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Influence of Demographic Factors on Information-seeking Behaviour of Medical Doctors in Teaching Hospitals in Nigeria

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INFLUENCE OF DEMOGRAPHIC FACTORS ON INFORMATION-SEEKING BEHAVIOUR OF MEDICAL DOCTORS IN TEACHING HOSPITALS IN NIGERIA

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ABSTRACT

Information-seeking Behaviour (IB) of medical doctors is crucial to satisfying information needs relating to patients' treatment and improvement of healthcare service delivery. Previous studies on doctors' IB have focused largely on information sources and utilisation without consideration for factors predicting their IB; particularly Doctors' Demographic Factors (DDF). This study, therefore, was designed to determine DDF (age, gender, marital status, specialty and medical job experience) as predictors of medical doctors' IB in teaching hospitals in Nigeria.

The survey design of correlational type was adopted and multi-stage procedure was used. Six teaching hospitals across five geo-political zones in Nigeria were randomly selected, excluding the North-east zone for safety reasons, while 13 medical specialties common to the hospitals were purposively selected. Five out of the 13 specialties were randomly selected and 20% of medical doctors in each of the selected specialties from each of the six hospitals were selected using the proportionate sampling technique, making a total of 668 medical doctors. The instruments used were DDF (α=0.73) and IB (α=0.69) scales and a structured interview was held with six highly experienced medical doctors, one representing each hospital. Data were analysed using descriptive statistics, Pearson's product moment correlation and regression at 0.05 level of significance, while the qualitative data were content-analysed.

Medical doctors' age was 34.30 ± 3.60 years, and 61.6% were male. They were mostly married (66.3%) with 51.0% having 5-14 years of medical job experience. Their specialties were obstetrics and gynecology (24.6%), ophthalmology (23.4%), otolaryngology (21.1%), medicine (19.5%) and surgery (11.4%). The doctors' specialty (r=-0.10), age (r=-0.10), gender (r=-0.11), job experience (r=0.06) had significant relationships with IB, while marital status did not. Specialty (β=0.15), age (β=0.06), job experience (β=0.04), gender (β=0.01) and marital status (β=0.01) relatively contributed to IB.

Doctors' specialty, age, gender and job experience influenced their information-seeking behaviour in teaching hospitals in Nigeria. These factors should be considered for improved information-seeking behaviour among medical doctors in teaching hospitals.

Keywords: Teaching hospitals in Nigeria, Medical doctors' information-seeking behaviour, Doctors' demographic factors

Word count: 318

INTRODUCTION

Medical doctors carry out a lot of professional activities including patient consultations, attending to emergencies, operations and medical investigations, and are largely involved in the conduct of research in medical sciences. While these doctors often need to respond to their information needs promptly, sometimes conducting searches in the presence of their patients, in order to reduce medical errors and ensure good quality of health care, they also need to improve on their information-seeking behaviour. Therefore, knowledge about their information-seeking behaviour is crucial so that the doctors can fulfill their information needs rapidly and ultimately improve on health care delivery.

The information-seeking behaviour of a particular doctor will usually depend on his specific needs. This includes: the reason the medical doctor is seeking the information and how the information is acquired. Information-seeking behaviour comprises the purposes of seeking information as well as the approaches, tools and sources used (Ocheibi and Buba, 2003). Furthermore, Choo, Detlor and Turnbull (2008) state that there are three fundamental elements that comprise information-seeking behaviour**.** These are: defining an information need, seeking the information, and using the information.

A number of factors prompt medical doctors to search for information. They seek information mostly for knowledge updating on diseases and health-related matters. This is followed by those who seek information in order to resolve specific patient problems (Norbert and Lwoga, 2012). In Nigeria, medical doctors largely sought information to keep up-to-date on current development (Ocheibi and Buba, 2003). Although sometimes, medical knowledge structure may not directly provide answers to specific patient questions, doctors most often resort to the Internet for an answer**:** to seek urgent information pertaining to a specific patient problem. The Internet provides an opportunity and a challenge to practicing doctors, when seeking medical information. Access can be difficult in some countries, and taking advantage of the technology and its information resources might be difficult, either. The fact still remains that the Internet facilitates fast access to the latest biomedical information in a manner that was impossible in the print publication era, when distribution via postal services was in vogue

The information-seeking behaviour of medical doctors is bedeviled with risks that threaten the quality of health care provided. For example, doctors engage in information-seeking to resolve medical problems during patient consultations. Some choose to consult with a

colleague while some usually read from a textbook or drug compendium. However, others do not usually search for answers during patient consultations but would rather base a decision on their current knowledge. Moreover, some doctors almost never sought answers to questions – that arose during a patient encounter - even after the encounter has ended, including questions that they themselves believed to be important. Such are situations that enhance the risks of medical errors and threaten to undermine the quality of health care provided by medical doctors. In the absence of crucial information and evidence, patient care may be jeopardized. Therefore, it is crucial for medical doctors to improve upon their information-seeking behaviour and incorporate such improvement into their knowledge base, as this shapes one part of reflection about care. Ely et al (2005) reported that searching for answers to questions that arise during doctor-patient encounters only occurs about one-third of cases. What mostly motivates the doctors to pursue answers is the conviction that an answer exists or the urgency to resolve the patient's problem. The most frequent reason doctors do not search for answers at the point of care was that they are convinced a decision could be based on their current knowledge, hence eliminating the need to search (Ely et al, 2005). It is projected that half of the questions may readily be answered with the aid of clinical records, one-quarter can be answered with traditional resources, such as journals and textbooks, while the remaining one-quarter requires synthesis of information with a biomedical knowledge base. Furthermore, in pursuing the answers, doctors' demographic factors have been identified to influence just which information sources the medical doctors use (or say they would use) (Bennett et al, 2006).

Several demographic factors also influence the information-seeking behaviour of medical doctors, with respect to a specific patient problem or a diseased condition. Such factors that have been identified in previous studies include age, gender, experience, practice type and setting (Bennett, Casebeer, Zheng and Kristofco, 2010). Younger doctors as well as female doctors were more inclined to seek information pertaining to a specific patient problem while male doctors and medical doctors with more than 20 years of experience were more likely to seek the latest information pertaining to a particular type of disease. Urban and sub-urban doctors seek information from online journals more often than medical doctors that practice in rural areas (Bennett et al, 2006). General practitioners in rural and non-rural areas were similar with respect to information needs, information seeking, and use of resources and equally effective at fulfilling their information needs (Gorman, Yao and Seshadri, 2004; Koonce, Giuse and Todd, 2004;

Gonzalez-Gonzalez, Dawes, Sanchez-Mateos and Riesgo-Fuertes, 2007). It was also found that (in comparison with medical doctors in government, university, or urban settings), doctors in rural settings more often sought help for patient care questions and less often asked questions out of curiosity or for research purposes.

Furthermore, demographic factors like 'years of experience' and specialties have been reported to either encourage or discourage information-seeking from internet-based sources when confronted with a new medical problem. This is probably because younger doctors were exposed to routine use of computers in their training, a technology that was largely irrelevant to their much older counterparts, while other specialists usually have less Internet usage, compared to general practitioners, who require in-depth information-seeking and a large number of different resources to cover the broad scope of their practice (Bennett et al, 2010).

The doctor's certification status also has an impact on the timing of advice or information seeking**:** those who are certified by a professional board are more willing to treat challenging problems without seeking additional information than are those who are not certified (Bennett et al, 2006). It has also been reported that medical specialty somehow exerts an influence on the information-seeking behaviour of medical doctors (Bennett et al, 2006). Family physicians are more apt to seek patient oriented materials than specialists who more often seek information from literature, journals and correspond with colleagues. In other words, family physicians are more likely to seek information on a specific patient problem while other specialists are more apt to seek the latest information on a specific area of research. In addition, family physicians' information-seeking differs from other specialists by focusing on direct questions that arise in the midst of patient care. Moreover, when attending to a specific patient problem, family physicians would more likely seek information on diagnosis, management, patient education resources, and guideline summaries, respectively (Bennett et al, 2006).

The previous studies reviewed have reported that demographic factors influence the information-seeking behaviour of medical doctors in other parts of the World. However, none of the studies investigated the extent of the relationships between doctors' demographic factors and their information-seeking behaviour. Therefore, this study investigated the extent to which demographic factors (age, gender, marital status, medical specialty, and years of medical job experience) influence the information-seeking behaviour of medical doctors in teaching hospitals in Nigeria.

Research questions

The study has the following research questions**:**

1. What is the information-seeking behaviour of medical doctors in teaching hospitals in Nigeria?
2. What is the relative influence of doctors' demographics on their information-seeking behaviour in teaching hospitals in Nigeria?

Hypothesis

The study tested the following null hypothesis at 0.05 level of significance:

Ho: There is no significant relationship between the demographic factors and information-seeking behaviour of medical doctors in teaching hospitals in Nigeria.

LITERATURE REVIEW

A number of factors influence just which information sources medical doctors use (or say they would use) in a particular situation. Some that have been identified in prior research include doctor's demographic factors, such as specialty, job experience, and age; practice characteristics such as practice type and settings, community size, and the availability of colleagues, specialists, and opinion leaders or educationally influential doctors (Bennett et al., 2006).

The age of the medical doctor is one characteristic that influences preferences for information sources. Younger doctors seem to use medical literature and colleagues more often than old doctors do. Contrarily, older doctors prefer CME courses and use pharmaceutical representatives more frequently (Accreditation Council for Continuing Medical Education, 2004). These differences may not be attributable simply to differences in level of experience. Gonzalez-Gonzalez et al (2007) ascertained that medical job experience, whether in respect of a specific problem or generally, has no influence on a doctor's' preference for information sources. It is most likely that younger and older doctors differ in their preferences as a result of their trainings, access to and familiarities with different information sources. The differential familiarities are perhaps most obvious in respect of computer-based information sources; medical students of nowadays are familiar with intensive use of computers during training, which was clearly not the case with medical students in the 1980s.

In addition to the influences of the characteristics of the individual doctor, the nature of the doctor's practice also affects information seeking. The doctor's specialty is one such characteristic. Bennett et al (2006) noted that in the quest of changing their drug prescription practices, specialists relied more on journals and colleagues, compared to family doctors that usually consult with pharmaceutical representatives for the same purpose. Overall, family physicians usually preferred to consult with colleagues, in respect of management and treatments in comparison with primary care internists that usually relied on medical literature (Bennett et al., 2006). As an information-intensive specialty, family doctors use several information sources in covering the wide spectrum of their practices. An essential requirement for family doctors is timeliness of access to the various sources of information that influence decisions relating to patient care. Precise questions pertaining to patient care occur in everyday practice (averagely, 3.2 questions per 10 patients) with drug prescription enquiries as the most frequent questions the doctors chose to answer. Family doctors took about less than two minutes to find an answer with the aid of traditional journals and textbooks (Gorman et al, 2004), while in another study on the use of palmtops for drug references, the doctors spent an average of 20 seconds in finding answers to their queries (Rothschild, Lee, Bae and Bates, 2002).

In a survey that compared family doctors' information seeking behaviours with those of other specialists, Bennett et al (2006) reported that family doctors claimed the Internet was beneficial and essential as a source of information. They were more inclined to seek information on a specific patient problem than specialists who normally sought correspondence with colleagues and searched journals and medical literature. Almost 50 percent of the family doctors used hand-held computers. When dealing with a specific patient problem, family doctors were inclined to seek information on diagnosis and management, patient education resources and guideline summaries respectively. In this instance, specialists exhibited about the same information-seeking behaviour except in respect of patient education resources.

The influence of practice type on information-seeking behaviour of medical doctors has further received some attention. Medical doctors working in academic settings (e.g. Colleges of Medicine) and as full-time staffs in large hospitals) made use of colleagues more frequently than did doctors that practice singly or in groups; and those practicing in groups held casual consultations more frequently with colleagues than did doctors that practice singly (Bennett et al, 2006). This is not particularly surprising given that colleagues are simply more available in

institutional and group practices. The fact that specialists and colleagues are readily available in larger communities probably explains their greater use by doctors in such communities, in comparison with doctors in smaller communities who prefer to use non-community specialists (Flynn and McGuinness, 2011). In addition to colleagues and specialists, journals and libraries were also more popular sources of information for doctors in more populous areas as well as in group practices (Gorman et al, 2004).

Gorman et al actually conducted a comparative study on information seeking and information resources use by rural and non-rural primary care clinicians. Their findings showed that both types of clinicians had similar practices except that rural clinicians relatively work in small groups. For consultations that took place within half-a-day, clinicians had attended to an average of 8.2 patients (95% CI 7.5 - 8.8) and generated an average of 0.83 questions/patient (95% CI 0.73 - 0.92). They had searched for answers to 47% of those questions (95% CI 40 - 53%), and stated they succeeded in answering 77% of the questions pursued (95% CI 70 - 84%). Statistically, the rural and non-rural clinicians were not significantly different in terms of the variables under study. The study concluded that rural and non-rural clinicians had about the same information needs, information-seeking pattern, information resource use, and efficacy of searching and answering their clinical questions, at the point of care. Although there was less availability of colleagues, electronic and library-based resources, in comparison with clinicians in urban settings, the differences did not significantly affect use.

A number of studies have concentrated on the doctors' characteristics, which other doctors consider in seeking information and advice. Usually recognized as "opinion leaders" or "educationally influential" doctors, they were early adopters of disseminated innovation in medical diagnosis and treatment to their colleagues (Spink et al., 2002; Norbert and Lwoga, 2012). The value of such doctors as information sources stems from their wide availability, and willingness to teach and provide free informal consultations in ways that are tailored to particular problems. These educationally influential (EI) doctors may be specialists, often practicing in university or hospital-based settings. They tend to consult among themselves and with specialists outside of the geographic area.

The Internet has afforded medical doctors world-wide to cooperate, communicate, and interact. Progressively, doctors are using on-line databases to seek up-to-date information on medical protocols in various medical specialties and patient management, and to access the

studies of other specialists and pursue continuing medical education (Chew et al, 2004). Flanagan et al (2003) reported that about 50% of doctors in Norway utilize the Internet in their professional settings. Research oriented, male doctors, between 30 to 49 years old, were the most active Internet users among the doctors. Vogin (2002) also reported that in a study conducted by the American Medical Association (AMA) in 2001, younger doctors tend to use the Web more frequently than their older colleagues, but that trend is also changing, according to the study – in 2001, 65% of doctors aged 60 years or older went online compared with 43% in 2000.

In Puerto Rico, Quijada and Monsanto-Planadeball (2008) also reported that rheumatologists, endocrinologists and cardiologists were the specialties with the highest Internet usage rate. Internet use decreased as age of the doctors increased. In a New Zealand study on rural general practitioners' Internet use, James, Arroll, Buetow, Coster, McCormick and Hague (2005) revealed that fewer General Practitioners (GPs) claimed to have used the Internet at work (56.5%) than at home (72%) with respect to patient diagnosis, management or treatment. Furthermore, not up to 10% of General Practitioners surveyed had used the technology three or more times weekly, either at work (7.0%) or at home (8.6%) with respect to patient care.

A survey of 485 oncology specialists and primary care doctors reported that at least once in a week, 61% of the participants seek information while 46% provide information on the Internet. In particular, oncology specialists would tend to use social media in order to be current with innovation, more than primary care doctors who are more inclined to use the media to communicate with colleagues and acquire knowledge from them (McGowan et al, 2012). There was no significant difference in the frequency of social media use between the oncology specialists and primary care doctors as the control variable for specialty was non-significant. Similarly, patient load was found to be non-significant (McGowan, 2012). Schwimmer's (Healthline.com) study surveyed physicians from a range of specialties (PCPs, endocrinologists, cardiologists, psychiatrist) and with a range of experience (2-30years in practice) on their use of the internet in clinical practice. He found that only 8% of all other physicians clicked on sponsored links, but 21% of psychiatrists clicked on the links.

Cooper et al (2012) carried out a study of doctors' use of social media and other Internet-based communication technologies for information seeking, among United States primary care doctors, obstetrician/gynaecologists, paediatricians, and dermatologists. The technologies listed in the survey include: (1) portable devices like cell phones, IPods, PDAs, smartphones, etc, for

downloading information from the internet (2) blogs (3) social network sites like Twitter, UpToDate, Sermo, LinkedIn (4) widget (an application developed by one website but can be presented on another website, (5) e-mail, (6) podcasts (digital audio or video files, and (7) Really Simple Syndication (RSS) feeds of websites that are read regularly, aimed at notifying users about updates of contents. When subjected to the technologies' modeling, predictors of use were consistently being male (linked to six technologies' usage), younger age (linked to three technologies' usage), and being privileged at a teaching hospital (linked to three technologies' usage). Conversely, fewer years in practice (a proxy for job experience) was linked to blog writing only. Among medical specialties and practice settings, the greatest predictor of technology use, depended on the technology modelled. When the models were adjusted, there was neither a significant relationship between the number of doctors in practice and technology use nor between average number of patients seen weekly (i.e. patient load) and technology use. Thus, Cooper et al concluded that demographic factors, and not practice-oriented characteristics, were greater predictors of doctors' use of internet-based technologies for information seeking.

While the odds of using the technologies examined in Cooper et al's study steadily diminished as age increases among doctors in general, the case was not always applicable to the doctors surveyed in their study. For example, doctors between 35 - 44 years of age were at higher odds of claiming they accessed widgets and the Internet using portable devices than did doctors less than 35 years old. This should not surprise anyone since doctors' use of internet-based communication technologies for information-seeking usually greatly surpasses use of these technologies by the general adult population. Additionally, doctors are methodically different from the mainstream adult population in that typically they have higher educational accomplishment and earnings; males are more than females among them; and 26 years is typically the minimum age for graduation or certification (in the United States), given the training requirements (Cooper et al (2012). Cooper et al's findings are in line with previous studies (Garrity and El Emam, 2006) which were restricted to doctors' characteristics related to the use of PDAs and emails to seek information from patients. In the previous studies, it was reported that male doctors were more inclined to use PDAs, and in Cooper et al's findings revealed that male doctors were at higher odds of claiming they used portable devices to access the internet.

METHODOLOGY

The population of the study comprised the medical doctors in teaching hospitals in Nigeria. There were 37 teaching hospitals, as at the period of collecting data for the study (March 2016 – March 2017), located across the six geo-political zones of Nigeria. The hospitals had a total number of 11,197 medical doctors (excluding medical doctors on internship and National Youth Service). Thus, the population of the study comprised 11,197 medical doctors under the employment of teaching hospitals in Nigeria.

A multi-stage (three-stage) sampling technique was adopted for the study. At the first stage, six teaching hospitals were randomly selected by balloting, selecting one hospital from each of the six geo-political zones in the country. The selected hospitals were Ahmadu Bello University Teaching Hospital, Zaria (ABUTH); Federal Teaching Hospital, Ido-Ekiti (FTH); University College Hospital, Ibadan (UCH); Imo State University Teaching Hospital, Orlu (IMOSUTH); University of Benin Teaching Hospital, Benin-City (UBTH); and University of Ilorin Teaching Hospital, Ilorin (UILTH). The total population of medical doctors in the six hospitals was 3337.

The North-East was excluded because of the highly tensed insecurity situation in the zone, as at the time of collecting data for the study; therefore, its slot was allocated to the South-West for two reasons: firstly, nearly one – third (30%) of the doctors in all the teaching hospitals are employed in the South-West zone, and secondly, in conjunction with the South-South, it has the highest number (10) of teaching hospitals in the country. The total population of medical doctors in the six hospitals was 3337.

At the second stage, 13 clinical departments were found to be common to all the selected hospitals and available in most of the teaching hospitals in Nigeria. These departments reflect the medical specialties available in each of the selected hospitals, thus providing a good spread across medical specialties. Five out of the 13 departments were randomly selected by balloting, based on a sampling fraction of 40%. The departments were Otholaryngology (E.N.T), Medicine, Obstetrics and Gynaecology, Ophthalmology, and Surgery.

At the third stage, 20% of the doctors in each of the six hospitals were selected for sampling, and this also gave a total number of 668 medical doctors as the sample size for the study. In each hospital the selected sample was evenly distributed across the five specialties (proxy for departments) earlier selected, in order to eliminate bias across the specialties while

within each department, random sampling procedure was adopted to choose the medical doctors. The sample size for the study is justified by Krejcie and Morgan (1970) who recommended a sample size of 384 for a population of 200,000 and Thomas (2003) who recommended a sample size of 500 as adequate for a population of 9,000.

The measuring instruments used in the study were the questionnaire and interview. The questionnaire was semi-structured but consisted almost entirely of closed questions, derived to elicit findings that have bearing to information obtained from the literature. A structured interview was held with the Chief Medical Director (or his/her representative) of each of the selected teaching hospitals to gather information on the hospital's staffing policy in relation to the doctors' demographic factors.

Data generated were analysed using descriptive and inferential statistics. Regression analysis was used to analyse the research question raised in the study, while Pearson Product Moment Correlation statistics was used to analyse and test the hypothesis at 0.05 level of confidence. Data collected from the interview were content analyzed.

RESULTS

Questionnaire administration and response rate

A total of 668 copies of the questionnaire designed for the study were administered to the medical doctors in six teaching hospitals in the country. However, 508 copies were returned and found good for analysis, giving a response rate of 76.1%. This percentage is in line with the submission of Nakash, Hutton, Jorstad-Stein, Gates and Lamb (2006) that 60% response rate is an acceptable standard for most research.

Demographic information of the respondents

The demographic information of the respondents comprises age, gender, marital status, specialty and years of medical job experience.

Age range

The highest percentage (37.2%) of age range is the 30-39 years category, while the youngest (less than 30 years) and oldest (60 years and above) among the doctors occupied 13.2%

and 5.9% respectively. Thus 70% of the doctors are within the age bracket of 30-49 years, confirming they are in their prime.

Interviews held with the medical directors (or their representatives) of the teaching hospitals revealed that, in conformity with the Federal Government policy on employment of Federal staff, age limits are considered by their management in the appointment of medical doctors, except on short-term or contract basis, which is at the discretion of the management.

Gender

The gender distribution portrayed a higher proportion of male doctors (61.6%). This finding is in line with our opinion that there is a sizeable number of female doctors in Nigeria, though the profession is still dominated by the male gender. Further, we are also of the opinion that the finding has no bearing with recruitment policies of any of the hospitals but strictly a function of probabilities and expectation. Interviews held with each hospital management also confirmed that gender equation is not factored into the employment of their doctors.

Marital status

There was much variation in the distribution of the marital status of the respondents. Expectedly, majority (66.3%) were married since it was earlier revealed that 70% were within the age range of 30-49 years while 13% were below 30 years. In the Nigeria context, within a male-dominated profession like this, it is quite normal that those two age ranges would mostly accommodate married and unmarried doctors respectively. Data also revealed that only three respondents (0.6%) were separated. The management of each hospital claimed that marital status is not a consideration in appointing medical doctors.

Specialty

Out of the five medical specialties sampled, Obstetrics and Gynecology recorded the highest percentage (24.61%) of respondents. Apart from Surgery/Neurosurgery (11%), the other three specialties were fairly evenly distributed (Medicine: 19.5%; ENT: 21%; Ophthalmology: 23.4%) and quite close to Obstetrics and Gynecology (24.6%). This suggests there might have been clear-cut attempts - incorporated into recruitment policies – to attain a balanced mix of

specialties, in accordance with demands and requirements. This suggestion was confirmed by the management of each hospital.

Years of medical job experience

Results showed that the largest percentage of the respondents (32.1%) have practiced as medical doctors for a period of 5-9 years. The percentage decreased inversely in proportion to years of experience, except those that have worked for less than five years, who stood out at 9.1%. This finding implies that about one-third of the doctors have just 5-9 years of job experience. In the interview schedule, management of each hospital affirmed that in several cases, 'medical job experience' is a requirement for the employment of medical doctors.

Answers to research questions

Research question 1: What is the information-seeking behaviour of medical of medical doctors in teaching hospitals in Nigeria?

The information-seeking behaviour of the respondents was examined with respect to their attendance at forums like seminars, workshops, conferences and symposiums; preference for medical information sources; use of medical literature and colleagues; and internet use.

Respondents' attendance at seminars, workshops, conferences and symposiums within the last one year showed that those that attended the forums between 1-5 times within that period, were in great majority (42.9%) (Table 1).

Table 1: Doctors' attendance at seminars, workshops, conferences and symposiums within the last one year

Attendance	Frequency (F)	Percentage (%)	Cumulative Percentage (%)
None	4	0.8	0.8
1 – 5 times	281	42.9	43.7
6 – 10 times	136	26.8	70.5
11 – 15 times	74	14.6	85.1
16 – 20 times	59	11.6	96.7
More than 20 times	17	3.3	100
N = 508; $\bar{x}$ = 3.03; Std. = 1.172			

The percentage of doctors that attended decreased inversely to the pre-defined frequency of attendance, with a negligible 0.8% having not attended at all. Specifically, medical doctors at

FTH recorded the largest attendance ($\bar{x}$ = 3.79), followed by UCH ($\bar{x}$ = 3.14) and UBTH ($\bar{x}$ =3.13) respectively, with IMOSUTH having the least attendance ($\bar{x}$ = 2.82).

Furthermore, the respondents were asked to choose the source of medical information they consider most useful and thus preferred. The responses are presented in Table 2.

Table 2: Most preferred sources of medical information by the doctors

S/N	ITEM	Frequency (F)	Percentage (%)
i	Continuing Medical Education (CME) courses	95	18.9
ii	Journals (print or online)	158	31.4
iii	Textbooks	142	28.2
iv	Professional colleagues	48	9.5
v	NMA Website	15	3.0
vi	University/medical school's health promotion newsletters	45	8.9
vii	Professional association's newsletters	5	1.0
N = 508			

Journals (31.4%) and textbooks (28.2%) were the leading preferences expressed by the doctors respectively while professional association newsletters (1%) were the least preferred. Within each hospital, the pattern of preference was about the same as that obtained overall. Journals were the most preferred sources in all the hospitals, except FTH where textbooks were mostly preferred.

The study further investigated how often the doctors rely on medical literature or colleagues in searching for medical information (Table 3). The frequency of use of medical literature ($\bar{x}$ = 3.22) is greater than making use of colleagues by the doctors. Notwithstanding, more than half of the respondents also rely, to an appreciable extent (often or very often), on their colleagues in searching for medical information.

Table 3: Frequency of use of medical literature and colleagues

S/N	ITEM		R	O	OF	VF	$\bar{x}$	Std.
i	When searching for medical information, how often do you make use of medical literature?	F	10	94	176	228	3.22	.815
		%	2.0	18.5	34.6	44.9		
ii	When searching for medical information, how often do you make use of your colleagues?	F	7	230	135	136	2.79	.855
		%	1.4	45.3	26.6	26.8		
N = 508								

Rarely (R); Occasionally (O); Often (OF); Very often (VO)

Within each hospital, doctors make use of medical literature than they rely on colleagues, except UILTH. We have the opinion that the use of medical literature is a more reliable and authentic option than reliance on colleagues, and so the study further differentiated among those who use the medical literature, distinguishing whether they conduct the searches themselves or use other categories of people (Table 4).

Table 4: Approaches to medical literature searches

S/N	STATEMENT		SD	D	A	SA	$\bar{x}$	Std.
I	I conduct the searches by myself	F	5	36	153	314	3.53	.672
		%	1.0	7.1	30.1	61.8		
Ii	I use junior colleagues	F	80	202	167	57	2.40	.885
		%	15.8	39.9	33.0	11.3		
iii	I use research assistants	F	128	212	134	33	2.20	.622
		%	25.2	41.7	26.4	6.5		
Iv	I use friends and relatives	F	151	204	137	16	2.04	.832
		%	29.7	40.2	27.0	3.1		
V	I use commercial/business enterprises	F	175	200	80	53	2.02	.959
		%	34.4	39.4	15.7	10.4		
N = 508								

Majority of the respondents ($\bar{x}$ = 3.53) conduct the searches themselves, with about 92% in agreement. Despite this, about one-third also use friends and relatives in searching. Whether such friends and relatives are familiar with the medical literature is not known. In each hospital, majority of doctors usually conduct the searches by themselves, followed by those that use junior colleagues.

The study found that about 98% of the respondents were Internet literate. Thus, they were asked to indicate how often they use the internet (at home, office or elsewhere) in seeking medical information (Table 5).

Table 5: Frequency of use of the Internet

S/N	ITEM		Rarely	Occasionally	Monthly	Once Weekly	Twice Weekly	Daily	$\bar{x}$	Std.
	At home	F	5	8	5	85	103	300	5.56	3.933
		%	1.0	1.6	1.0	16.7	20.3	59.1		
	In the office	F	35	38	0	64	71	300	4.96	1.580
		%	6.9	7.5	0	12.6	14.0	59.1		
	In Cyber Café	F	263	113	3	30	64	35	2.26	1.713
		%	51.8	22.2	0.6	5.9	12.6	6.9		
	Elsewhere	F	235	129	18	48	53	25	2.27	1.592
		%	46.3	25.4	3.5	9.4	10.4	4.9		
	N = 508									

Medical doctors that use the Internet at home ($\bar{x}$ = 5.56) were in majority but not much less also use it in the office ($\bar{x}$ = 4.96). The proportions that use it in Cyber Café ($\bar{x}$ = 2.26) or elsewhere ($\bar{x}$ = 2.27) were considerably less. Daily use at home or in the office is the same at about 60%. Overall, Internet visit by the doctors is impressive, with more than 96% visiting at least on a weekly basis. Within each hospital, trend of use was about the same as the aggregate, except ABUTH and FTH, where visits to Cyber Café were more than 'elsewhere.'

Research question 2: What is the relative influence of doctors' demographics on their information-seeking behaviour in teaching hospitals in Nigeria?

Relative influence of demographic factors on the information-seeking behaviour of medical doctors in the teaching hospitals was determined, using regression analysis method. The results are presented in Table 6.

Table 6: Regression analysis showing relative influence of demographic factors on the information-seeking behaviour of medical doctors

Model		Unstandardized Regression Coefficients		Standardized Regression Coefficients	t	Sig.	95.0% Confidence Interval for β		Collinearity Statistics	
		β	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	15.056	1.626		9.259	.000	11.861	18.250		
	Specialty	.361	.119	.146	3.047	.002	.594	-.128	.825	1.212
	Age	.212	.278	.059	.762	.046	.759	.335	.310	3.226
	Gender	.053	.590	.008	.090	.029	1.212	1.106	.250	3.992
	Marital status	.030	.311	.005	.097	.123	-.640	.580	.584	1.713
	Years of medical job experience	.067	.090	.035	.736	.062	.244	.111	.827	1.209

a. Dependent Variable: Information-seeking behaviour

Table 6 shows that in a decreasing order of magnitude, specialty (β = 0.146), age (β = 0.059), medical job experience (β = 0.035), gender (β = 0.008), and marital status (β = 0.005) had relative influence on information-seeking behaviour. Thus, the relative influence due to 'gender' or 'marital status' is weak and negligible. It should be noted however, that it is more likely, other factors had relative influence as well.

Test of the hypothesis

The null hypothesis formulated for this study was tested at 0.05 level of significance. The results are shown in Table 7.

Ho: There is no significant relationship between the demographic factors and information-seeking behaviour of medical doctors in teaching hospitals in Nigeria.

Table 7: Relationship between the demographic factors and information-seeking behaviour of medical doctors

Variable	N	r	df	Sig.	Remark
Specialty	508	-.097*	507	.029	Sig.
Age range	508	-.099*	507	.026	Sig.
Gender	508	-.109*	507	.014	Sig.
Marital status	508	.070	507	.115	Not Sig.
Years of medical job experience	508	.061*	507	.018	Sig.
Information-seeking behaviour	508		507		

**. Correlation is significant at 0.05 level

There is significant negative relationship between specialty ($r = -.097^{*}$; $p < 0.05$), age ($r = -.099^{*}$; $p < 0.05$), gender ($r = -.109^{*}$; $p < 0.05$) and information-seeking behaviour of the medical doctors (Table 7). Thus differences within specialty, age range and gender would not more or less improve this behaviour. There is no significant relationship between marital status and information-seeking behaviour ($r = 0.07$; $p>0.05$) but a positive relationship exists between 'years of medical job experience' ($r = .061^{*}$; $p < 0.05$) and information-seeking behaviour, which implies that increase in the number of years of job experience would more likely improve this behaviour. Therefore, the null hypothesis is rejected.

DISCUSSION

The findings of the present study corroborated Wilson's (1999:253) model of information behavior, which states that an individual or his responsibility to the society or his environment will influence the occurrence of his particular information-seeking behavior. These influencing factors represent the context of the information-seeking behavior, and the context features are interwoven, occasionally conditioning one another. Individual features influence order of preference and choice of information needs, and ultimately influence the information-seeking behavior. In the present study, the context that influences information-seeking behaviour comprises the doctors' demographic factors, among other factors.

Our study established that there is a significant negative relationship between specialty, age, gender and information–seeking behaviour of the doctors. Thus differences within specialty, age, and gender would more likely influence but do not necessarily improve this behaviour. This finding aligns with some previous studies. For example, a study carried out by Accreditation

Council for Continuing Medical Education (ACCMA) in 2004 (P.116) was in agreement, reporting that the age of the medical doctor is a characteristic that influences preferences for information sources. It went further: "Younger doctors appear to make greater use of medical literature and of colleagues than did their older counterparts, who more often used pharmaceutical representatives and preferred CME courses". However, in contrast to the present study, Gonzalez–Gonzalez (2007) found that the level of medical experience (number of years of medical job experience) did not influence doctors' preferences for different information sources.

Bennett et al (2006: 122) was also in agreement with the present study in observing that "in addition to the influences of the characteristics of the individual doctor, the nature of the doctor's practice also affects information-seeking, and the doctor's specialty is one such characteristic." Their study reported that "specialists relied more on journals and colleagues, compared to family doctors that usually consult with pharmaceutical representatives for the same purpose. Overall, family physicians usually preferred to consult with colleagues, in respect of management and treatments in comparison with primary care internists that usually relied on medical literature". Moreover, Cooper et al (2012) carried out a survey of physicians' use of social media and other Internet-based communication technologies for information-seeking, among US primary care physicians, pediatricians, obstetrician/gynecologists, and dermatologists, and they concluded that demographic factors, compared to practice-related characteristics, were more consistent predictors of physicians' information-seeking behaviour.

The present study also found that there is no significant relationship between marital status and information-seeking behaviour but a positive relationship exists between years of medical job experience and information-seeking behaviour, which implies that increase in the number of years of job experience improves this information- seeking behaviour.

CONCLUSION

The study concluded that specialty had the greatest relative influence on the doctors' information-seeking behaviour while marital status and gender had the least and a very weak relative influence respectively. Furthermore, differences within doctors' specialty, age range and gender will individually influence their information-seeking behaviour but do not necessarily improve this behaviour, while 'years of medical job experience' (a proxy for experienced doctors) will promote a good behaviour.

Generally, one way doctors can improve on their information-seeking behaviour is the adoption of handheld computers for information seeking at the point-of-care at an affordable compromise of timeliness. This is so because the efficacy of an information source or resource is the greatest factor that determines its use. This probably implies that developers and designers of online medical information sources and databases should strive towards less voluminous and easily accessible information, as a doctor's inability to obtain required information at that point discourages subsequent use of that resource. Moreover, a doctor's information-seeking will be facilitated to the extent that the information source anticipates the doctor's needs and makes it easy for him to meet those needs within a very short time. In addition, hospital managements should probably consider doctors' demographics in organizing a series of brief, individualised training sessions on information-seeking for medical practitioners, as this could enrich their information-seeking skills and, eventually, enhance their efficiency in seeking medical information.

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