Extent of utilization of health information by medical doctors in Niger State, Nigeria

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Abstract
The study investigated the extent to which medical practitioners (doctors) utilized health information resources. It adopted survey design to answer four research questions. A total of 116 medical doctors were selected using a combination of stratified, simple random and purposive sampling techniques. The data collected were analyzed with frequency counts, percentage and mean. Two data collection instruments were used: questionnaire and observation check. The findings revealed that a majority of the respondents utilized textbooks more than the other sources of health information. Sources of health information were found inadequate. The sources of information available to the medical practitioners have impacted positively on medical service delivery as a majority of them reported that they use those information for diagnosis, symptoms of disease conditions to mention but a few. The study concluded that due to the busy nature of the respondents' jobs, a number of strategies that would assist to increase the use of the preferred health information sources, depending on their individual choices such as setting up mobile medical libraries should be adopted. Mobile apps which contain health information would also enhance health information delivery straight to the palm of the medical doctors.

Keywords*:* Utilization, health information, medical doctors, Niger State, Nigeria

Introduction
Information is the life-wire of any organization and the twenty-first century has witnessed remarkable evolution of information. Health information is pertinent for medical practitice all over the world. This information, in the opinion of Nwfor-Orizu and Nwachukwu (2012), is likened to knowledge, facts and news generated from various sources that are necessary for good physical and mental conditions of human beings. Health information can be generated and disseminated from and through different sources: the foremost is research. Other sources, according to Nwfor-Orizu et al (2015), include routine or audit data as well as experiences in practice. Whatever the health information is, the dissemination is through information resources like journals, textbooks, encyclopedia, conference proceedings and most recently the Internet. The availability of health information from these sources, nevertheless, does not indicate its utilization.

Utilization of information, according to Bitagi (2012), is the extent to which available information resources is used to meet the information needs of the users. This implies that it is incumbent on medical practitioners to make maximum use of the available information resources to ease the performance of their respective duties as prescribed and arranged. If this is achieved it is expected that the medical practitioners will provide sufficient and reliable medical services to all the citizens of the state. However, the health information in their different forms and sources need to be found in order for use to be effective. Recent studies in information sciences have been

concerned with the manner in which information sought is used. Cox and Jantti (2012) maintained that usability studies are concerned with discovering, articulating, understanding, influencing and when appropriate the elimination or at least minimization of those obstacles between a user and his information goals. Studies by Eison, (2010) which explored the use of information, found out difference in the use of information, sources and types exist among professionals.

Statement of the problem
Effective healthcare delivery in Nigeria has been an issue of discuss among stakeholders. Accessing quality and up-to-date data information has also been identified as vital to maintaining quality healthcare. It is no wonder that international funding agencies like the World bank are funding projects aimed at making health information available, especially in developing countries. Medical practitioners all over the world make use of different types of information for patient care which include but not limited to the following, patient data, population statistics, medical knowledge, logistic information and social influence. However, most of the clinical information they apply while examining patients are out of date or wrong. Thus, patients have died as a result of wrong diagnosis and treatment. It is necessary for doctors to seek and keep abreast with current clinical information. There is thus a need to investigate the use of health information of medical practitioners to fill up these gaps in the literature.

Objectives of the Study
The broad objective of this study was to determine the utilization of health information by medical practitioners in Niger State. Specifically, the study set out to:

1. identify the sources of health information available to medical practitioners in Niger State Government hospitals;
2. find out the types of health information that are been utilized by medical practitioners in Niger State Government hospitals;
3. find out the purpose for which the health information are used for; and
4. determine how satisfied medical practitioners are with the health information they assessed.

Literature review
Yusuf (2012) posited that the progress of modern societies as well as individuals depends on providing the right kind of information in its right form, source and time. Accordingly, Davies, (2011) stated that information utilization leads to an increase in knowledge and understanding of a phenomenon. In the same vein, Kostenik, Morgan, D'Arcy (2013) noted that an individual who reads, views or browse information resources is using those materials in the expected way. That is to say, an expressed demand has been satisfied and use has taken place. However, for information to be used effectively, it has to be systematically collected, organized and must be readily available for users on demand. Investigating how information and communication technology (ICT) has enhanced information use, Bhattacharjee and Siha (2016) observed that ICT has enhanced the generation of quicker as well as better information, stating further that prior to the advent of ICT, information search used to take a huge amount of time because of the volume of information non-electronic or analog form.

Interpersonal contacts with colleagues, consulting medical experts, pharmaceutical representatives and

intermediaries such as medical librarians are one source of information used by doctors to seek further information. According to Anyaoku (2016), medical libraries are institutions for health information dissemination and access. They are set up to collect, organize and disseminate health and well-being information in a health, hospital or academic setting. They support medical doctors, nurses, pharmacists, other allied health professionals and students in learning, knowledge acquisition and research through provision of information resources that cover all areas of medical specialties.

Arraid (2011) citing Nail-Chiwetalu and Ratner, in a 16-question survey study conducted to assess the information-seeking abilities and needs of practicing speech-language pathologists demonstrated that personal communications tend to be used most often, since 164 out of 208 responses ranked it as the first important information source for them.

The tendency of doctors to use personal contacts, to obtain information to solve clinical problems and foster personal knowledge or to fill gaps in knowledge, have been attributed by researchers to the immediacy, accuracy and reliability of the information. Kostenuik, Morgan and D'Arcy (2013) study reported that 62.4% of family physicians in the Canadian province of Saskatchewari made consultations with colleagues in main patient care setting in order to make specific clinical decisions at least once every month and preferred it as a source of clinical information. Olajide and Otunla (2015) revealed that the major channel of searching for information of student nurses in three school of nursing in south west Nigeria was asking colleagues (73.3%) even though they visited the library very often.

It appears that doctors in general use paper sources in order to answer medical questions that emerge during their clinical practices and for other purposes such as education and research. Medical doctors usually prefer communication with their colleagues as a source of clinical information, as well as print sources such as books and journal articles to answer questions that arise in their daily practice (Naidoo *et al.*, 2010; Kosteniuk *et al.*, 2013).Whereas Verhoevenf, et al (2009) reported that family doctors tend to consider their colleagues as a first source in the context of patient care and self-study. However, they confirmed that family doctors, who were concerned with research or education, depended mainly on formal resources whether printed or electronic.

Some studies have been undertaken to investigate whether the medical literature can answer the doctors' clinical questions and satisfy their information needs. In a study carried out by Ayers (2011) to discover whether clinical questions posed by the primary care doctors could be answered by the literature published in the medical journals showed that the medical journals can provide information to answer such questions. They collected a sample of the doctors' questions (sixty questions out of two hundred and ninety-five recorded questions were selected randomly) and with the help of librarians searched for answers to those questions and then asked doctors to evaluate these answers (the study received feedback for only forty-eight questions). They found that doctors said that the information found was relevant for twenty eight out of forty-eight (58%) of the questions, and doctors stated that they obtained a "clear answer" for twenty-two out of forty-eight (46%) of the questions. What is more, the study indicated that the doctors believe that the acquired information might have influenced 40% of the patient cases. However, the authors believed that one of the limitations of these outcomes is that the librarians who searched

the answers did not meet the doctors who asked the questions. This might have affected their efficacy at finding more appropriate and relevant sources. In addition, they think that the estimation of efficiency and relevance of the retrieved articles may have been affected by the long period between the time of asking these questions and receiving the answers.

Osain (2011) proposed a framework to help explain the need for information. The suggested framework classifies the situation according to the tasks, which are "service provider, administrator/manager, researcher, educator, and student". Such classification may give insights to the different types of information needs. For instance, the service provider (patient management in the case of doctors) requires information in reference to specific patient care, whereas the researcher, educator, and student may need information that it is general in nature.

While Naem Ahmed and Ishaq (2013) categorized the type of information required by doctors according to the situations that give rise to such needs, these needs can be classified into two main broad categories. The first category is the clinical information needs, and the second category is non-clinical information needs. They classified the information needs as "Those generated by a specific case or individual (diagnostic, referral, pharmaceutical needs, etc.) and those of a general nature (research reports, grant information, statistical data, policies, directives, etc.)". It is assumed, that the first type refers to clinical information needs as it is in reference to patient care, and the second type indicates non-clinical information needs as it may be for purposes other than patient care such as teaching, and managerial purposes. However, the authors did not provide detailed information about such information needs and they included several health professionals other than doctors so it is difficult to take them as representative of doctors' needs.

The clinical health information needs in the context of patient care include basic information about a patient's medical history, diagnosis and treatment information. Chatterly, Storie, Chambers, Buckingham, Shiri and Dorgan, (2012) provided more information of information. According to them they include "diagnosis", "physical signs/symptoms", "treatment", "lab tests", "drug information", "referral" and "provide information to family". Therefore, the clinical information needs are the kind of information that is likely to be needed with reference to patient care and to support the clinical decision making of doctors.

However, there is non-clinical health information in which doctors have a wide range of information needs apart from clinical needs. This kind of information is more likely to be generated for purposes other than the patient care, such as education and management. However, the majority of the research has concentrated on the clinical information needs (Owens & Tomlin, 1998; Davies, 2007).

Non-clinical information needs, such as information needed to achieve educational objectives can involve real practice with patient cases (World Health Organization, 1995) (the real practice of medical students in the hospital with the patient, which requires that doctors who are involved in such programmed should collect important information on the patient, such information may result in patient care management, though the main aim is to collect information that is useful in the educational context).

Gonzalez-Gonzalez et al. (2007) found that doctors who have a teaching or managerial responsibility have greater need for non-clinical information. Consequently, it should be recognized by the health

information systems and effort should be made to satisfy such needs for doctors.

It is assumed that doctors in their routine practices encounter many medical problems that should be solved, and in order to support and make a clinical decision in the context of patient care, doctors sometimes are in need of further information. Although recognized needs are often considered as a major driving force for making a decision to seek information. There are also cognitive records showing setbacks in health due to lack of health information such as high mortality rate, underutilization of services, increased health care costs, increased medical errors, increased hospitalization to mention just a few. It is in view of averting this setbacks that Zakari and Nongo (2016) asserted the need for information by service providers has increased considerably with the increasing competitiveness of the health care market place . There is a dare need to strategize using the competitive intelligence systems as a vital tool or source for health information.

Studies revealed that dental science teachers and students of Baba Farid University of Health Sciences used the Internet for perceiving health/dental science information, followed by patient care with 26.5%, 18.3% for research and 12.6% used the Internet for other reasons. Doran et al (2010) evaluated the usability of mobile information terminals to improve access to information resources for nurses in Ontario, Canada. The study revealed that the nurses frequently consulted Google and Nursing PLUS for drug and medical reference information.

Ajuwon (2015) investigated resident doctors in Southwestern Nigeria using descriptive survey design and questionnaire. The study revealed that 98.8% of the resident doctors in Southwestern Nigeria used health information resources for preparation of ground round/seminar presentations, 94.5% used them for examination, 93.1% for research, 90.3% used it for communication and 88.55 for patient care.

Olajide and Otunla (2015) investigated the use of information resources by nursing students of three schools of nursing in south west Nigeria using descriptive survey. Their findings revealed that 77.8% used the information resources for their assignments while 59.7% used information resources to get information about patients' diagnosis/intervention.

Methods
The study adopted the descriptive survey. The population consisted of 182 doctors in Niger State Ministry of Health and Hospital Management Board hospitals (Niger State Government hospitals). Stratified sampling, simple random and purposive sampling techniques were used to select three (3) local government areas from each of the (3) geo-political zones of the state - Zone A, Zone B and Zone C. To select the needed sample from the population of the hospitals that were used, all the doctors found during the period of the research were purposively selected for this study. A total of 116 respondents were selected from 9 hospitals in the nine (9) selected local government areas of Niger State as sample for this study. Questionnaire was the only instrument used for data collection in this study. The questionnaire contained both open and close ended questions. The researcher distributed the questionnaire personally with the help of research assistants who were staff of each hospital under study. The data collected were analyzed using descriptive statistics of frequency counts, percentage and mean.

Results
The response rate of the administered questionnaire to Medical Doctors in each of the sample hospital is presented in Table 1.

The table indicated the copies of questionnaire returned and used for this study. A total of one hundred and sixteen 116 copies of the questionnaires were administered to the medical doctors of the sampled hospitals. Out of this figure, 86(74.1%) were properly filled, return and used for the purpose of the analysis, while the thirty 30 (26%) were either not returned or unusable.

Table 2 reveals that, out of the total number of 86 respondents, 45(52%) of the respondents were males, while 41(48%) were females. Similarly, the table also shows the age distribution of respondents in the three geo political zones under study. The respondents under 30 years of age were 14 (20%), respondents between the ages (31-40) years were 31(44%,), respondents between the ages (41-50) years were 22(31%) while the respondents between (51-60) years were 4(6%).

Table 3 shows the response rate of medical doctors on the sources of patient health information utilized in Niger State Hospitals. The table shows that the doctors used different information sources to get health information, ranging from interpersonal contacts to textbooks, encyclopedias, Textbooks and electronic resource and Internet are the most used of health information by the doctors in Niger State. The other sources might be formal (printed or electronic) or informal such as personal communications. Regardless of type, it is important to determine the preferences of the doctors and the most frequently used source to help develop medical library systems since use is an indication of need. From the table above, the most used source of health information by the doctors in Niger State are textbooks. Obianuju et al (2015) also found that out in their study which stated that all of the doctors (100%) in six teaching hospitals in south east

Nigeria ranked textbooks as the most preferred source of health information. These results give an indication that doctors use textbooks more than the other sources of health information. Unfortunately, the researcher noticed that most of the hospitals in Niger state do not have libraries with textbooks for the doctors. This seems to be a trend in developing countries. According to the authors, challenges include lack of sources of high quality and current information on relevant health issues and equally lack of locally relevant materials. This is a major information gap that the Niger state library board has to step into to fill by liaising with the hospitals management board on setting up functional libraries in hospitals. Alternatively, if the doctors can't have access to their most preferred information source which are textbooks, wireless Internet connection should be provided for them to access e-textbooks, unfortunately also, there were no wireless network connections in the hospitals. This is in sharp contrast to what is obtained in southwest Nigeria as reported by Anjuwon (2015) that over 40% of the doctors in training health care institutions in the South-West used wireless connection to access health information.

Respondents view from the observation check lists shows the types of health information resources available in the Niger state hospitals as presented in Table 4. The table reveals that information resources on patient data, diagnosis information, physical symptoms and drugs were more available in Niger state hospitals while information resources on disease conditions, Disease psycho. Aspects, Lab tests & results, Treatment, medical knowledge and population statistics were not adequately available. This finding indicates that a lot of health information resources related to patient data, diagnosis information

were prevalent in hospitals in Niger State. This is not surprising as these hospitals are the secondary health care facilities in the state, thus issues that can't be treated at the primary health care level are referred here. In line with these findings, Nongo and Ode (2018) revealed that Nigerian government left alone cannot actualize the Sustainable Developmental Goals 3. It has the responsibility to synergize both the Traditional Medical Practitioner and the Orthodox Medical Doctor to enhance easy access to health. This calls for enforcement of healthy information sources by the Medical Librarians in Tertiary hospitals, Colleges of Medicine, Institution of learning and research. The synergy will help to speed up action towards realization of the SDGs in developing country like Nigeria. The key to successful realization of sustainable development goals (SDGs) in Nigeria is Advocacy/sensitization of preventive health care for all ages. They recommend further measures that will promote continuity in culture, provide adequate fund and aggressively address the issue of inadequate health facility with a national health policy in place which could look at the broadest spectrum of diseases, causation and effective management and intervention strategies with appropriate healthy measures.

Respondents' views on the purpose of utilizing health information resources is presented in Table 5. The table indicates that majority of the medical doctors in Niger State used the different types of information resources to be up to date and also to answer patients and colleague's questions. This finding agreed with Mohammed-Arraid (2011) that, clinical information needs are the kind of information that is likely to be needed with reference to patient care and to support the clinical decision making of doctors. Their study confirmed that heath workers' need up-to-

date, simple information in formats that can be useful for program management, policy development and service delivery. Doctors handle lives of individuals and it is only pertinent for them to be up-to date in their profession to avoid unnecessary causalities. Librarians can leverage on this finding to provide more current ground breaking treatment and diagnosis techniques for their doctors to keep them updated at all times.

Respondents' views on the level of satisfaction Health Information resources that was accessed and utilized is presented in Table 6. It can be seen that the doctors were very satisfied with encyclopedia, electronic medical records, handbooks, Theses/Dissertations, audio visual materials and paper resources. While majority of the respondents indicated that they were unsatisfied with use of Library, and interpersonal contact in their respective hospitals.

Summary of major findings

The major findings of the study are:

1. Several health information sources are available to the medical practitioners in Niger State. They include textbooks; inter personal contact, audio visual materials, general medical websites; encyclopedia to mention but a few. The most preferred of these sources by the doctors however are textbooks.

2. The types of health information available to doctors working in Niger State Hospitals were found to be patient data, diagnosis information, physical symptoms, disease conditions, lab tests & results, about treatment, about drugs, medical knowledge, population statistic, referral information and information on medical equipment.

3. The purpose of utilizing health information as indicated by the doctors working with Niger- State includes been up to date with latest trends in the field, for patient care, answering patients/ families' questions, and answering colleague questions.

4. A majority of the respondents indicated that they were very satisfied with the health information gotten from encyclopedia, electronic medical records, handbooks, theses/dissertations, audio visual materials and paper resources.

Table 1: Response rate

Hospital	Population	Number administered	Number returned	Percentage returned
Minna	62	62	43	50
Suleja	14	14	10	11.6
Kagara	6	6	6	7.0
Agaie	3	3	3	3.5
Lapai	3	3	3	3.5
Bida	10	10	10	11.6
Nasco	3	3	3	3.5
Kotangora	13	13	6	7.0
Wushishi	2	2	2	2.3
Total	116	116	86	100

Table 2: Respondents classification by gender

Gender	Frequency	Percentage
Male	45	52
Female	41	48
Age		
Under 30yrs	14	20
31-40Yrs	31	44
41-50Yrs	22	31
51-60Yrs	4	6

Table 3: Sources of health information utilized by medical practitioners

S/No.	Available information sources	Minna	Suleja	Kagara	Agai	Lapai	Nasco	Wushishi
1.	Inter personal contacts	1	1	1	1	1	1	1
2.	Use of library (hospital library)	1	1	1	1	1	1	1
3.	Textbooks	1	1	1	1	1	1	1
4.	Electronic resource and Internet	1	1	1	1	1	1	1
5.	Audio visual materials	1	1	1	1	1	1	1
6.	General medical websites	1	1	-	-	-	-	-
7.	Encyclopedias	1	1	1	1	1	1	1
8.	Use of electronic medical records	1	-	-	-	-	-	-
9.	Handbooks	1	-	-	-	-	-	-
10.	Theses/dissertations'	1	-	-	-	-	-	-
11	Others specify	-	-	-	-	-	-	-

Table 4: Types of health information resources in the Niger state hospitals

S/N	Resources	Available	Not Available
1	Patient data	56(65%)	30(35%)
2	Diagnosis information	56(65%)	30(35%)
3	Physical symptoms	57(66%)	29(34%)
4	Disease conditions	-	86(100%)
5	Disease psycho. Aspects	29(34%)	57(66%)
6	Lab tests & results	-	86(100%)
7	Treatment	20(23%)	66(77%)
8	Drugs	68(79%)	18(21%)
9	Medical knowledge	28(33%)	58(67%)
10	Population statistics	22(26%)	64(77%)

Table 5: Purpose of utilizing health information resources by the respondents

Types	To be up to date	Patient care	Education purpose	To write journal articles	Answer patients/ families questions	Answer colleague questions	Mean
Patient data	30(35%)	56(65%)	-	-	-	-	1.65
Diagnosis	57(66%)	29(34%)	-	-	-	-	1.34
Physical symptoms	85(99%)	1(1%)	-	-	-	-	1.01
disease conditions	40(46%)	46(54%)	-	-	-	-	1.53
Disease psycho. Aspects	29(34%)	57(66%)	-	-	-	-	1.66
Lab tests & results	29(34%)	12(14%)	1(1%)	-	44(51%)	-	3.22
Treatment	29(34%)	12(14%)	1(1%)	-	44(51%)	-	3.22
Drugs	1(1%)	40(46%)	1(1%)	-	-	44(51%)	4.06
Medical knowledge	45(52%)	41(48%)	-	-	-	-	4.07
Population statistic	1(1%)	29(34%)	1(1%)	-	-	55(64%)	1.48
Referral information	45(52%)	41(48%)	-	-	-	-	2.33
New med. equips.	1(1%)	29(34%)	1(1%)	-	-	55(64%)	4.28

Table 6 Assessment of the level of satisfaction of health information resources accessed and utilized by medical practitioner

S/N	Information Sources utilized	Very Satisfied	Satisfied	Unsatisfied	Very Unsatisfied	Mean
1.	Inter personal contact	30(35%)	-	11(13%)	45(52%)	2.17
2.	Use of library	30(35%)	-	11(13%)-	45(52%)	2.17
3.	Textbooks	75(87%)	-	-	11(13%)	3.62
4.	Electronic resource and Internet	56(65%)	-	-	30(35%)	2.95
5.	Audio visual Materials	86(100%)	-	-	-	4.00
6.	General medical website (e.g. Medline)	45(52%)	-	41(48%)	-	2.95
7.	Encyclopedia	45(52%)	-	-	41(48%)	2.57
8.	Use of electronic medical records	45(52%)	-	-	41(48%)	2.57
9.	Handbooks	45(52%)	-	-	41(48%)	2.57

10.	Thesis/dissertations	45(52%)	-	-	41(48%)	2.57

KEY.VS=Very satisfied. S=satisfied. UN= Unsatisfied. VN= Very Unsatisfied

Conclusion

Based on the findings of this study, it is pertinent that librarians develop and design trending library services to the medical practitioners. Due to the busy nature of their jobs, a number of strategies that would assist to increase the use of the preferred health information sources, depending on their individual choice such as setting up mobile libraries won't be a bad idea. Mobile apps with that contain the types of information available would also help bring this health information straight to the palm of the doctors.

Based on the findings of this study the researcher recommends the following:

1. The provision of adequate health information resources for medical practitioners working in Niger state hospitals should be enhanced.
2. The periodic training of medical practitioners on the technicality of library facilities through harmonized library instruction program.
3. The provision of Information Communication Technology facilities linked with internet to enable the medical practitioners to have adequate access to health information.
4. The systematic and periodic organization of product promotion/book shows by the Niger state hospital management board.
5. The provision of information that caters for the medical practitioners' personal factors on the effective utilization of health information resources which will enhance their services.

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