

Information Needs and Use of Healthcare Professionals: International Perspective

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ABSTRACT

This paper reviews research that has been done on the information needs and use of health care providers around the world. The paper focuses on different types of professionals in the medical field such as medical faculty members, general practitioners, nursing professionals, family physicians, clinicians, etc. The growth of research and developmental (R&D) activities in the medical and health-care, resulted many changes in all the field of Medicine. The health-care professionals need up-to-date information to serve the society in a better way. The findings of the studies are organised into the main headings like information needs and information use.

Keywords: Information needs, information use, health-care, medical professionals, healthcare providers, medical faculty members, medical information system

1. INTRODUCTION

Human knowledge is passing through the phases like preservation, transmission and advancement. The continuous adding of new knowledge to the existing knowledge makes possible progress in and all areas of the disciplines. The review of the theoretical and research literature is the first step of research pursuit. The term 'review of literature' consists of two words: Review and literature. The word 'review' means the analysis and synthesis of the available knowledge of the field in a unique way to provide the rationale for the study. The word 'literature' refers to the knowledge of a particular area of investigation of any discipline which includes theoretical, practical and its research studies.

According to Borg & Gall¹, the review of literature involves locating, reading and evaluating reports of research as well as reports of casual observation and opinion that are related to individual's planned research project. Van Dale² defines "the review of educational research gives you an excellent overview of the work that has been done in the field and helps to keep up with recent developments. It helps to move further in the right direction".

2. OBJECTIVES

The objectives of this study are to:

- (a) Search, identify, collect and evaluate scholarly papers related to information needs and use of healthcare professionals.
- (b) Present an overview on previous literature

about information needs and use of medical professionals.

- (c) Identify the global trends on the topic information needs and use of health related professionals.

3. SCOPE AND METHODS

The main objective of the paper is to review the scholarly papers published on the topic information needs and use of healthcare professionals and related fields. For this purpose literature published over 44 years was collected through the information resources like Directory of Open Access Journals (DOAJ), Directory of Open Access Repositories (OpenDoar), MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINHAL), UGC-Infonet Digital Library Consortium, Biodiversity Heritage Library, etc. Different search terms were used to find out relevant articles. Keywords such as 'information needs' and 'information use' with the terms 'healthcare professionals', 'medical faculty members', 'general practitioners', 'nursing professionals', 'family physicians', 'clinicians', 'patients', etc. were used. In addition to this, citations from relevant research papers were also explored to find related information on more specific topic. Finally eighty six scholarly articles published within the span of the year 1968 and 2012 were selected for this study. Two evaluative criteria have been used to classify the articles that meet the selection:

- (a) Information needs: Purpose or need for seeking information including patient care, continuing

education, teaching and research, etc.

- (b) Information use: Different types of information resources, such as print and electronic publications, reference sources, databases, open access sources, etc., and the frequency of use and barriers to seek information.

4. CHARACTERISATION OF GROUP

The health care providers are doing their service not only for treatment and patients care but also in the field of administration, education, teaching and research. They are all need to be sufficient knowledge in their field. The present study mainly classified into two facets: Information needs and information use. For the purpose of reviewing information needs and use studies on diverse user groups, the articles were classified into the subtitles like 'Medical Faculty Members', 'Medical Information System', 'General Practitioners', 'Medical Students', 'Patients and General Public', 'Nursing Practitioners', 'Family Physicians', 'Health Workers', 'Biomedical Research', 'Specialists', etc.

5. INFORMATION NEEDS

Information needs may include information demand (or requirement) and information wants (or desires). With respect to this study information needs are items of information that are required in delivering lectures, patient care, educating general public, etc.

5.1 Medical Faculty Members

Cohen³, *et al.* investigated that physicians at different stages of training rely on different sources of information. This study suggests that designing effective medical education requires considering the level of the physician's training and the nature of the medical decision. In 2010 Adkoli⁴, *et al.* conducted a survey among the faculty members of the Medical Education Unit of the University of Dammam, Saudi Arabia, to find out the need of faculty development programme. Respondents suggested initiatives that should be undertaken by the Medical Education Unit and the broader institution.

5.2 Medical Information System

Medical information system consists of libraries and online information retrieval systems to satisfy the information needs of medical community. Northup⁵, *et al.* found that familiarity with a resource in the library is often the basis of the choice of the resource and identified different types of information needs. Manning & Petit⁶ investigated that there are some information needs which may become collective needs when practitioners begin to focus on a particular area of knowledge in similar clinical circumstances and setting. King⁷ undertook an investigation on the ability of the hospital library to meet case-related

information needs of health professionals in eight hospitals. Another study conducted by Schwartz⁸ reported that while in medical school, physicians needed information that was found in textbooks or conveyed to them during class lectures. As they began their residencies, the type of information they needed changed, and they turned to journals. Perley⁹, *et al.* conducted a research, both clinical and non-clinical respondents and emphasised the need for information services customised to their professional information needs, to provide evidence to support the development of a long-term strategy for the Via Christi Regional Medical Center Libraries.

5.3 General Practitioners (GPs)

Hewins¹⁰ assessed that many of the studies of the information needs of medical practitioners are by their very essence use studies. This is due to the increasing emphasis in medicine on locating patient care information with regard to clinical decision-making and problem-solving. Osheroff¹¹, *et al.* mooted that the absence of Index Medicus and Medical Subject Heading (MeSH), terms related 'clinical information need' reflects the scant attention that this subject has received. Forsythe¹², *et al.* made an empirical study of information needs in four clinical settings in internal medicine in a university teaching hospital. They addressed two main issues: how to identify and interpret expressions of information needs in medicine and how to broaden our conception of "information needs" to account for the empirical data. In 1999 Bryant¹³, in his article discussed and identified the challenges intrinsic to delivering information services to primary care. The results of the study conducted by Murugan & Allysornam¹⁴, shows that the GPs in developing countries need more awareness about the use of various information sources (including digital), for their professional and personal competency development.

5.4 Medical Students

The study of Cogdill & Moore¹⁵ revealed that the first-year medical students' information needs most often pertain to diagnosing a problem or choosing a treatment. Forrest & Robb¹⁶ conducted a study to find out more about the information needs of doctors-in-training and to identify their preferred sources of information. The two most important requirements were 'more time to find and obtain information' and 'better access to information sources when and where they are needed'.

5.5 Patients and General Public

Patients and general public are another important group who need right information at right time. Chetwynd¹⁷ mentioned in his study almost all doctors (95 %) had some contact with patients concerning AIDS. Specific information topics of interest included

personal safety, patient care and ethical issues. Christensen¹⁸, *et al.* surveyed healthcare professionals in a rural community to identify the information needs of health-care professionals and information needs of patients. In a comparative study, Jickling & Graydon¹⁹ found no differences in information needs between men and women. NetWellness, the Web-based consumer health information service that focuses on the residents of Ohio evaluated by Guard²⁰, *et al.* In 2002 Raupach & Hiller²¹ investigated that ninety-four percentage patients reported a high level of need for information about one or more issues. Gender differences in health information needs and decisional preferences after an acute ischemic coronary event (ICE) examined by Stewart²², *et al.* in 2004. Patients after ICE, especially women, reported receiving much less information than they wanted from all health professionals. Sylla²³, *et al.* collected qualitative data from 75 key informants and members of two focus groups in Senegal on various aspects of health information needs. Respondents reported needing information in reproductive health and to address rumors and religious barriers to family planning. Majidi²⁴, *et al.* investigated that patients should have some information about it to make decision for the remedy and adjust themselves with disease results.

5.6 Nursing Practitioners (NPs)

Information needs of NPs is equally important than that of any other health professionals. In 1999 Rasch & Cogdill²⁵ conducted an exploratory study on the information needs and information seeking in a sample of nurse practitioners approved to practice in North Carolina. They reported NPs most frequent information needs relate to drug therapy, diagnosis, and other therapy. Fakhoury & Wright²⁶ made a cross-sectional survey investigating communication and information needs of community psychiatric nurses attached to community mental health teams in the United Kingdom. A pilot study conducted by Xu²⁷, *et al.* to find out nurses' information needs and searching behaviour in acute care settings. The findings of the study were that nurses' information needs are different from what is reported in the literature in terms of physicians' information needs.

5.7 Health Workers

In this context the health workers consists of practitioners in rural area and in primary care. Lundeen²⁸, *et al.* studied the information needs of Hawaii's rural health care practitioners and their methods of accessing information. Most reported that journal articles were the information sources that best meet their needs. In 1997 Dorsch & Pifalo²⁹ investigated that the rural health professionals were found to request current information on a wide range of topics in clinical medicine, nursing,

health administration, allied health, social sciences, and basic sciences. Dorsch's³⁰ analysis of some studies indicates that rural health practitioners appear to have the same basic needs for patient-care information as their urban counterparts, and that both groups rely on colleagues and personal libraries as their main sources of information.

Giuse³¹, *et al.* initiated a study to examine the information needs of health care professionals in HIV-related clinical encounters, and to determine the suitability of existing information sources to address those needs. The study suggests that present-day information sources are not entirely satisfactory for answering clinical questions generated by examining charts of HIV-infected patients. Another study of Haigh³² to determine the information needs and support required by Allied Health Professionals (AHPs) whilst building services based on clinical effectiveness. It is noticed that when seeking information, AHPs are more likely to use professional networks than libraries. Lillebo³³, *et al.* studied the needs for status information and projection of future status and events for key factors in the perioperative environment. It is found that information and projection needs differed significantly between actors. Royle³⁴, *et al.* conducted a study to identify what information resources staff need to improve clinical, and managerial decision making. The findings revealed the need for more information resources to assist staff.

5.8 Biomedical Research

In 1968, Rubinstein & Schultz³⁵ studied the information needs of biomedical researchers by observing pattern of repeated use of the BIOSIS information from a remote data terminal located at the Walter Reed Army Institute of Research, USA. Another study of Grefsheim & Rankin³⁶ on the information needs of clinical specialists and biomedical researchers at the US National Institutes of Health (NIH) to inform library services and contribute to a broader understanding of information use in academic and research settings. It was found that NIH scientists overwhelmingly used the NIH Library, began their searches at the library's website rather than Google, were likely to seek information themselves, and valued desktop resources and services.

5.9 Specialists

Here information needs of specialists refer to the health care professionals in a specific area of specialisation and health board members. Nail-Chiwetalu & Ratner³⁷ assumed that if evidence-based practice (EBP) is to become a viable practice in clinical decision making, there appears to be a tremendous need for information literacy instruction in the university curriculum, as well as through continuing education activities for currently practicing

speech language pathologists. Thain & Wales³⁸ studied the information needs and use of NHS library services by members of the West of Scotland Colorectal Cancer Managed Clinical Network. Most had access to a library, although not all made use of it, possibly an indication of the need for improved communications between librarians and healthcare staff. Zelmer & Zelmer³⁹ noted that most hospitals and health agencies in developed countries have 'advisory committees' or 'boards of management'.

6. INFORMATION USE

Here information use refers to how the health care professionals use the information in their service to the end-users.

6.1 Medical Faculty Members

A study conducted by Curtis⁴⁰, *et al.* found that use of the print Index Medicus among faculty was in transition: While 30.5 % continued to use the print resources, 68 % of faculty accessed MEDLINE through electronic means. DaRosa⁴¹, *et al.* reported that no differences among the three groups (third-year students, fourth-year students and physicians) in accurately solving patient care problems. Renwick⁴² surveyed the faculty in medicine, pharmacy, dentistry, and veterinary sciences at the University of the West Indies. It was found that the faculty had high awareness of the electronic resources made available by MSL, but low use of MSL. The medical faculty members of the University of Tennessee Health Science Center were surveyed by Tenopir⁴³, *et al.* They report that faculty members continue to rely on print journals versus electronic journals.

6.2 Medical Information System

Andrews⁴⁴, *et al.* studied the current levels of information technology use in a primary care practice-based research network (PBRN). Only 21 % of practitioners use an electronic medical record (EMR). Bird & Heekin⁴⁵ found that MEDLINE was the most frequently mentioned database across all disciplines, including the health and social sciences. Analysis of the responses and observations of the Burnham & Perry⁴⁶ reveal some strategies for enhancing the outcomes of projects and improving access to medical care literature by health care professionals at rural sites. Williamson⁴⁷, *et al.* recognised that the ways in which physicians manage patients is in part dependent on the relevance and validity of the scientific information they use in their clinical decision making. To determine their use of the internet as an information source and their access to MEDLINE, Members of the Royal New Zealand College surveyed by Cullen⁴⁸. 48.6 % reported that they used the internet to look for clinical information. MEDLINE was the most frequently accessed source. Haynes⁴⁹, *et al.* introduced self-service access to

the MEDLINE into clinical settings to assess the frequency, patterns, purposes, and success of use. Free online access was provided to MEDLINE through GRATEFUL MED software. Maguire & Lovelace⁵⁰ undertook a study to investigate the use of Medlars, an information service.

The quality of MEDLINE searches done by physicians, physician trainees, and expert searchers tested by McKibbin⁵¹, *et al.* They found that novice searchers on MEDLINE via GRATEFUL MED after brief training have relatively low recall and precision. Sandra⁵², *et al.* made research to determine use of online biomedical journals and databases and to assess current user characteristics associated with the use of online resources in an academic health sciences center. While 53 % of the users indicated they searched MEDLINE at least once a week, other databases showed much lower usage. Maharana⁵³, *et al.* found that ICT can be a useful tool to address problems in medical education, but the lack of technology and resources is still a serious limitation. Messerle's⁵⁴ study attempted to find out the most acceptable form of that information and the way it is used that thought could be given to the ways to bring relevant, timely information closer to the users' point of need. Srinivasulu & Reddy⁵⁵ found that the library collection is adequate and the DDC is the classification system. Most of the respondents visit the library regularly.

6.3 General Practitioners (GPs)

A cross-sectional survey among GPs, currently practicing in France, was conducted by Bernard⁵⁶, *et al.* in July 2009. The practice conditions and lack of information were the main barriers. Bowden⁵⁷, *et al.* made a survey of all physicians in four counties in the lower Rio Grande Valley of Texas and to a random sample of physicians in Bexar County, Texas. There was no statistically significant difference in either group's rating of experience with using databases. Multiple linear regression analysis done by Curley⁵⁸, *et al.* suggested that physicians' use of clinical knowledge resources could be described by the physician's level of training, availability, applicability, and the resource medium. Glover & Woollacott⁵⁹ indicated that GPs comprise the largest group of health professionals providing primary health care services. They are frequently the first point of contact with the health care system, and saw some 85 % of the population at least once in 1989. Gruppen⁶⁰ investigated that GPs first access the most preferred source, followed by secondary sources if the problem remains unsolved. Haug⁶¹ made a study using a meta-analytic procedure and reviews twelve studies published between 1978 and 1992. The results indicate that physicians prefer to obtain information from journals and books, but also that they often consult colleagues. Lockyer⁶², *et al.*

attempted to delineate how physicians integrate medical innovations into clinical practice. They found that most physicians obtained information from several sources before making a change in their clinical practice.

Every good physician realises he must perpetually supplement his knowledge base; he must discard and add continually. This was observed by Manning & DeBaakey⁶³. Manning⁶⁴, *et al.* reviewed and analysed individual physicians' prescriptions in an effort to identify the type of information that would help physicians improve drug therapy. Munro⁶⁵, *et al.* noted that greater emphasis is being made by the public and the profession alike that doctors keep up to date. Stross & Harlan⁶⁶ conducted a study to determine physicians' knowledge of photocoagulation in diabetic retinopathy. They found that only 28 % of the family physicians and 46 % of the internists were aware of the study results. Timka & Arborelius⁶⁷ investigated that from 46 consultations, 262 dilemmas were identified by the 12 GPs involved. Medical dilemmas were encountered during three out of four consultations. Williams & Connolly⁶⁸ surveyed 242 physicians in North Carolina of whom 56 % were in family practice and 11.5 % in general practice. Young & Ward⁶⁹ conducted a study to determine the awareness and use of the Cochrane Library and access to the internet by GPs in New South Wales. 134 respondents had access to the internet either at home or at work; 42 were 'Online' at their workplace.

6.4 Medical Students

Information use pattern of researchers in veterinary science and animal husbandry was examined by Biswas & Haque⁷⁰. This study have primarily depended on periodicals of veterinary science and allied branches for their sources of information.

6.5 Nursing Practitioners (NPs)

The information resources NPs used most frequently were consultations with colleagues, drug reference manuals, and textbooks and protocol manuals. This was the findings of the survey conducted by Cogdill⁷¹. Spath & Buttlar⁷² revealed through this study that nurfconnellyses seek information from colleagues more than from any other source. Information on databases may be particularly important in light of the present study's finding that databases available in CD-ROM format are consulted very little. Wakeham⁷³ made a brief comparison with the perceptions that librarians have of nurses' information-seeking activity followed by a more detailed discussion of the ways that librarians consider that nurses' use of libraries could be improved. Wozar & Worona⁷⁴ made a survey on the usage of online information resources by nurses. For this purpose the participants were instructed in the content and use of several

different online resources. A special webpage was designed for this project serving as an access point to the resources. Eight participants accessed the project page thirty-nine times in a thirty-day period. The most accessed resource was Primary Care Online (PCO), accessed thirty-three times. PCO was followed by MD Consult (17), Ovid (8), NLM resources (5), and e-journals (1).

6.6 Health Workers

In 1991, Dorsch⁷⁵ undertook a follow-up outreach project to extend and reinforce the work of a National Library of Medicine-funded outreach project conducted in west central Illinois. He noticed that the introduction of Grateful Med/Loansome Doc to unaffiliated health professionals is an important component in equalising information access. Mullaly-Quijas⁷⁶, *et al.* describes the use of focus groups as a data-gathering tool, in both theoretical and practical terms. Musoke⁷⁷ conducted a study in 1998/99 to investigate the accessibility and use of information by health workers in rural Uganda. The concepts that emerged from the analysis of the use of information pointed directly to the information needs of the health workers studied, which shows that information was valuable in meeting those needs. Osiobe⁷⁸ reviewed the use of information resources by health professionals and their information seeking behavior from a wide range of existing literature. Stinson & Muller⁷⁹ interviewed 402 randomly selected health professionals, used to stay abreast of current advances in medicine. They found that in addition to medical literature, the most common source, the typical responder spent one to five hours each week in discussions with colleagues. Timpka⁸⁰, *et al.* studied that computer technology should be considered for communication between health care providers, as well as for the distribution of up-to-date medical texts.

6.7 Biomedical Research

Murray⁸¹, *et al.* reported that colleagues were an important information source for daily work-related queries, yet journal articles in print format provided the major published information source. The preferred methods of locating information were through Medline and browsing the contents pages of journals. Pyne⁸², *et al.* reported that clinicians' use of library resources and the competencies they require to access information necessary for the practice of evidence-based healthcare. It is based on the results of a study commissioned by North Thames Region to identify the training needs of clinicians for the adoption and practice of evidence-based healthcare. Wessel⁸³, *et al.* conducted a study which sought to understand the literature search experiences and skills of clinical research coordinators at a large academic medical center.

The data from this survey indicate that clinical research coordinators are a population who would benefit from training by academic medical center librarians in how to use electronic library resources and services.

6.8 Specialists

To determine how often physical therapists in private practice in Vermont use sources of information for clinical and practice-management decision making, Hall⁸⁴ conducted a survey. The therapists' responses show frequent reliance on personal and office collections of literature for clinical decision making but virtually no use of bibliographic databases. Strother⁸⁵, *et al.* randomly selected five hundred dentists in Louisiana were surveyed to determine what information dentists seek and what sources they prefer. Responses indicated that dentists need information on new techniques in dentistry and that preferred sources are professional colleagues and personal journal collections. Pelzer⁸⁵, *et al.* carried out a survey amongst veterinary medical students in the University of Iowa. The results shows that the main reason for visiting the library were to photocopy and to study course materials.

7. ANALYSIS AND INTERPRETATION

When analysing the information needs of the healthcare professionals, different categories of professionals had different types of needs to satisfy. The medical faculty members often need training and faculty development program to serve the society. Some scholars like King and Schwartz suggests that there should be an adequate collection in the libraries and other medical information systems. General practitioners need more awareness and orientation programs in information sources and services to meet their needs. The important group, patients and general public need information in all stages of treatment. They need information on the different diseases, treatment and also in decision making. The nursing community often needs information on drug therapy, diagnosis and other therapy. Yet their needs were different from physician's information needs. It was found that health workers often request current information on a wide range of topics. In biomedical research settings scientists always browse the website of US National Institutes of Health (NIH) Library.

Medical faculty members use information from print as well as e-journals, e-information resources like MSL, MEDLINE, etc. A vast majority of medical information systems prefer MEDLINE to make use of the user community. General practitioners often seeking and using information from books, journals and colleagues. Lack of awareness of information sources is the main barriers in using different types of resources. The nursing practitioners most

frequently using or consulting with colleagues, drug reference manuals, textbooks, protocols, etc. Health workers used to stay abreast of current advances in medicine. So they frequently use information resources. In biomedical research colleagues were the main source of information. But MEDLINE and print journals had also significant role. The specialists like therapists, dentists, etc., prefer to use information on new techniques in their field.

8. CONCLUSIONS

This literature review covers significant studies on information needs and use of healthcare providers all around the globe. It is found that professionals in this field, especially faculty members, general practitioners, nursing professionals, clinicians, health workers, etc., need training and faculty development programme; information regarding drugs, drug therapy, diagnosis, clinical medicine, nursing, health administration, allied health, social sciences, basic sciences, etc., to serve the society. So that the information systems should provide resources like print and e-journals, MEDLINE, Medical Subject Headings (MeSH), web-based consumer health information service, etc. It is noticed that the professionals are using the information sources and systems like colleagues, print and e-journals, MEDLINE, practice-based research network (PBRN), Electronic Medical Records (EMR), Index Medicus and MeSHs.

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