



IMPACT OF MEDICAL LIBRARY SERVICES ON CLINICAL DECISION-MAKING AMONG MEDICAL DOCTORS: A CASE STUDY OF JOS UNIVERSITY TEACHING HOSPITAL (JUTH)

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Abstract

The aim of this study was to determine the impact of University of Jos Medical Library Services on Doctors' Clinical decision-making at the Jos University Teaching Hospital (JUTH). The research design used was descriptive survey, using convenient simple random techniques-a non probability sampling strategy. Questionnaire instrument was used to gather data. Data were analyzed using statistical packages for the social sciences (SPSS). Statistics used included percentages, frequencies and Chi-square to compare relationships for information decision-making and its impact on the Doctors' Job performance. The results of the study revealed that information retrieved from the library had impacted on the Doctors' clinical decision-making and most of them responded that the information were relevant. Most used sources of information are textbooks and monographs, learned journals and contact with colleagues. There exist relationships at 5% probability level for information retrieved on patient management, support of diagnosis and research purposes "AND" impact on Doctors' job Performance. Relationship does not, however, exist between use of library "AND" service delivery. Generally, the library impacted on the Doctors' clinical decision-making despite its huge limitations enumerated by the Doctors. Recommendations were made towards a balanced collection development of both print and non-print materials, aggressive re-sensitization and re-orientation to the use of handheld digital devices for evidence-based medicine.

Key Words: Medical, Doctors, clinical, decision-making, library, services, Jos, Nigeria

Background to the Study

The delivery of quality medical care in University Teaching Hospitals is a function of the communicated medical information in their respective libraries (Bryant, 2004). Therefore, the quality, relevance, adequacy and timely information available and accessible to doctors will certainly reflect on

the quality of medical care system. The medical libraries need to be stocked with current and updated information sources to be able to meet the information needs of doctors in order to meet up the Nigeria Federal Government Policy on health for all. Recently, Nigeria has made tremendous progress in the areas of health provision and

health information through the establishment of National Health Insurance Scheme (NHIS). Whereas the establishment of NHIS is generally accepted by the Nigerian populace, a structure has to be in place to supplement the doctor's information needs. Such information needs borders on management of patients that has been documented and shows evidence or general agreement that a given procedure or treatment is useful and also effective. Information for use of new drugs vis a' viz their efficacies are required by doctors. In addition, information to support their diagnoses and also those on management of unexplained symptoms (MUS) would be of high value if provided by the medical libraries of their institutions. Furthermore, some of the doctors undertake researches; therefore, they need background information to fill identified gaps. The various relevant information types for doctors job requirements could be obtain through medical libraries resources and services; making them available, accessible and well packaged for easy use by doctors.

The Objectives of the Study

The main objective is to determine the impact of the University of Jos medical library on doctors' clinical decision making.

The specific objectives of the study are to:

1. assess the Doctors' information sources;
2. to assess the frequency of use of medical library by doctors;
3. to investigate the activities Doctors seek information for;
4. to assess the medical library in terms of service delivery.

Research Questions

1. What are the most consulted information sources among the Doctors?
2. What is the frequency of use of medical library by the Doctors?
3. What activity/activities Doctors seek information for?

4. What is the extent of the medical library in terms of service delivery?

Null Hypotheses

1. There is no significant relationship on information retrieved for clinical decision- making and impact on medical doctors' job performance.
2. There is no significant relationship between use of medical Library and assessment on service delivery.

Review of Related Literature

Information has been defined by different people from different school of thoughts. The one given by Uwem (1990) appears to be apt here. Uwem(1990) defined information as data that have been subjected to some processing functions capable of answering a user's query, be it recorded, summarized, or simply collected, that will help in decision-making. This implies that medical doctors search for information for making decisions on certain medical issues. Kumar (1993) emphasized the role of information in the delivery of quality medical services and argued that right and timely information would promote quality medical services by doctors. In addition, Nankivell, Wallis and Mynott, (2001) averred that 'timely and easy access to clinical and educational information is crucial to the practice of evidence-based medicine which underpins high quality clinical care.' Also, Pluye, Roland, Grad, Dunikowski and Stephenson (2005) submitted that in a nearly one-third of searches, using information-retrieval technology has had a positive impact on doctors clinical-decision making. Therefore, as more medical and health related information becomes available, it has effects on both doctors and librarians as information providers. For instance, doctor's interest for the health of their patients has been influenced by access to quality and quantity of information, and this perhaps changed the dynamics between doctors and patients.

The quality and quantity of information are expected to be provided by the medical

libraries. The value of medical libraries services would have a positive effect on the doctor's use of the libraries for information retrieval and use. Pamela, Navarro and Addajane (2004) informed that published research on the value of medical library services has an impact on information retrieval process and that the articles are read and cited and have continued to be of value. Furthermore, Marshall (1992) reported on the impact of Rochester, NY medical library on clinical decision-making that 80% of the doctors handled some aspect of patient care different than they would have handled otherwise. The doctors also confirmed that the information provided by the library contributed to their ability to avoid hospital admission, patient mortality, hospital acquired infection, surgery and additional tests of procedures. Marshall (1992) added that doctors rated the information provided by the library more highly than that provided by other information sources. Houser, Fushman, Damner, Jacobs, Humphrey Ford, and Thoma, (2007) also reported that the use of handheld computers with internet access from medical libraries are useful tools for doctors to access MEDLINE in real time. Houser, et al. (2007) asserts that MEDLINE citations can answer specific clinical questions when several terms are used to form a query. This then suggests that the use of digital gadgets by doctors will provide answers to their queries and such digital gadgets should have wireless connections to their central or medical libraries.

Librarians could also fine tune medical libraries services by helping doctors who are already comfortable in the current digital landscape. According to Manhattan Research, LLC, survey (2008), 83% of physicians make use of online video. Furthermore, one-quarter of doctors are contributing user-generated content to medical blogs, drug rating sites, and message boards (Manhattan Research, 2009). One such ways librarians can help doctors stay on top of the latest available literature is with what Atreja, Messinger-Rapport, Jain, and Mehta (2006) call an

"online evidence-based information portal" This portal combines an RSS feed of current articles from high impact medical journals with a blog feature which doctors can use for their clinical decision –making.

Research Methodology

The descriptive survey design was used to document and describe what exactly exist on the impact of the medical library on doctors' clinical decision-making using convenient simple random technique-a non-probability sampling strategy that uses the most easily accessible people (respondents) to participate in a study. The population of medical doctors for the session 2010/2011 was 353 (source: Medical Registrar JUTH). One hundred and eighty-six doctors therefore formed the sample size as determined using the standard table for sample size adopted by Krejcie and Morgan (1970). Questionnaires were used for data gathering. The questionnaires were distributed and made handy to the doctors in their various offices by Research assistants employed. The questionnaire was validated by experts from Sociology and Statistics Departments of University of Jos, Jos. The use of statistical packages for the social sciences was employed for data analysis, and statistics used includes Chi-square (χ^2) for comparing the relationships of information for clinical decision-making and its impact on the Doctors. Others are percentages and frequencies.

Results

Table 1: Distribution of respondents by Status

Department	Response	Percentage
Consultants	12	9%
Senior officers	33	24.8%
Resident officers	57	42.9%
Missing system	31	23.3%
Total	133	100%

Table 1 shows the distribution of the respondents by status. Nine percent (9%) of the respondents are consultants, 24.8% are

senior officers and 42.9% are resident officers. 23.3% did not indicate their status.

Table 2: Frequency of use of medical Library

Department	Response	Percentage
Daily	18	13.5%
Forth nightly	5	3.8%
Occasionally	63	47.4%
Rarely	28	21.1%
Never	18	13.5%
Missing system	1	0.8%
Total	133	100%

Table 2 shows the frequency of use of medical library by the respondents. 47.4% occasionally used the medical library. 13.5% used the medical library on daily basis, while

3.8% used the library forth nightly. 21.1% rarely used it and 13.5% “never” used it. 0.8% did not respond to the item.

Table 3: Reasons for not using medical library

Department	Response	Percentage
Lack of time	4	3%
Library does not contain my information needs	12	9%
I have all my required information sources	5	3.8%
Lack of internet connectivity	44	33.1%
Distance from my abode	9	6.8%
Missing system	59	44.4%
Total	133	100%

Table 3 captured reasons for not using the medical library. 33.1% indicated lack of internet connectivity as their reason. 9% said that the library does not contain their informational needs. While 3% indicated lack

of time, 3.8% indicated that it is because they have their required information sources. A great percentage of up to 44.4% did not respond.

Table 4: Sources of information consulted by Doctors

Item(s)	Responses	
	Yes	No
Contact with professional colleagues	65(48.9%)	68(51.1%)
Personal record of information	48(36.1%)	85(63.9%)
Textbooks and monographs	100(75.2%)	33(24.8%)
Learned journals	72(54.1%)	61(45.9%)
Conference proceedings	27(20.3%)	106(45.7%)
Seminars and workshop proceedings	37(27.8%)	96(72.2%)
In-house memoranda	12(9%)	12(91%)
News letters and bulleting	42(31.6%)	91(68.4%)
Indexes, abstracts and reviews	27(20.3%)	106(79.7%)
Medical librarian	22(16.5%)	111(83.5%)
Library catalogue	29(21.8%)	104(78.2%)
CD-ROM databases	24(18%)	109(82%)
Micro films, video, slides, and tapes	15(11.3%)	118(88.7%)
Electric and printed media	31(23.3%)	102(76.7%)
Local and foreign correspondence courses	17(12.8%)	116(87.2%)

Table 4 captures the sources of information used by the medical Doctors. High reasonable percentages of up to 75.2% are using textbooks and monographs as their source of information. 54.1% are using learned journals while 48.9% contact with their professional colleagues. The least used source of information is in-house memoranda-9%. On the other hand, 91.0% of the respondents don't use in-house memoranda as source of information. And 88.7% don't use microfilms, video, slides and

tapes as sources of their information., while only 24.8% don't use textbooks and monographs as their sources of information. Only 21.8% used the librarian as their source of information.

Table 5: Assessment of service delivery

Responses	No. of respondents	Percentage
Very good	5	3.8%
Good	44	33.1%
Fair	57	42.9%
Poor	15	11.3%
Missing system	12	9%
Total	133	100%

Table 5 shows the assessment of service delivery rendered by the library staffers. While only 3.8% said it is very good, 33.1% said that service delivery is good. A fairly

reasonable percentage of up to 42.9 indicated that it is fair. And 11.3% outrightly said it is poor. 9% did not respond.

Table 6: Activities on which Doctors sought information

Activities	Responses		
	Yes	No	MS
Management of patients	69(51.9%)	63(47.4%)	
About new drugs	37(27.8%)	96(72.2%)	
Supporting diagnosis	49(36.8%)	84(63.2%)	
Research purpose	74(55.6%)	59(44.4%)	
Seminar presentation	63(47.4%)	69(51.9%)	1(0.8%)

Table 6 shows the activities for which Doctors sought information. Among the activities, research purposes and management of patients are the most activities Doctors sought information for with 55.6% and 51.9% of the Doctors involved in them respectively. 47.4% of the

Doctors sought information for seminar presentation while 36.8% and 27.8% of the Doctors sought information for supporting diagnosis and about new drugs. 72.2% of the Doctors don't seek information about new drugs and 0.8% did not respond to this item.

Table 7: Impact of information obtained on Doctors' job performance

Responses		
Yes	No	MS
107(80.5%)	11(8.3%)	15(11.3%)

Table 7 presents the impact of information obtained on the Doctors' job performance. Over eighty percent (80.5%) of the Doctors attested that the information obtained from the library has impacted on

their job performance. And only 8.3% of them said there is no impact on their job performance. However, 11.3% did not respond.

Table 8: Assessment of the clinical value of information

Criteria	Responses		
	Yes	No	MS
Relevant	84(63.2%)	46(34.6%)	3(2.3%)
Provided new information of clinical value	43(32.3%)	87(65.4%)	3(2.3%)
Information obtained saved patient(s) life	35(26.3%)	95(71.4%)	3(2.3%)
Contributed to patient care management	60(45.1%)	70(52.6%)	3(2.3%)
Saved consultation time	24(18%)	106(79.7%)	3(2.3%)

Table 8 captures the assessment of the clinical value of information. While 63.2% of the Doctors responded that the information is relevant to clinical value, 34.6% said it is not relevant. 65.4% assessed the information that it has not provided new information of clinical value. 45.1% responded that the information contributed to patient care management, 26.3% said information

obtained saved patients life and only 18% said it saved their consultation time. On the overall, 2.3% of the respondents did not respond to all the criteria of the information.

Testing of Hypotheses

Hypothesis 1: There is no significant relationship on information retrieved for

clinical decision-making and impact on medical Doctors' job performance.

This hypothesis was tested using Chi-square (χ^2) test statistics at 0.05 significant

levels. The outcome is contained in table 14.1 below.

Table 9: Summary of test of significance of relationship between information retrieved for clinical decision-making "AND" impact on Doctors job performance

Activities	Does the information retrieve for clinical decision-making have any impact on your job performance?				
	N	χ^2 value	Df	P-value	Decision
For patient management	118	17.082	1	0	S
For new drugs	118	2.625	1	0.105	NS
Support of diagnosis	118	5.256	1	0.022	S
For research purposes	118	9.358	1	0.002	S
For seminar presentation	118	3.107	1	0.078	NS

For the different information retrieved for clinical decision-making, information for patient management, support of diagnosis and for research purposes had significant impact on the Doctors' job performance at 0.05% probability. $0 < 0.05$, $0.022 < 0.05$ and $0.002 < 0.05$ respectively. Information retrieved for new drugs and seminar presentation has no impact on the Doctors' job performances. Their significant level were $0.105 > 0.05$ and $0.078 > 0.05$ respectively.

Hypothesis 2: There is no significant relationship between frequency of use of medical library and assessment on service delivery.

This hypothesis was tested using Chi-square (χ^2) test statistics at 0.05 significant levels. The outcome is contained in table 10 below:

Table 10: Summary of test of significance of relationship between frequency of use of medical library "AND" service delivery rendered by staff

Assessment on service delivery vs. frequency of use				
N	χ^2 value	Df	P-value	Decision
120	9.777	12	0.635	NS

From the table above, the p. value is $0.635 > 0.05$; therefore the NULL hypothesis is accepted.

Discussion of Results

From the list of 15 possible information sources presented in table 4; respondents were asked to tick multiple sources used. Textbooks and monographs were the most commonly sources of information consulted by the Doctors (75.2%), followed by use of learned journals (54.1%) and contact with professional colleagues (48.9%).

This finding is in sharp contrast with that submitted by Oduwale (1999) where most of

his respondents (92.5%) commonly used learned journals. However, Wood and Wright (1996) reported that most of their respondents used professional colleagues both internal and external as their source of information. This study reveals professional colleagues as the third most used sources of information (54.1%). These variations in the different use of information sources could be as a result of the readily available source in times of need. It could stem also from the different levels of the Doctors' experiences as seen in Table 1. The less experienced Doctors formed most of the respondents (42.9%). Thus, literary sources of information are commonly used

for immediate patient care problems than human sources.

On the frequency of use of medial library, only 13.5% of the Doctors use it daily. Far more less (3.8%) use it fortnightly. While 47.4% occasionally visit the library, 21.1% rarely visit the library -Table 2 presents these. While the Doctors need the library for newer synthesized evidence- based information, the low frequency of use could be explained on the nature of their tight schedules and distance of the medical library from JUTH. Furthermore, the lack of Internet would have been other reasons for low use of the library.

Concerning the activities on which information is sought, Doctors stated that information is sought mainly for research purposes (55.6%) Table 6 .Over fifty percent (51.9%) responded that the activities they sought information for was for patients' management. What is, however, striking here is that Doctors do more of research than management of patients and supporting diagnosis in JUTH. The possible explanation to this could be that JUTH is a teaching and also a tertiary hospital. This outcome contradicted that submitted by Oduwole (1999) who conducted a similar study at the Western part of Nigeria. Oduwole(1999) reported that the activities most Doctors sought information for are diagnosis of ailments and information about new drugs. Whatever it is, Doctors face their businesses as the situation demands with all seriousness based on their ethics.

On the assessment of service delivery by the medical library, it could be inferred that the services is only but fair as responded by 42.9%- see Table 5 above. However, 33.1% and 3.8% said that the services are "good" and "very good" respectively. The checker to this was observed on Table 3, where 33.1% of the Doctors said that there is no Internet connectivity; this perhaps appears to be the essential part of service delivery needed by the Doctors. Forty-four percent (44.4%) of the Doctors did not respond why they are not using the medical library, this probably

signify the level of service offered by the library is not aligning to their needs.

Concerning the impact of the information obtained by the Doctors in their job performance, 80.5% of them attested that it has positively impacted on their job performance (Table 7). This is in consonance with the studies of Marshal (1992), Wood and Wright (1996) and Oduwole(1999). At their various studies, their respondents admitted that the information obtained impacted on their job performance. However on the limitations of their medical libraries, this is further evident on the assessment of clinical value of information. Quite reasonable respondents comprising 63.2% said it is relevant and 45.1% said it contributed to patients' care management while 32.3% responded that it provided new information on clinical value (Table 8). Almost eighty percent (79.7%) agreed that it did not save consultation time. This contradicted the report of Sneiderman, Fushman, Darnar, Fiszman, Ide, and Rindfleisch (2007) who investigated three knowledge-based systems for assisting clinicians in finding answers to questions in MEDLINE. They assert and concluded that a fusion of the three approaches (SemRep, Essie, and CQA-1.0) was significantly ($p < 0.01$) better than any individual system, and therefore, saved consultation time for clinicians.

The above assertions were further revealed in the hypothesis test as shown in Table 9 (Hypothesis 1). The criterion for rejection was set as 5% probability (0.05). There are significant relationships on information retrieved for clinical decision-making "AND" impact on the Doctors' job performance for patient management ($p < 0.00 < 0.05$), support of diagnosis ($p < 0.22 < 0.05$) and for research purposes ($p < 0.002 < 0.05$). Therefore, for these three mentioned activities, the NULL Hypotheses were rejected and the alternate accepted. However, information retrieved on new drugs and for seminar presentation with probability levels at $p < 0.105 > 0.05$ and $p < 0.078 > 0.05$ respectively had no significant relationship

on the impact of the Doctors' job performance; therefore, the NULL hypotheses were accepted.

For the test of the second hypothesis (H_2) on frequency of use of medical library "AND" service delivery, the probability level was ($p\ 0.635 > 0.05$) which implies there is no significant relationship between frequency of use of medical library and assessment on service delivery- (Table 10). Therefore, the NULL hypothesis was accepted. This result reflects those of Wood and Wright (1996) and Oduwole (1999). They both reported that Doctors hardly ever visit libraries except only if the journals found there are free. Furthermore, Wood and Wright (1996) posited that Doctors considered libraries to be a collection of books and journals and only to be accessed when they have time, rather than as an information service. This assertion appears to be true because only 47.4% of the Doctors occasionally use the medical library (Table 2) and 42.9% of them assessed the service as fair (Table 5). It, thus, appears that only their frequent use of the library will determine their support not only as collection centre of books and journals but as quick access point for information retrieval and use.

Conclusions and Recommendations

The impact of the University of Jos medical library on Doctors' clinical decision-making was investigated. While most of the Doctors (80.5%) responded that the information obtained from the medical library impacted on their clinical decision-making, the most used sources of information were textbooks and monographs, learned journals and contacts with their professional colleagues in that order. It can simply be deduced that doctors derive maximum satisfaction from their continued use of information sources to meet their information needs. Invariably, this has brightened the areas for collection development which is part of the significance of this study. While Doctors considered the sources relevant, the contents of the sources also contributed to their clinical- decision. It is, however, noted that the formats of the

information sources are printed (text and journals and oral i.e. contact with colleagues).

Research and patient management are the most activities Doctors sought information for. Therefore, this has also pointed out their urgent informational needs as it concerned Doctors in JUTH-which is the second significance of this study. Significant relationships exist between information obtained from the library and the Doctors' job performance on patient management, information supporting diagnosis and for Research purposes. However, no relationship existed between service delivery and frequency of use of medical library by the Doctors.

Recommendations

The following recommendations were made based on the observed realities from the study.

1. Aggressive collection development for both print and e-resources should be embarked upon in addition to installing robust Internet facilities for Doctors' use.
2. The library should be housed within JUTH premises for quick access by Doctors.
3. An aggressive and persuasive re-sensitization for Doctors on the purchased new informational materials i.e. both the print and e-resources should be staged with a view to enlightening them. NB: It is not to say that there are unavailable online resources, but they are only accessible at the main library which is a distance from JUTH.
4. Doctors in JUTH should have a training and re-orientation on the use of modern handheld digital devices for quick and effective search for synthesized evidenced-based literature which will invariably impact on their clinical decision-making.

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