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Medical Informatics: The Role of Health Science Librarians

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ABSTRACT

Background: Medical informatics, a newly emerged concept has in recent years attracted the attention of scholars. This concept therefore needs thorough discourse and interpretations as relating to information packaging and its access in the field of medicine and its allies.
Therefore, the would – be information manager needs to be grounded in the medical informatics for him to effectively have full control of the information environment.
Objectives: Research work delved into the meanings of medical informatics and its impact on health sciences and the need for adequate education of health science librarians for them to be effective and efficient in their service delivery.
Methods: It is a review of information sources on the medical informatics. Sources consulted were print, electronic and on – line sources.
The opinions and theories of scholars on this subject matter were analysed and discussed.
Results: This work discovered two basic facts as follows:-
Medical informatics is embedded in information science and two fields have a meeting point.
Secondly, medical informatics as a discipline needs to be studied and understood by health science librarians - a shift that is very much necessary now for him not only to be information container manager but also information "content manager".
Conclusion: Medical informatics has come to stay and its understanding becomes imperative on the part of health information broker as this will enhance increase in job performance, productivity and recognition in the organization where he serves.

Keywords: Medical informatics, technology information, health information, bio–informatics, health science librarians.

INTRODUCTION

Healthcare delivery is a national and global priority and one in which both information and technology are essential[1].

The advancement in computerization and the use of satellite and cable network have tremendously enhanced the generation and dissemination of medical information[2,3,4]. This has been matched by a dramatic growth and access to medical knowledge and in the application of information technologies to support various aspects of healthcare including patient records, clinical decision making and research[3]. These information technologies developments have greatly changed the doctor patient relationships, patients with easy access to a wide and deep pool of health Information will have different presentations to and expectations of their physicians[4,5,6].

A critical factor in the medical use of the new technology is the trend towards patients taking more responsibility for their own medical care[6].

Many managed care and other health- related institutions are exploring on-line health information resources for their members or patients, accessible either within the care setting or in the home.[7] It has been reported that medical research and health care sectors are information intensive[4]. The degree to which these information needs of the various stakeholders in the health care sector will be met, depends on the efficiency of collections, organization, storage and retrieval mode.

This is where the health science libraries become relevant. Clearly libraries and librarians have been contributing greatly in this direction in most advanced and developing countries of the world. Information management principles grounded in Library Science have been recognized as useful in the medical setting. The Association of American Medical college's Better Health 2010 report states[8] thus "essential knowledge and skills for managing the health information environment resides in many areas including the library, informatics, computer support, administrative services and clinical and research disciplines. The stewardship approach that libraries have traditionally used – selection, storage, organization, preservation, creating means for intellectual and physical access, etc – applies well to the management of knowledge resources in any form. The concept of the library can be a useful framework for designing the information environment of 2010". As information organizer and manager, libraries are in the provision of health information to the users. As information retrieval specialists, librarians couple an ability to clarify to the patrons real health questions with search mapping skills to help locate the most useful information[9]. That is the reason why libraries are clamouring for the integration of information technology literacy into the education of medical students and healthcare professional as an opportunity for solidifying partnerships between academic librarians and public health educators through a transdisciplinary approach[10,11].

Arising from the recent convergence of information

and technology and a focus on best practices[12,13]. The emphasis on information literacy has necessitated that students in the health sciences develop information literacy competences which encompasses having the basic knowledge of computer system and information searching strategies coupled with an understanding of research resources.

Major Advances in Computer Technology is greatly transforming the nature of health science information and its management[14]. These new sources of information are qualitatively different from those that health education, health research and healthcare have relied on in the past, and a different type of skill is required to select, implement and disseminate these advances[15].

As a result, the traditional responsibilities and educational preparation for librarianship must be reflective of the challenges of an evolving environment[16]. Most especially in a developing country like Nigeria, where there is urgent need to adopt and adapt the application of I.T into the Library School Curriculum as it is obtained in developed countries of the world. Librarians must be able to recognize and seize non-traditional opportunities for expanded roles[17]. This is to guide against information management roles being taken over by individuals with different skills.

This research work delved into the meanings of medical informatics and its impact on health science, and the need for adequate education of health science librarians for them to be effective and efficient in their service delivery.
Therefore, the following relevant issues would be explored:

- Definition and Scope of Medical Informatics;
- Medical informatics and the emergence of new forms of Health Information;
- Impact of Medical Informatics on the Practice of Health Sciences Librarianship;
- Impact of Medical Informatics on Education of Health Sciences Librarians.

MATERIALS AND METHODS

It is a review of information sources on the medical informatics. Sources consulted were print, electronic and on – line sources.
The opinions and theories of scholars on this subject matter were analysed and discussed.

DEFINITION AND SCOPE OF MEDICAL INFORMATICS

What is Medical Informatics?

Medical Informatics has many and varying definitions, but all agree that this term concern the application of computer in health care delivery. It is a discipline with strong European origin[1].

Medical Informatics is the field concerned with acquiring, storing and using information in healthcare, usually involving the application of information technology[18]. It is a broad, multi disciplinary field, covering electronic medical records, others are access to knowledge based information and digital libraries, digital imaging systems, tele-medicine, clinical decision support and closely related to medical informatics or perhaps a part of Medical Informatics is Evidence Based Medicine (EBM) which focused on creating tools to access and apply the best evidence for making decision about patient care[19]. It is defined as the application of computer technology to all fields of medicine, medical care, medical teaching and medical research[5]. Medical Informatics skills consist of applied and theoretical knowledge necessary to adapt generic information science to the bio-medical domain. These skills focus on specific teaching, research and healthcare agenda, which must be able to draw upon a deep understanding of biomedical information systems[20].

Another definition of medical informatics put forth by Stead[21] as a simplification but nonetheless capturing the essence of the field is that medical informatics is the science that deals with health information, its structure, acquisition and use.

Although varied terminology is used in the informatics fields, one approach differentiate areas of informatics by the practice area covered as in nursing informatics, public health informatics, others use the term bioinformatics to reflect informatics activities related to the basic sciences especially those dealing with genetics[5].

Greenes and Shortliffe[22] define medical informatics as the field that concerns itself with the cognitive, information processing and communication tasks of medical practice, education and research including the information science and the technology to support these tasks. An intrinsically interdisciplinary field, medical informatics has a highly applied focus, but also addresses a number of fundamental research problems as well as planning policy issues.

In addition the American Medical Informatics Association encompasses the sub-discipline under the general term "Medical Informatics"[5]. In recent times, informatics concepts have additionally been useful in dealing with other health related kinds of data especially basic science and public health information[5]. New sub-fields of informatics continue to be identified and a number of professional medical societies related to the particular data information and knowledge in their domains. Examples include primary care and oncology informatics[23].

Informatics and The Emergence of New Forms of Health Information:

Biomedical informatics as a discipline influenced greatly the role of Medical Librarianship and how it is practiced today[24]

However, health sciences librarian no longer manages only the containers of information but rather the contents, that is, the information itself. There is a revolutionary departure from the traditional perspective of librarianship where librarians manage the containers of information rather than the contents. Then, information was represented best on cuneiform tablets, papyrus sheets, or the codex book[25,26], but these days, with the use of information and communication technology, availability of health information and access to it have greatly improved.

The rise of information technology that is, computers which not only has increased availability of information by several orders of magnitude but also has led to different forms of information as follows: Hypertext, CD-interactive, digital video – interactive, knowledge bases, expert-systems and virtual reality[25].

With the advent of advances in Medical Informatics, new forms of information appear on a daily basis.

Today, we talk of Map of Medicine, Hinari, Unified

Medical Language System (UMLS) Medical Logic Module (MLM) and MEDLINE.

These new forms of information are qualitatively different in terms of structures, phenomena and not easily handled by the traditional approaches to containers.

However, this is not to say that the traditional print form or linear organizations of information are dead. Rather, both forms will persist for the foreseeable future existing side by side[25].

Impact of Medical Informatics on the Practice of Health Science Librarianship:

While medical informatics focuses on specific domain knowledge librarianship concerns itself with process and structure across generic subject areas. Health science librarians, because of their knowledge and skills in the identification, selections, organization and dissemination of information play an important role in both provision of health information services and patient education. These roles have not changed much except that technology is transforming the tasks of health science librarians[27,28].

However, one of the most significant factors influencing medical librarians' roles is the discipline of bio-medical informatics and how it is practiced[29]. Bio-medical Informatics applications have the potential to bridge the gap between the pool of scientific knowledge and healthcare related information needs[25]. The Health sciences Librarians are specially equipped to understand and provide linkages between information resources and those who seek assistance. Frisse; M.E. etal[30] Posited that a change in the form and contents of scientific communication also promotes an increasing convergence between informatics and librarianships.

Therefore informatics should be included in librarians professional preparation which should go beyond bibliographic retrieval[25]. Braude, R.M. added that advances in computing and information resources have shifted Librarians roles toward influencing information resources content and away from managing containers of information. The growth of information resources and access technologies have created new roles for librarians in dealing with the heterogeneous needs of medical information consumers and in filtering out irrelevances[29]. It is also the position of Masys: DR[31] that there is a niche for medical librarians with expertise in health services research to support continuous quality improvements in healthcare and to serve on teams involved in developing clinical practice guidelines.

Dalrymple, PW[1] in support of the above opinion, recognized the need for timely and accurate healthcare delivery system among nations. He added that this can be accomplished by creating and maintaining an efficient information network capable of serving clinicians, researchers, patients and the public. A highly skilled workforce is necessary to accomplish this goal according to Dalrymple, while retaining librarianship as core values, requires expanded attention to education.

Perry, G.J. etal[5] opined that the underlying shared mission of delivering relevant information has not changed, and that three significant factors have decreased the distance between the two disciplines. They further asserted that the broadening of medical informatics, the blurring of distinctions among different types of materials, and the movement of libraries to predominantly digital services has allowed librarianship and medical informatics the opportunity to develop a synergistic relationship combining the strengths of both disciplines.

Impact of Medical Informatics on Education of Health Sciences Librarian:

Education and retraining of Health Science Librarians is of great importance in order to meet the challenges of today's information service delivery. Dalrymple[1], Giuse etal[29], Braude[25], posited that training in the library school should be directed toward professional development and improved job performance in order to meet professional standards and expectations. Therefore for the health science librarians in developing countries like Nigeria to be able to fit into the new information technology world, there is urgent need to review library education curriculum to reflect the new paradigm of information technology age as is the case in the developed countries of the world.

In this case, library education should produce graduates with skills to perform tasks, considered important for future generation of librarians. The academic librarian of the future needs to look beyond traditional skills and the traditional library school curriculum for preparation. Braude[25], asked the question, what is that environment and what kinds of information management positions will be available? This is because the job characteristics will determine the nature and type of education that should be acquired.

Today, there are couples of vacant positions advertised on the internet and other similar sources indicative of the changing nature of jobs in health sciences libraries.

Therefore, education should provide the knowledge and skills to succeed in the future environment where the information technology is transforming the environment in which librarians work and changing the skills needed to function effectively and efficiently.

In an article published by Harsh[28], he opined that a library science and medical informatics have developed as intersecting fields with similar interests but significant divergences in scope and activity... We now have an opportunity for the two fields to work together.

For the health science librarians to further articulate their skills, it is generally important for them to acquire domain knowledge vis-à-vis the cultural facility so as not to lose claim to this professional territory, through training and continuing education programs.

CONCLUSION

A number of studies have been conducted on the impact of informatics on the role of health science librarians in developed countries. Most of these studies have centered on librarians providing quality – filtered information to health care providers. Therefore, to ensure that all healthcare providers have equal access to necessary information to support their decision making, it is necessary to explore new ways of delivering that information in an efficient and effective manner most especially in a developing country like Nigeria.

This research work set out to prove that information technology is transforming the environment in which librarians work and also changing the skills needed to function. It is imperative that librarians in developing