



Information needs of rural health professionals: A case study of the Tuberculosis and Leprosy Referral Centre (TB/L), Eku, Delta State

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Abstract

In developing countries, many rural health professionals have little or no access to basic practical information. The "information poverty" of health professionals in rural area is exacerbating what is clearly a public health emergency on a massive scale. It is against this background that the researcher is investigating the information needs of rural health professionals in the tuberculosis and leprosy referral center (TB/L), Eku, Nigeria. The study employed the *ex-post facto* research method. The population of the study is 69. Percentages and frequency counts were used to analyze the data. The following are the findings derived from the study. The rural health professionals in the area need information on the diagnosis of ailment, availability of medical facilities, and research reports on causes and cures of ailments. Some of the sources of information to rural health professionals include department of health and human services, telephone contact with colleagues/agencies/local hospital libraries and rural health resources directory and research information. The major problems faced by them include lack of access to the Internet, inadequate interpretation skills and unreliable phone services. Recommendations were however made to ameliorate the situations.

Keywords: Information Needs Rural Health Professionals, Tuberculosis and Leprosy Referral Centre (Tb/L).

Introduction

In every state of the federation, efforts to improve health in rural areas are hampered by a lack of trained personnel who have access to adequate and appropriate information resources. Rural areas face critical health problems that are exacerbated by isolation, poverty, a scarcity of specialist personnel, transportation, and limited access to information (Lundeen, Tenopir &

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Wermager, 1994). The problems of providing adequate health services and information access in rural areas are well documented. In the tuberculosis and leprosy referral center (TB/L), Eku, the situation is complicated further by the location of rural area on separate location.

However, there are now many successful initiatives that could be extended or replicated. An example is BIREME (<http://www.bireme.org>), the Latin American and Caribbean Centre for Health Sciences Information. In 1967, following an agreement between the Pan American Health Organization (PAHO)/WHO and the Brazilian Government, BIREME has shown how significant government funding across a region can successfully overcome the phenomenon of the "lost science of the Third World" (Gibbs, 1995). In collaboration with the Foundation for the Support of Science of São Paulo (FAPESP) and the Chilean National Council of Sciences, BIREME set up SciELO (the Scientific Electronic Library Online, <http://www.scielo.org>), which was the first and is now one of the largest sources of free full-text access to health research information. BIREME also set up LILACS (<http://lilacs.bvsalud.org>), which indexes journals from Latin America and the Caribbean, and the Virtual Health Library (<http://www.bvsalud.org>), which provides free online access to a range of evidence-based resources that support health-care decisions.

Universal access to information for health professionals is a prerequisite for meeting the Millennium Development Goals and achieving health for all. However, despite the promises of the information revolution, and some successful initiatives, there is little if any evidence that the majority of health professionals in the developing world are any better informed than they were ten years ago. Lack of access to information remains a major barrier to knowledge-based rural health in developing countries. The development of reliable, relevant, usable information can be represented as a system that requires cooperation among a wide range of professionals including health-care providers, policy makers, researchers, publishers, information professionals, indexers, and systematic reviewers. The system is not working because it is poorly understaffed, undermanaged, and under-resourced.

Health professionals are at the centre of efforts to address this crisis. They are hampered by two main factors. First, there is a gross deficiency in the actual number of health professionals in Africa, affecting all cadres. The "brain drain" depletes public sector health professionals to critically low numbers, especially in rural areas. Second, there has been a remarkable lack of attention on understanding and addressing the needs of existing health professionals themselves, and how they might be better supported to deliver safe and effective health care.

In developing countries, many rural health professionals have little or no access to basic, practical information (Pakenham-Walsh, Priestly, & Smith, 1997; Macrorie, 1997; Sekikawa,

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Laporte, Satoh & Ochi, 1997). Indeed, many have come to rely on observation, advice from colleagues and building experience empirically through their own treatment successes and failures. It is against this background that the researcher is investigating the information needs of the rural health professionals in TB/L, Eku, Delta, Nigeria.

Information needs of rural health professionals

The concept of information needs was coined by an American information scientist Taylor (1962) in his article titled "The Process of Asking Questions" published in *American Documentation* (Now *Journal of the American Society of Information Science and Technology*). Taylor attempted to describe how an inquirer obtains an answer from an information system, by performing the process consciously or unconsciously; also, he studied the reciprocal influence between the inquirer and a given system.

Information need is an individual or group's desire to locate and obtain information to satisfy a conscious or unconscious need. The main reasons for studying information needs as stated by Taylor (1962) are:

- i. The explanation of observed phenomena of information use or expressed need;
- ii. The prediction of instances of information uses;
- iii. The control and thereby improvement of the utilization of information manipulation of essentials conditions.

According to Taylor, information needs has four levels:

1. The conscious and unconscious need for information not existing in the remembered experience of the investigator. In terms of the query range, this level might be called the "ideal question" — the question which would bring from the ideal system exactly what the inquirer, if he could state his need. It is the actual, but unexpressed, need for information
2. The conscious mental description of an ill-defined area of indecision. In this level, the inquirer might talk to someone else in the field to get an answer.
3. A researcher forms a rational statement of his question. This statement is a rational and unambiguous description of the inquirer's doubts.
4. The question as presented to the information system.

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The turbulent and changing information environment calls for continual research to ensure that the needs of the information users are satisfactorily met and that the information professionals acquire the required expertise to cope with the operational management of the information resources and plan for the future (Devadason & Lingam, 1996). Information needs were of two general kinds: those generated by a specific case or individual (diagnostic, referral, pharmaceutical needs, etc.) and those of a general nature (research reports, grant information, statistical data, policies, directives, etc.). Physicians and pharmacists tended to have more needs of the first kind; social professionals, public health nurses, and managers tended to have more needs of the second kind.

Ten years ago, a meeting to review global access to health information concluded that most health professionals in developing countries had inadequate access to information and that the information available to them was often unreliable or irrelevant (Kale, 1994 as cited by Godlee, Pakenham-Walsh, Ncayiyana, Cohen & Packer, 2004). At that time, there was optimism that, by 2004, all—or nearly all—health professionals in developing countries would have access to the information they needed to provide the most effective rural health possible with the resources available.

Information sources of rural health professionals

According to Devadason and Lingam (1996), in order to identify information needs or to have some insight into the actual information needs, one should adopt various methods to gather information on the various factors that influence the information needs. No single method or tool will serve entirely. A careful selection and blending of several techniques depending on the user whose need is being studied is necessary.

The Medical and Health Information Directory listed eleven organizations, agencies, and institutions concerned with rural health, as well as fifteen rural health services (Backus, 1992 as cited by Lundeen, Tenopir and Wermager, 1994). Many of these organizations provide information to the public, to rural health providers, or to other agencies. The Rural Health Resources Directory (1991) contains listings of many additional national and regional sources of information and is an important resource (U.S Department of Health and Human Services, 1991 as cited by Lundeen, Tenopir and Wermager, 1994).

Major national providers of rural health information resources include the U.S. Department of Agriculture, U.S. Department of Health and Human Services (HHS), NLM, and the National

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Rural Health Association (NRHA). The most important federal source of information on these issues is the Rural Information Center Health Service (RICHS), which is part of the Rural Information Centre at the National Agricultural Library (NAL). RICHS was jointly created by NAL and the HHS Office of Rural Health Policy as a rural health information service. Its purpose is to collect and disseminate information on rural health issues and research findings related to rural health and to provide innovative approaches to the delivery of rural health services. RICHS provides the following services: assistance in locating a variety of information sources to meet individual needs, referrals to organizations or experts in the field with additional information, and brief literature searches of computerized databases on requested topics free of charge or exhaustive searches on a cost-recovery basis. The many services of RICHS are available to rural health providers, either directly or through a library. There is a charge for some services, such as document delivery.

The NRHA is an important source of publications, such as the Rural Health Resources Directory and research information. It also publishes the Journal of Rural Health. According to the directory, "The NRHA is a multidisciplinary organization addressing all aspects of the delivery of rural health in rural areas.... NRHA members include administrators, educators, government professionals, physicians, and other health professionals from private practice, hospitals, community and migrant health centers, and educational institutions. The NRHA's purpose is to improve rural health and rural health through advocacy, education, research and communications" (U.S Department of Health and Human Services, 1991 as cited by Lundeen, Tenopir and Wermager, 1994).

Thomas, Bowers, Cadatal, and Kim (2006) indicated the following as the types of information sources for rural health professionals. They include:

1. Human resources: patients, colleagues, librarians, outside consultants.
2. Primary resources (original research): clinical research, non-clinical laboratory research. Typically articles published in peer-reviewed journals.
3. Secondary resources (describe or analyze primary resources): reviews, meta-analyses, textbooks, manuals, encyclopedias, other books.
4. Tertiary resources (a compilation of primary and secondary resources): bibliographies, library catalogs, directories, reading lists. Encyclopedias and textbooks can serve as both secondary and tertiary sources.

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5. Print resources.
6. Electronic resources available on personal computers such as desktops or laptops.
7. Electronic resources available on handheld computers.
8. Links to information about psychiatric and related scales.

Godlee, Pakenham, Ncayiyana, Cohen and Packer (2004) noted that most health professionals still prefer print. Godlee, Pakenham, Ncayiyana, Cohen and Packer further observed that most health professionals in developing countries like Nigeria will not or cannot pay for information themselves and that as much information as possible should therefore be free to use. Pakenham-Walsh, Priestly and Smith (1997) indicated in their draft report that, WHO argues that “knowledge must be accessible to all in a form which is useful and can be acted upon by different people and groups”. Tamber, Godlee and Newmark (2003) indicated that “Free access” and “open access” initiatives have greatly improved availability of the biomedical literature, which is the crucial building block for evidence-based rural health. Godlee, Pakenham, Ncayiyana, Cohen and Packer (2004) observed that in particular, HINARI (Health InterNetwork Access to Research Initiative; <http://www.healthinternet.org>) a partnership initiative led by WHO, now provides developing countries with access to nearly 2300 online journals. According to Werner, Thuman and Maxwell (2003), in information-rich industrialized countries, clinicians often rely largely on two or three essential information resources—basic reference and learning materials such as handbooks and drug formularies. A community health worker may find a single copy of where there is no doctor, adapted and written in the local language more useful than access to thousands of international journals. More attention is needed to ensure free access to such resources for the vast majority of developing-world health professionals who work in primary and district care.

Problems faced by rural health professionals in seeking information

The few empirical studies such as (Adamson, Muula, Misiri, 2004; Health Information Network, 2004; Horton, 2000; & Health Information needs and services in Cameroun, 1998) and many anecdotal reports suggest that lack of physical access to information (absent, slow, or unreliable internet connectivity, expensive paper, and high subscription cost of products) remains the major barrier to knowledge-based rural health in developing countries. Lundee, Tenopir and Wermager (1994) also indicated that inadequate information technology or infrastructure, including lack of dedicated phone lines, modems, and microcomputers, and unreliable phone service; increasing demands on local resources without corresponding added support (for example, such

demands are placed on the community colleges by several health and medical outreach programs of the main campus of the University of Hawaii); high costs associated with online searching and document delivery and slow turnaround time for document delivery (one to three weeks) as some of the problems faced by rural health professionals in seeking health information.

According to Dorsch (2000) several barriers are consistently apparent to rural health professionals: lack of time, isolation, lack of library, technology illiteracy, lack of equipment, and cost. Although many of these barriers are shared by urban health professionals, they appear to be more prominent among rural health professionals. Deane as cited by Dorsch (2000) indicated lack of time as the major obstacle to consulting books and journals or using the library to answer clinical questions. Lack of time was also the major barrier reported by 65% of respondents in the Illinois follow-up study by Dorsch and Pifalo (1997). Bowden, Kromer, and Tobia (1994), Texas study showed 22.8% of rural versus 14.3% of urban health professionals reported lack of time as the major obstacle to seeking information.

Dorsch (2000) noted that several studies have been carried out by different authors on the barriers faced by rural health professionals. Lundeen, Burnham and Shelstad as cited by Dorsch (2000) all found that isolation was a major barrier to rural health professionals' use of information. Isolation implies geographic isolation, lack of access to a medical school or academic health sciences library, distance from specialist colleagues, and inadequate road and telecommunications infrastructures. Remoteness from the hospital library, lack of local information, and general lack of awareness of available information were the most common problems reported by nurses in the needs assessment by Farmer and Richardson. Dorsch further noted that lack of a local library (collections, staff, and services) was another significant barrier reported by Shelstad and Burnham. Even in more recent studies, lack of equipment was listed as a barrier. In a 1995 Illinois study by Dorsch and Pifalo (1997), 26% of respondents said lack of computer equipment was a reason for not using medical databases. Lack of technological skills appeared to be another significant barrier for rural health professionals. Lack of skills, either computer or searching, was reported by 61% of respondents in the Illinois follow-up study by Dorsch and Pifalo.

Solutions to the improvement of the problems faced by rural health professionals

Rural health providers from the rural population who are trained in the special requirements of such populations are needed to help address the problem. Access to information that is appropriate and targeted to rural health, is an important part of the solution of healthcare professionals. If information services in rural areas are to be improved, then several steps must be

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taken. It is first important to understand what types of information resources are needed by all categories of rural health professionals in rural areas, to learn how they now get information, and to discover what barriers they perceive to improved information access. In addition, national and international sources of information on rural health must be identified.

Godlee, Pakenham-Walsh, Ncayiyana, Cohen and Packer (2004) noted the following as solutions to the problems of health professionals information needs.

The first issue is improved access to essential information for health professionals, such as drug formularies and evidence-based handbooks. This may best be achieved through strengthening of local and regional publishers, libraries, and information services. With access to electronic resources (and adequate financial support for training and equipment), libraries can make information available to end-users in a range of formats (printed, electronic, digital, and broadcast media). In many developing countries, it is difficult, if not impossible, for librarians and others to find out—and certainly to afford—the full range of relevant publications available nationally or internationally. But much has been learned about the development of libraries and resource centres, particularly through the work of Health link Worldwide and its partners. WHO's Blue Trunk Library may be a model that should be replicated more widely; it has provided over 1000 mini libraries for use by district hospitals and other frontline facilities, providing access to a selection of essential health-information materials.

The second issue is improved connectivity. Clinicians may still generally prefer paper, but among currently available technologies only the internet has the potential to deliver universal access to up-to-date health-care information. Connectivity is vital for efficient information flows among librarians, publishers, and all others responsible for developing and distributing materials. Internet connectivity has increased dramatically over the past 10 years, but it is still unavailable to most health professionals (Tan-Torres, 2000 as cited by Godlee, Pakenham-Walsh, Ncayiyana, Cohen & Packer, 2004). Godlee, Pakenham-Walsh, Ncayiyana, Cohen and Packer (2004) noted that access to e-mail is spreading faster than the internet, especially in Africa. E-mail provides new possibilities for publishing and distributing practical health-care information and for networking with other health professionals, as evidenced by the success of regional networks (eg, AFRO-Nets; <http://www.afronets.org>), publisher networks (eg, Forum for African Medical Editors), librarian networks, and multidisciplinary health-information development networks (eg, HIF-net at WHO). E-mail has also enabled one-to-one communications, both professional and personal, facilitating development of relationships and reducing professional isolation. Significant problems to overcome in some countries include inadequate power supply; lack of computer equipment and information

technology support; the fact that the necessary software is mainly in English; lack of computer skills; and resistance to use of technology among health professionals. Improvements in connectivity will require a major global information communication technology initiative, which itself will require substantial and sustained financing.

The third issue is the need to identify and overcome barriers to the use of information in different settings. Haines and Donald (2002) noted that a growing body of evidence, mainly from the developed world, suggests that access to information is necessary but not sufficient to change practice. Changing practice is by no means simple and remains a major challenge in the information-rich industrialized world. In a survey carried out by Haines and Donald in 2002, of nearly 7000 people in the USA, and review of their medical records, found that, over 2 years, participants received only 54% of recommended care.¹⁸ There is plenty of anecdotal evidence to suggest that this “know-do” gap is at least as great in developing as in developed countries.

According to Godlee, Pakenham-Walsh, Ncayiyana, Cohen and Packer (2004), known and assumed barriers to using information in practice (many of which are also experienced by health professionals in developed countries) include: lack of awareness of what is available; lack of relevance of available information (not meeting people’s needs in terms of scope, style, language, or format); lack of time and incentives to use information; and lack of interpretation skills.

There are no simple solutions. Any attempts to overcome barriers to use of information should be based on good research into the nature of the barriers and evaluations of planned interventions. Training and peer support is likely to be key. As the amount of information available increases, health professionals will need critical appraisal skills to be able to distinguish unreliable from reliable sources of information. Librarians and producers of health-care materials need searching, critical appraisal, and computer skills. Researchers, systematic reviewers, journal editors, and indexers need to understand research design and to have skills in searching, critical appraisal, writing, and editing. Software and interface designers need to empower users so that they can exploit technologies to combine and mediate information and knowledge. Achieving all of this on a global scale will require major investment within countries, and the use of effective learning and peer support methodologies, whether face-to-face or virtual.

Study Purpose

The main purpose of this study is to investigate the information needs of rural health professionals in the tuberculosis and leprosy referral centre (TB/L), Eku, Delta state. Specifically, the study is set out to:

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- i. find out the information needs of rural health professionals in the tuberculosis and leprosy referral center (TB/L) Eku.
- ii. ascertain the information sources used by the rural health professionals.
- iii. investigate the problems faced by the rural health professionals in seeking information.
- iv. ascertain the possible solutions to improve the information needs of rural health professionals.

Methodology

The study will employ the *ex post facto research* using the descriptive survey research method. The population of the study is sixty nine (69). It comprises medical doctors, medical director, nurses, pharmacists, lab scientist, community health extension professionals and health assistants. Questionnaire was the instrument used to collect the required data for the study. Data were analyzed using frequency counts and percentages.

Response Rate

The numbers of questionnaire administered were 69 copies and 60 (86.96%) copies were retrieved. According to Dulle, Minish-Majanja & Cloete (2010), the response rate of 86% is considered appropriate because the most acceptable response rate is 60%. This chapter is divided into three sections. Section A is concerned with the demographic data of the respondents, section B deals with answering of the research questions while section C is concerned with discussion of findings.

Data Analysis

Table I: Sex Distribution of the Respondents

Sex	Frequency	Percentage (%)
Male	36	60
Female	24	40
Total	60	100

The distribution above shows that 36(60%) of the respondents are male while 24(40%) of the respondents are female. This means that there are more male than female rural health professionals in Tuberculosis and Leprosy referral centre (TB/L), Eku.

Table II: Distribution of the Respondents by Marital Status

Sex	Frequency	Percentage (%)
Married	39	65.00
Single	17	28.33
Divorce	4	6.66
Total	60	100

Table II shows the marital status of the respondents. The result shows that there are more married rural health professionals than singles and divorce.

Table III: Distribution of the Respondents by Profession

Profession	Frequency	Percentage (%)
Medical director	1	1.67
Doctors	4	6.67
Nurses	10	16.67
Pharmacists	5	8.33
Laboratory scientists	6	10.00
Health assistants	13	21.00
Community health extension workers	21	35.00
Total	60	100

Table III shows that 21(35%) of the respondents are community health workers, 13(21%) are health assistants, while 10(16.67%) are nurses. This means that there are more community health extension workers in the Tuberculosis and Leprosy referral centre (TB/L), Eku.

Table IV: Health Information Needs of Rural Health Professionals

Health Information Needs	Frequency	Percentage (%)
Diagnosis of ailment	48	80.00
Referral center/organization or experts	35	58.33
Pharmaceutical companies	23	38.33
Research reports on causes of ailment	42	70.00
Research reports on cures of ailment	40	66.66
Availability of medical facilities	46	76.66

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Table IV shows that diagnosis of ailment 48(80%), availability of medical facilities 46(76.66%) research reports on causes 42(70%) and cures 40(66.66%) of ailments are the major information needs of the rural health professionals.

Table V: Information Sources used by the Rural Health Professionals

Information Sources of Health Needs	Frequency	Percent age (%)
Department of health and human services	49	81.66
National rural health association	33	55.00
Rural health resources directory and research information	37	61.66
Human resources	27	45.00
Print resources	30	50.00
Electronic resources	30	50.00
Telephone contact with colleagues/agencies/local hospital libraries	41	68.33
Rural health information center services	36	60.00

The result from Table V shows that the sources of health information for the health information needs of the rural health professionals varied. Some of the sources include department of health and human services, telephone contact with colleagues/agencies/local hospital libraries and rural health resources directory and research information.

Table VI: Problems faced by Rural Health Professionals in Seeking Information Needs

Problems	Frequency	Percentage (%)
Lack of access to the Internet	49	81.66
Inadequate information technology or infrastructure	33	55.00
Unreliable phone services	37	61.66
Increasing demand for local resources without corresponding added support	27	45.00
High cost associated with online searching and document delivery	30	50.00
Inadequate time to consult/use the available information	30	50.00
Inadequate interpretation skills	41	68.33
Limited consultation time/language barrier	36	60.00

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Table VI shows the problems faced by rural health professionals while seeking information needs. The major problems faced by them include lack of access to the Internet 49 (81.66%), inadequate interpretation skills 41(68.33%) and unreliable phone services 37(61.66%).

Table VII: Solutions to the Problems faced by Rural Health Professionals in Seeking Information Needs

Problems	Frequency	Percentage (%)
Improvement on access to essential information	60	100.00
Improved connectivity	49	81.66
Training on current health practices	54	90.00
Creation of awareness on the causes/cures of diseases	48	80.00
Information on how-to-do manual for emergency treatment of diseases	47	78.33

Table VII shows that improvement on access to essential information 60(100.00%), training on current health practices 54(90.00%), improved connectivity 49(81.66%) are some of the major solutions to the problems faced by rural health professionals in seeking information needs.

Findings and Discussion

From the data analysis, the following findings were revealed.

The study found that the rural health professional needs information on diagnosis of ailment, availability of medical facilities, and research reports on causes and cures of ailments. This supports the work of Devadason and Lingam (1996) who noted that information needs were of two general kinds: those generated by a specific case or individual (diagnostic, referral, pharmaceutical needs, etc.) and those of a general nature (research reports, grant information, statistical data, policies, directives, etc.). Devadason and Lingam indicated that physicians and pharmacists tended to have more needs of the first kind; social professionals, public health nurses, and managers tended to have more needs of the second kind. The first type of need seems to be better met with current systems than is the second type, which is more nebulous and less well defined; the information that best responds to the latter kinds of needs tends to be more scattered.

The result also shows that the sources of health information for the health information needs of the rural health professionals varied. Some of the sources include department of health and human services, telephone contact with colleagues/agencies/local hospital libraries and rural

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health resources directory and research information. Devadason and Lingam (1996) also indicated that no single method or tool will serve entirely as a source of information needs for rural health professionals. Lundeen, Tenopir and Wermager (1994) noted that although Hawaii's rural health professionals seldom consult outside organizations for information, rural health information is available from a variety of government departments or agencies. In line with the above, The Medical and Health Information Directory listed eleven organizations, agencies, and institutions concerned with rural health, as well as fifteen rural health services (Backus, 1992 as cited by Lundeen, Tenopir and Wermager, 1994). Many of these organizations provide information to the public, to rural health providers, or to other agencies. A search of the online version of the Encyclopedia of Associations retrieves fourteen organizations worldwide that are concerned with rural health.

The Rural Health Resources Directory 1991 contains listings of many additional national and regional sources of information and is an important resource (U.S Department of Health and Human Services, 1991 as cited by Lundeen, Tenopir and Wermager, 1994). Also, in a study carried out by Pakenham-walsh and bukachi (2009), a questionnaire survey of 37 East African surgeons found that they prefer electronic journals to textbooks. (It should be noted, however, that the results of this study may well have been affected by reporting bias – see item 4 in "Methodology issues" below.) "Western" journals (defined as being published within Canada, the United Kingdom of the United States) were indicated as being the most useful by most of the respondents in their clinical (76% of respondents), teaching (73%), and research (68%) activities. Local journals, defined as those from the region where the physicians practice, were regarded as most useful by far fewer respondents for their clinical (22%), teaching (14%), and research (11%) activities. A total of 62% said that they would change their practice based on "Western" journal information, in contrast to only 11% who would change it based on information from local journals. Thomas, Bowers, Cadatal, and Kim (2006) indicated the following as the types of information sources for rural health professionals. They include human resources: patients, colleagues, librarians, outside consultants, Primary resources (original research): clinical research, non-clinical laboratory research. Typically articles published in peer-reviewed journals, secondary resources (describe or analyze primary resources): reviews, meta-analyses, textbooks, manuals, encyclopedias, other books, tertiary resources (a compilation of primary and secondary resources): bibliographies, library catalogs, directories, reading lists. Encyclopedias and textbooks can serve as both secondary and tertiary sources, print resources, electronic resources available on personal computers such as desktops or

laptops, electronic resources available on handheld computers and links to information about psychiatric and related scales.

Findings from this study revealed the problems faced by rural health professionals while seeking information needs. The major problems faced by them include lack of access to the Internet, inadequate interpretation skills and unreliable phone services. This supports the work of Adamson, Muula, Misiri (2004); Health Information Network (2004); Horton (2000); and Health Information needs and services in Cameroun (1998) and many anecdotal reports suggest that lack of physical access to information (absent, slow, or unreliable internet connectivity, expensive paper, and high subscription cost of products) remains the major barrier to knowledge-based rural health in developing countries. Also, Thomas, Bowers, Cadatal, and Kim (2006) noted the following as obstacles that rural health professionals face when seeking information. They include: the clinical care of individual patients is a primary reason for seeking information about patient oriented information needs, to keep up-to-date, to obtain information for patients to explain really important risk factors, especially for well-informed patients, to acquire pharmacological information (hard data to guide or back-up prescribing decisions), to fill specific gaps in knowledge on "new" diagnoses and therapies, to satisfy curiosity, personal interest, and inclination, to resolve issues around uncertainty and evidence.

The study also found that improvement on access to essential information, improved connectivity, training on current health practices, creation of awareness on the causes/cures of diseases and information on how-to-do manual for emergency treatment of diseases are some of the solutions to the problems faced by rural health professionals in the cause of seeking information. This is in line with Godlee, Pakenham-Walsh, Ncayiyana, Cohen and Packer (2004) who noted the following as solutions to the problems of health professionals information needs.

The first issue is improved access to essential information for health professionals, such as drug formularies and evidence-based handbooks. This may best be achieved through strengthening of local and regional publishers, libraries, and information services. With access to electronic resources (and adequate financial support for training and equipment), libraries can make information available to end-users in a range of formats (printed, electronic, digital, and broadcast media). At the moment there are stark regional differences in library support. In many developing countries it is difficult, if not impossible, for librarians and others to find out—and certainly to afford—the full range of relevant publications available nationally or internationally. But much has been learned about the development of libraries and resource centres, particularly through the work of Healthlink Worldwide and its partners. WHO's Blue Trunk Library may be a model that should

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be replicated more widely; it has provided over 1000 mini libraries for use by district hospitals and other frontline facilities, providing access to a selection of essential health-information materials.

The second issue is improved connectivity. Clinicians may still generally prefer paper, but among currently available technologies only the internet has the potential to deliver universal access to up-to-date health-care information. Connectivity is vital for efficient information flows among librarians, publishers, and all others responsible for developing and distributing materials. Internet connectivity has increased dramatically over the past 10 years, but it is still unavailable to most health professionals (Tan-Torres, 2000 as cited by Godlee, Pakenham-Walsh, Ncayiyana, Cohen & Packer, 2004). Godlee, Pakenham-Walsh, Ncayiyana, Cohen and Packer (2004) noted that access to e-mail is spreading faster than the internet, especially in Africa. E-mail provides new possibilities for publishing and distributing practical health-care information and for networking with other health professionals, as evidenced by the success of regional networks (eg, AFRO-Nets; <http://www.afronets.org>), publisher networks (eg, Forum for African Medical Editors), librarian networks, and multidisciplinary health-information development networks (eg, HIF-net at WHO). E-mail has also enabled one-to-one communications, both professional and personal, facilitating development of relationships and reducing professional isolation. Significant problems to overcome in some countries include inadequate power supply; lack of computer equipment and information technology support; the fact that the necessary software is mainly in English; lack of computer skills; and resistance to use of technology among health professionals. Improvements in connectivity will require a major global information communication technology initiative, which itself will require substantial and sustained financing.

The third issue is the need to identify and overcome barriers to the use of information in different settings. Haines and Donald (2002) noted that a growing body of evidence, mainly from the developed world, suggests that access to information is necessary but not sufficient to change practice. Changing practice is by no means simple and remains a major challenge in the information-rich industrialized world. In a survey carried out by Haines and Donald in 2003, of nearly 7000 people in the USA, and review of their medical records, found that, over 2 years, participants received only 54% of recommended care.¹⁸ There is plenty of anecdotal evidence to suggest that this “know-do” gap is at least as great in developing as in developed countries.

According to Godlee, Pakenham-Walsh, Ncayiyana, Cohen and Packer (2004), known and assumed barriers to using information in practice (many of which are also experienced by health professionals in developed countries) include: lack of awareness of what is available; lack of

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relevance of available information (not meeting people's needs in terms of scope, style, language, or format); lack of time and incentives to use information; and lack of interpretation skills.

Conclusion

Information needs of health professionals in developing countries are varied and are constantly under the influence of multiple factors -professional, institutional, cultural and infrastructural. Meeting these needs requires a clearer and better understanding of the complex interrelationships between these factors. Thus, no single method is ideal in evaluating health information needs. A snapshot of the published literature highlights progress, challenges and opportunities.

In particular, the availability of health information provides confidence in clinical decision-making, improves practical skills and attitudes to care. Serious and widespread deficiencies in the existing knowledge and practice of health practitioners is a reminder of the crucial importance of improving the availability of relevant, reliable rural health information – and its potential to radically improve rural health worldwide. The following recommendations are hereby made. Health information needs such as pharmaceutical companies should be opened in the locality for immediate purchase of drugs. Information sources such as print and electronic as well as human resources should be beefed up for effective service delivery. Problems such as inadequate information technology or infrastructure, inadequate time to consult/use the available information, inadequate interpretation skills and limited consultation time/language barrier should be taken care of to improve on the services rendered in the hospital.

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