primary care clinics affiliated with Bufallo University Medical School.[8] It is however lower than 78% reported by Robin *et. al*, in primary care waiting room in Columbia[7] and 65% in a cross-sectional study from the waiting room of 13 primary care officers affiliated with the MetroNet Practice based research network in Detroit area.[20] Other experts in primary care research have reported lower figures. For instance, in the Niger-Delta Region of the Federal Republic of Nigeria, Etukumana *et. al*.,[21] reported a percentage of 40.3% among primary care patients in a tertiary health facility, while Richard *et al*., reported 34% among Type 2 diabetes mellitus patients.[9] The figure reported in the current study is above average. However, it is not encouraging when compared with other figures from the developed economy. The low figure obtained in this study could be attributable to the fact that many middle-belt populace may not have come to terms with the current global internet revolution. Furthermore, many Nigerians are living below the poverty line; as a result they may exercise some restrains in accessing internet resource because of financial constraints. Additionally, differences in the study design and the studied population might have contributed to the disparity in the percentages reported. The present study has also revealed that out of the 154(54.6%) primary care patients that used the internet resource, only 53(34.4%)

used the facility to obtain health information. This figure is higher than 24.8% reported in South-South Nigeria,[21] and more recently, 25% by O'Connor and Johanson among gastroenterology patients.[22]It is however lower than 74%[22] reported in Wayne State University School of Medicine; 68%[8] in urban Buffalo and 53.5% in Internal Medicine private practice located in Providence.[23] Even though more than half of the participants indicated to have used the internet resource in the current study, it is disturbing to observe that about a third of this population used it to retrieve health information. The reason for the above discovery is hazy because this study was conducted among patients and one could have expected that the internet which they were using for other purpose(s) could have equally been used to obtain information about their own illness. Similarly, evidence from research work has shown that health information is one of the most frequently sought topics on the internet, as a result Computer-literate patients are seeking to take more control of their health by using the Internet to seek out information related to illness and treatment. [14, 15, 16]. The information provided on the Web helps patients to better manage illness and to make informed choices, and ultimately changes the dynamics of the patient–provider relationship.[5] There is need to advocate for studies on why many patients are not using the internet resource to obtain information about their health in the middle-belt region of Nigeria. Furthermore, different people use internet resources for different purposes; these include e-mail, research, social network, transactions, communication and entertainment. The current study has shown that majority of the primary care patients that participated in the study used the internet service to send e-mails and to retrieve information for research work. The reason for this finding might be that many of the participants were under 30 years of age and about 61.0% were either in the tertiary institution or had tertiary institution certificates. These groups of participants are likely to use e-mail services readily and undertake research activities very often. **Limitation:** The current study is hospital based; the results obtained may not be an accurate representation of the people of the middle-belt region of Nigeria. **Conclusion:** The percentage of the primary care patients that used internet in a part of middle-belt region of Nigeria is 54.6%. Out of this only 34.4% used the internet to obtain health information. These findings underscore the need to include health benefits of internet use in public health awareness and interventions.

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Reference

1. National Telecommunications and Information Administration (NTIA). Falling through the Net: Toward Digital Inclusion. Available at: http://www.nita.doc.gov/. 2000
2. Pew Internet and American Life Project. Internet Health Resources, Health Searches and Email Have Become More Commonplace, But There Is Room for Improvement in Searches and Overall Internet Access. 2003. Available at: http://pewInternet.org/
3. National Telecommunications and Information Administration (NTIA). A Nation Online: How Americans Are Expanding Their Use of the Internet.2002.Available at: http: // www .nita. doc. gov/
4. Schement J, Curtis T. Tendencies and Tensions of the Information Age. New Brunswick, NJ: Transaction Publications, 1997
5. Internet usage on Nigerian's Global System of Mobile Telecommunication Networks. Available at:http:/www.premiumtimesng.com/news/topnews/htm
6. Eighty three million Internet users in Nigeria. Availableat:http:www.vanguardngr.com/2015/05/83m- internetusers-nigeria-ncc/htlm
7. Robin L. K, Richelle J. Koopman, B. J. Douglas S. W. Lynn E. K. Shannon M. C. Internet use by Primary Care Patients: Where is the digital divide? Fam Med 2012;44(5):342.
8. Suzanne D, Amber M. R, Thomas H. F, Rakesh B, Ellen R, Vinod K. G, and Charles O. H, Patient Internet Use for Health Information at Three Urban Primary Care Clinics. JAM Med Information Association 2004;11:499-504
9. Richard W. G, Enrico C, Henry C. C, and James B. M, Internet Use Among Primary Care Patients with Type 2 Diabetes. J Gen Intern Med. 2005 May;20(5):470-3

10. Ralston JD, Carrell D, Reid R, Anderson M, Moran M, Hereford J. Patient web services integrated with a shared medical record: patient use and satisfaction. J Am Med Inform Assoc 2007;14(6):798-80

11. Crabtree BF, Nutting PA, Miller WL, Stange KC, Stewart EE, Jaen CR. Summary of the National Demonstration Project and recommendations for the patient-centered medical home. Ann Fam Med 2010;8(Suppl 1):S80-S90

12. McClellan M, McKethan AN, Lewis JL, Roski J, Fisher ES. A national strategy to put accountable care into practice. Health Aff (Millwood) 2010;29(5):982-90

13. Centers for Medicare and Medicaid Services (CMS), HHS. Medicare and Medicaid programs; Electronic Health Record Incentive Program; final rule. Fed Regist 2010; 75(144):44314-62

14. Dickerson SS, Brennan PF. The Internet as a catalyst for changing power in patient/provider relationships.Nurs Outlook. 2002;50:195–203

15. Ehrenberger H, Murray PJ. Issues in the use of communications technologies in nursing research. Oncol Nurs Forum. 1998;25:11–15

16. Tyson T. The Internet: tomorrow's portal to non–traditional health care services. J Ambul Care Manage. 2000;23:1–7

17. Eysenbach G, Powell J, Kuss O, Sa E. Empirical studies assessing the quality of health information for consumers on the World Wide Web: a systematic review. JAMA. 2002;287:2691–70

18. National Population Commission, Abuja. 2006 National Census Report

19. World Health Organization Sample Size Determination Auser's Manual. WHO/ HST/ ESM /86

20. Kendra LS, Thomas R, Justin N, Raouf S, Anne VN. Family Medicine Patients' Use of Internet for Health Informatio: A MetroNet Study. *J Am Board Fam Med 2006(19). 1 39-4*

21. Etukumana, EA, Egwuda, L, Jiman A,,Andem, N ,Udo, Godwin. Internet use by primary care patients in a tertiary health facility ,Uyo, Nigeria. 4th Wonca African Regional Conference, Ghana 2015. Sustainable Development Goals for the Health of Africa,pg 80

22. O'Connor JB, Johanson JF. Use of the Web for medical information by a gastroenterology clinic population.JAMA. 2000;284:1962–4

23. Joseph AD Rebecca AGJames JN Steven ER Peter DF,Anne WM.Patients' Use of the Internet for Medical Information. J Gen Intern Med. 2002 Mar; 17(3): 180–185.

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