INFORMATION NEEDS OF RURAL HEALTH CARE WORKERS

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ABSTRACT

Information workers, including physicians, nurses, social workers, etc., in rural areas have needs for a wide range of specialized information, but have difficulty getting access to information resources. As part of a rural health education project funded by the U.S. Department of Health and Human Services*, we studied the information needs of rural health workers in Hawaii and their current means of information access. Barriers to information access included lack of funds, lack of appropriate hardware, infrastructure problems (such as poor telephone lines or no convenient access to libraries), insufficient training in how to use information sources, and insufficient time to spend on information tasks. Only a small percent of those who have computers and modems and knowledge of online resources use them regularly. Recommendations for solving some of their information needs include the development of a rural health information clearinghouse; better identification, training, and exploitation of the specialized services available for health care workers; and, most importantly, the establishment of "rural health care information agents" (modeled on agricultural extension agents) on each major island. The methodology, needs identified, and recommendations are applicable to any rural community

INTRODUCTION

The improvement of health care to rural areas everywhere is hampered by a lack of trained personnel who have access to adequate and appropriate information resources. Other problems associated with providing health services and information access to rural communities have been discussed in the literature [1-5]. Hawaii's rural areas on all five islands face many critical health care problems that are exacerbated by geographical isolation, poverty, and a scarcity of specialist personnel, inadequate transportation, and limited access to information.

To help solve this problem, a federal grant was awarded to the University of Hawaii School of Social Work for training rural health care personnel, with subcontracting by the University School of Library and Information Studies to investigate ways to improve information access to all rural health care workers. The first step was to discover what information needs they have, their current methods of accessing information, and what barriers exist to improving information access. This needs assessment was conducted in 1992 to aid in the eventual development of a Rural Health Information Clearinghouse and Database. It consisted of two parts: 1) interviews with selected rural health workers, and 2) a questionnaire sent to rural health care workers throughout the state. Findings from the interviews and questionnaire shed light on the information needs and problems of all types of health care providers in rural settings, and appropriate solutions should be transferable to other regions and states.

INTERVIEWS WITH PRACTITIONERS

Project members from the School of Library and Information Studies made visits to Kauai, Hawaii, Maui, Molokai and Lanai to interview more than forty health care workers, including physicians, nurses, hospital directors, librarians, educators, public health workers, social workers, and pharmacists.

Everyone expressed a need for improved access to health related information, although the expressed needs varied. Needs and deficiencies mentioned in the interviews fell into seven distinct categories:

1. Inadequate information technology/ infrastructure (including insufficient dedicated phone lines and modems, unreliable phone service, slow modems and a lack of microcomputers and other hardware);

2. Increased demands on local resources without added support for the increasing load (a common complaint from all of the Community Colleges who are being impacted by the several health/medical outreach programs of the main campus of the University of Hawaii);

3. High costs associated with online searching and document delivery;

4. Slow turnaround time for document delivery (1 to 3 weeks);

5. The need for networking/consultation with colleagues throughout the state and beyond;

6. The need for statistical data for grant applications and program planning (including health status indicators, demographics, and data broken down to local areas by ethnicity, age, sex, etc.);

7. The need for more directory/referral information (including information on grants and funding opportunities, services, and information sources).

During the visits, additional needs were discussed that are not, at the basic level, informational:

-Inadequate supply of qualified personnel (including physicians, dentists, respite care, prenatal care, social workers, and librarians),

-Poor telephone services,

-Inadequate funding,

-Need for primary care clinics and integrated health services,

-Need for better transportation services, and

-Lack of affordable housing.

Even these non-informational needs could benefit from improved information access and services. Funding sources for grants; data to support grant applications; reports of projects, studies, etc. that help in program planning, all require information.

Information needs were of two general kinds: those generated by a specific case or individual (diagnostic, referral, pharmaceutical, 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 workers, public health nurses, and managers tended to have more needs of the second kind. The first type seems to be better met with current systems; the second type is more general, nebulous and less well defined, and the information that best responds to these kinds of needs tends to be more scattered.

Health professionals are meeting their information needs now at some level using a variety of means and sources. Among those mentioned are:

-Personal files

-Telephone contacts with colleagues, agencies

-Local hospital library

-Community College library

-Hawaii Medical Library (a subscription medical library serving the University of Hawaii Medical School, hospitals, and private members)

-University of Hawaii main campus libraries

-Online services (including Grateful Med, Medline via NLM, Dialog or BRS, other databases via Dialog or BRS, and the state information gateway "FYI")

-CD ROM databases (including CINAHL, MEDLINE and full texts of medical journals).

In the course of the interviews, several suggestions were made for meeting the information needs. These included:

-A directory database to point to existing services, sources

-A database with selected articles, reports on rural health programs, projects, policies, etc.

-A statistical database on health status indicators, broken down to the census track level

-T-1 lines with adequate capacity dedicated to health applications

-Focus of the services at the specific populations

-Choices in access mode (online or CD ROM or telephone/FAX or newsletters, print form, dependency on telephone should be avoided)

-Need to have the system user friendly, electronically accessible, full text, broad in scope, and inclusive of regional differences

-Need for personal help, contact with a knowledgeable person

-More money.

QUESTIONNAIRE AND SURVEY RESULTS

A mailed survey was used to expand the number of participants and to find out more about the information needs, current information use, and problems with locating or retrieving information for all types of health care workers in Hawaii's rural areas. (A copy of the questionnaire is reproduced as Figure 1.)

Figure 1

Questionnaire for Rural Health Database Project

1. What is your occupation/role:

__1 Physician
__2 Pharmacist
__3 Clinical Nurse
__4 Public Health Nurse
__5 Psychologist
__6 Speech pathologist
__7 Dentist
__8 Teacher
__9 Social Worker
__10 School Health Aid
__11 Dietician
__12 Alternative health provider
__13 Public health administrator
__14 Hospital/clinic administrator
__15 Other (specify) _____

2. Where do you do your health related work?

__16 Oahu
- __18 Honolulu
- __20 Waianae/Makaha/Nanakuli
- __22 Waimanalo
- __24 Kahuku/Laie/Hauula/Kaaawa
- __26 Haleiwa/Waialua
- __28 Wahiawa
- __30 Other _____

__17 Hawaii
- __19 Hilo
- __21 Kona
- __23 Kohala/Hamakua
- __25 Ka'u
- __27 Puna
- __29 Other _____

__31 Kauai
- __33 Lihue
- __35 Kawaihau
- __37 Hanalei
- __39 Waimea
- __41 Koloa
- __43 Other _____

__32 Maui
- __34 Wailuku
- __36 Hana
- __38 Makawao
- __40 Lahaina
- __42 Other _____

__44 Molokai __45 Lanai __46 Other _____

3. Type of employer:

__47 Private practice __48 State of Hawaii __49 County __50 Federal
__51 Other (specify) _____

4. What kinds of information do you need to support your work?

Number those that apply in order of importance to you (1 = highest importance, use each number only once)

__52 Clinical trials/current practice __53 Medical research __54 Nursing research
__55 Public health research __56 Social work research __57 Psychology research
__58 Policy issues __59 Funding sources __60 Grant demographics
__61 Health status indicators __62 Other (specify) _____

5. What kinds of sources best meet these needs?

Number those that apply in order of importance to you (1 = highest importance, use each number only once)

__63 Journal articles __64 Books __65 Reports __66 Product literature
__67 Newsletters __68 Videos __69 Resource directory
__70 Informal discussions with colleagues __71 Other(specify) _____

6. Where do you access this material?

Number those that apply in order of frequency of use (1 = used most, use each number only once)

__72 Personal files __73 Colleagues' collection(s) __74 Library within your organization
__75 Local hospital library __76 Hawaii Medical Library __77 Community College library
__78 UH Manoa library __79 Other college library __80 Public library
__81 Online document ordering __82 Other (specify) _____

Figure 1 continued

7. Do you have:

__83 FAX machine __84 Modem
__85 IBM compatible computer __86 CD ROM Drive
__87 Macintosh computer
__88 Other microcomputer (specify)_____

8. Which (if any) of the following do you use?

	Weekly	Monthly	Less than monthly
NLM Medlars system, direct	__89	__90	__91
Greatful Med	__92	__93	__94
Medline from other vendor (Dialog, BRS)	__95	__96	__97
Other online databases	__98	__99	__100
UH Library CARL System	__101	__102	__103
State Library catalog	__104	__105	__106
FYI (State gateway)	__107	__108	__109
CD ROM sources	__110	__111	__112
Electronic mail/Internet/Bitnet	__113	__114	__115

9. Which (if any) of the following do you use to acquire copies of documents?

__116 NLM Medlars Loansome Doc __117 UH Interlibrary loan
__118 Public library interlibrary loan __119 UH CARL electronic document delivery system
__120 Hawaii Medical Library __121 Other _____

10. What barriers to information use do you see as being a problem?

__122 Cost __123 Geographic isolation __124 Document delivery delays __125 Inadequate technology
__126 Inadequate staffing __127 Other_____

11. Would you like a visit/discussion with the State DOH personnel about your needs/access to health status indicators/data?

__128 Yes __129 No If Yes, please write your name and phone number:

_____

12. What three things would you like to see changed/introduced to improve your health information access and use?

1. _____

_____

2. _____

_____

3. _____

_____

Comments:

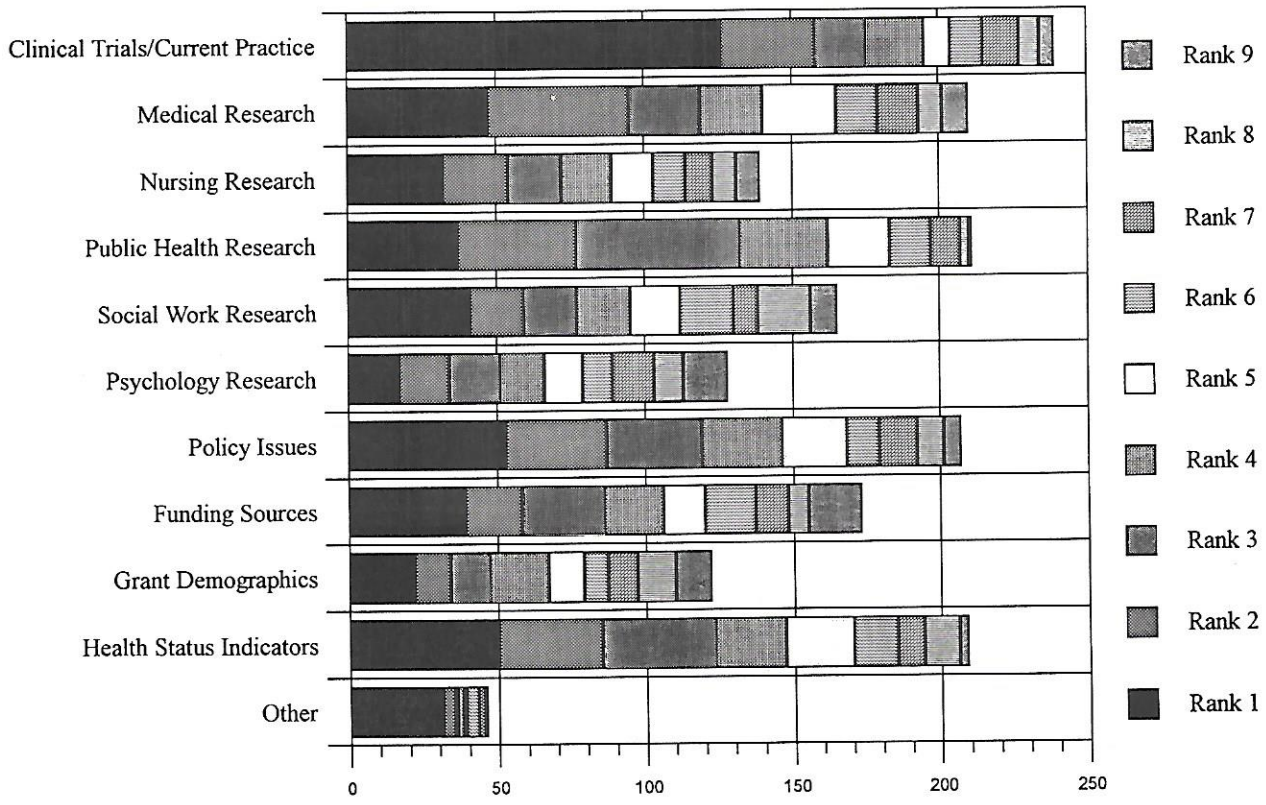
Please return within 7 days to: Gerald Lundeen, School of Library and Information Studies, University of Hawaii, 2550 The Mall, Honolulu, HI 96822

A total of 572 copies of the questionnaire were mailed--approximately 200 each to Kauai, Hawaii, and Maui counties and 50 to Oahu (Oahu is predominantly urban). The response rate was over 64%, with 365 questionnaires returned.

Respondents indicated a variety of health care workers. Nurses represented the largest group (20%), followed by administrators (18.1%), physicians (16.7%), and social workers (12.6%). They are most often employed by the state (43.8%), followed by private employers (26.6%), and other, mostly nonprofit, organizations.

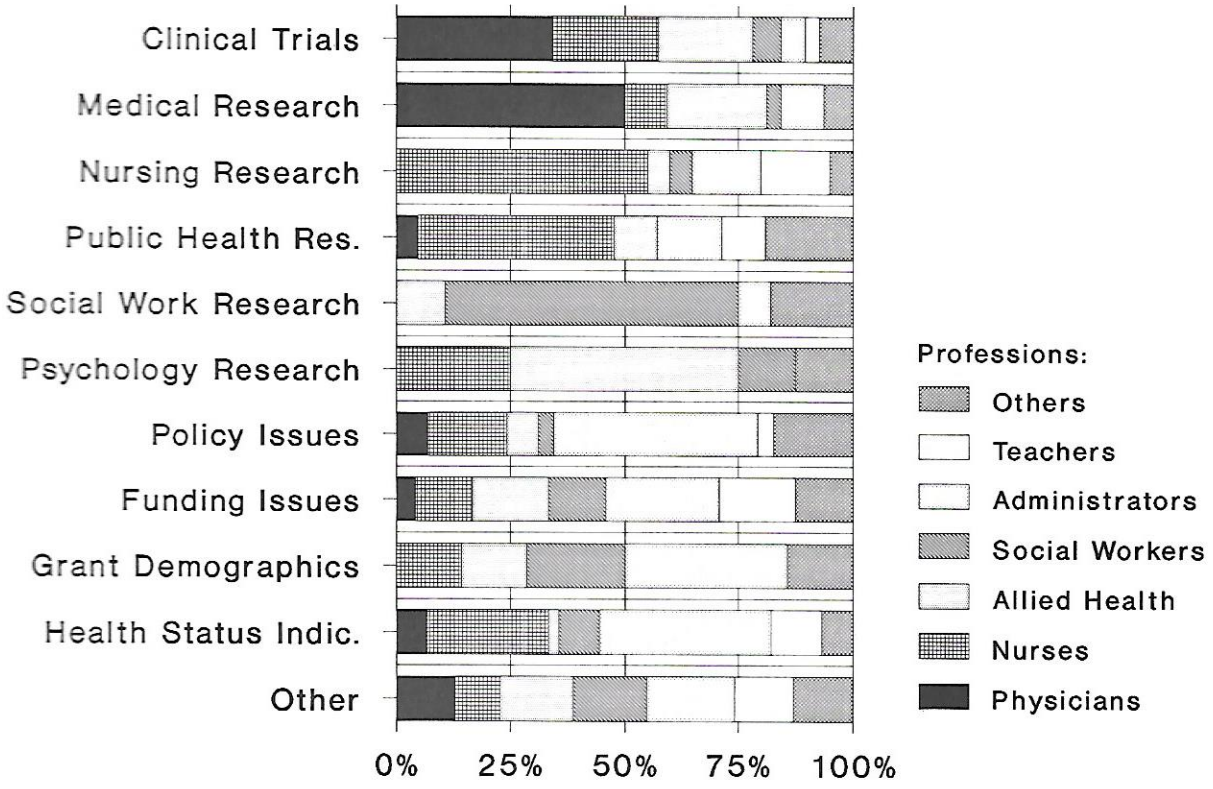
When asked what kinds of information they need to do their work, respondents ranked clinical trials/current practice as the most important. (See Figure 2.) Other information types that are used by more than 50% of the respondents include medical research, public health research, policy issues, and health status indicators. The wide variety of information is noteworthy--every source was needed to some degree by someone, so no one type of information or source of information is likely to meet all of the needs expressed. This finding is consistent with Osiobe [6], who noted that with the constant proliferation and fragmentation of scientific literature, health professionals must use a wider range of information resources both formal and informal in order to stay current in their fields.

Figure 2 Ranking of types of information needed



A difference in types of information needed was evident by the category of respondents. Not surprisingly, physicians, nurses and allied health personnel most often cited clinical trials, while social workers needed social work research, and administrators needed health status indicators and policy documents. (See Figure 3.)

Figure 3
Information Needs Ranked by Professions



100% Bar Chart

Journal articles are overwhelmingly the type of source that best meets the information needs overall, indicating the importance of access to journal indexes and journal collections or article delivery services. Journal articles were ranked first by almost all categories of personnel. This is similar to the findings reported by Stinson and Mueller [7] and Osiobe [8]. Figures 4 and 5 show the sources ranked by importance. After journal articles, the most important source is informal discussions with colleagues. This informal information channel ranked ahead of newsletters, books and reports, in that order. Other information sources were ranked lower, but it is interesting to note that each source was ranked as most important by some respondents.

Figure 4 Ranked Sources of Information

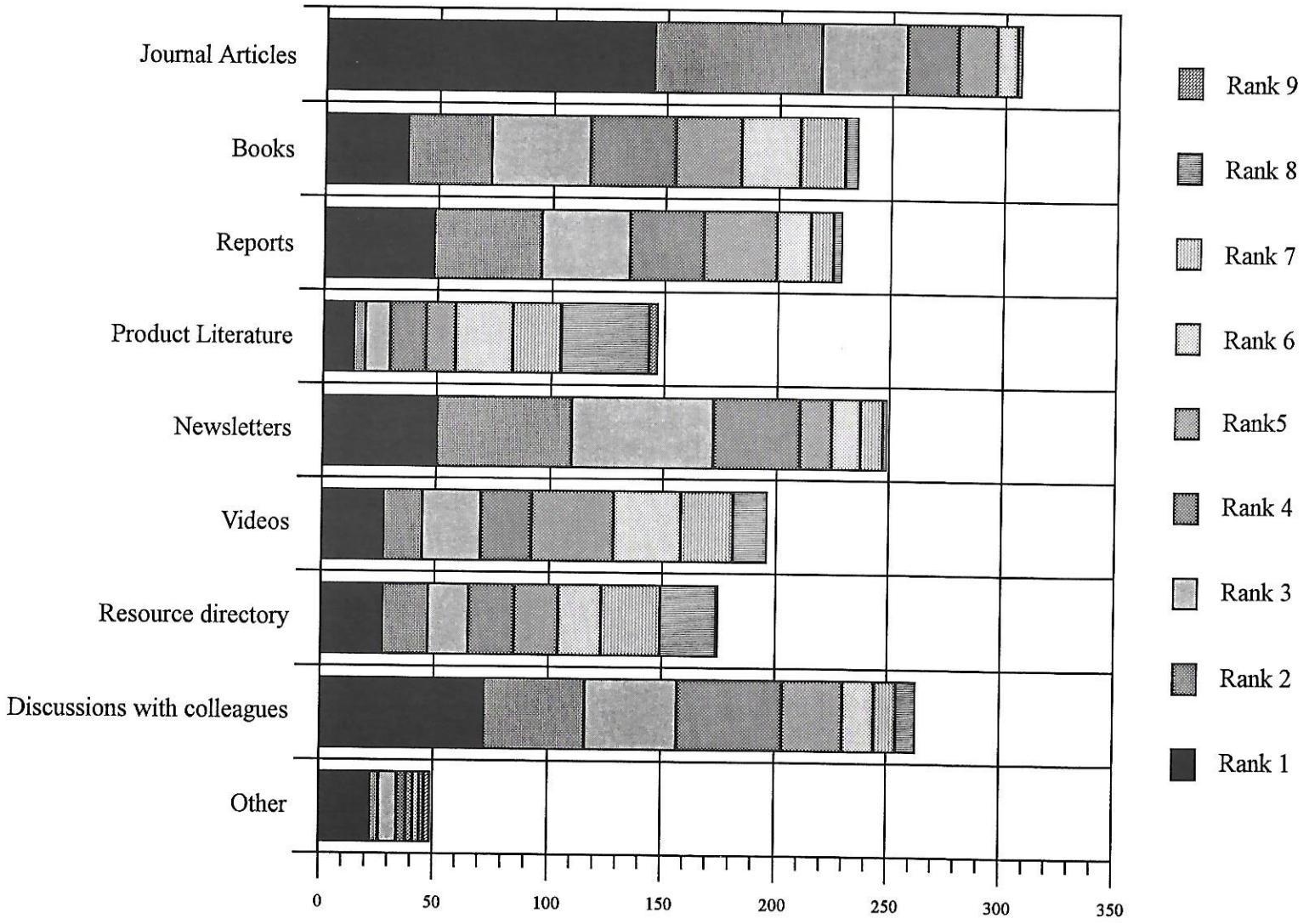
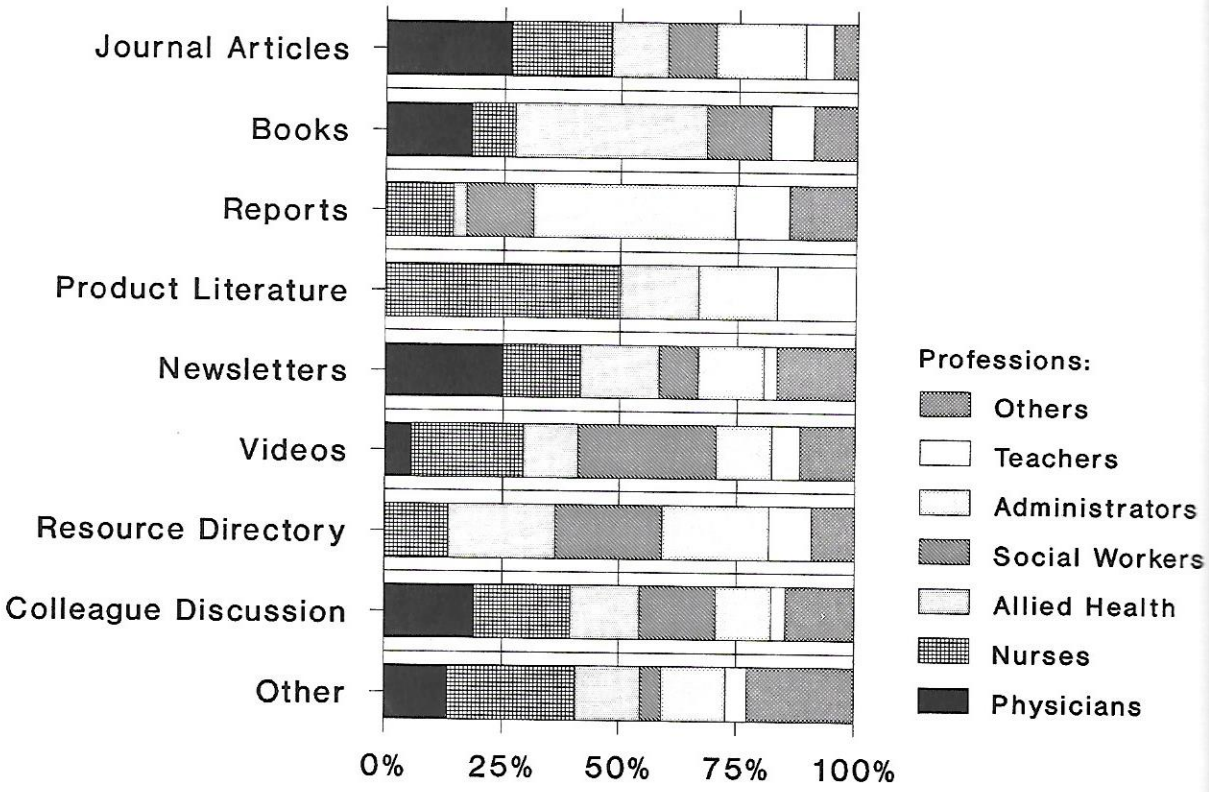


Figure 5

Information Sources Ranked by Profession



100% Bar Graph

Personal files or a colleague's collection are by far the most common places for accessing the materials needed. Figure 6 shows the aggregate data of where health care personnel now access information resources, while Figure 7 breaks the data down by category of personnel. All categories are most likely to first use personal files, with hospital or organizational libraries and a colleague's collection next. Libraries that are convenient to the user, such as a library in a local organization or local hospital library, are more likely to be used, as other libraries ranked far below. Ease of use, speed of access, and cost all likely influence these choices.

Figure 6 Ranked Sources of documents

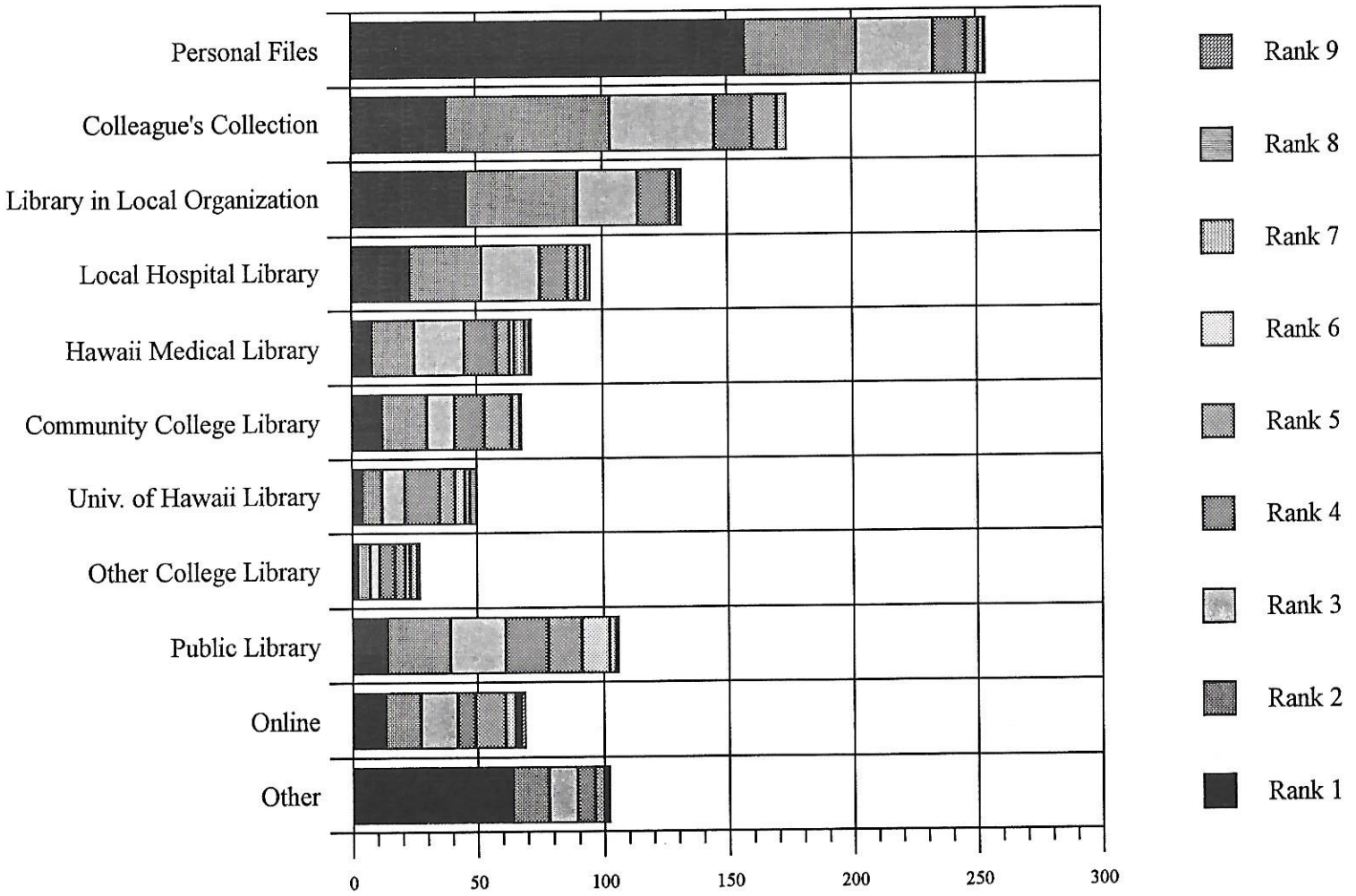
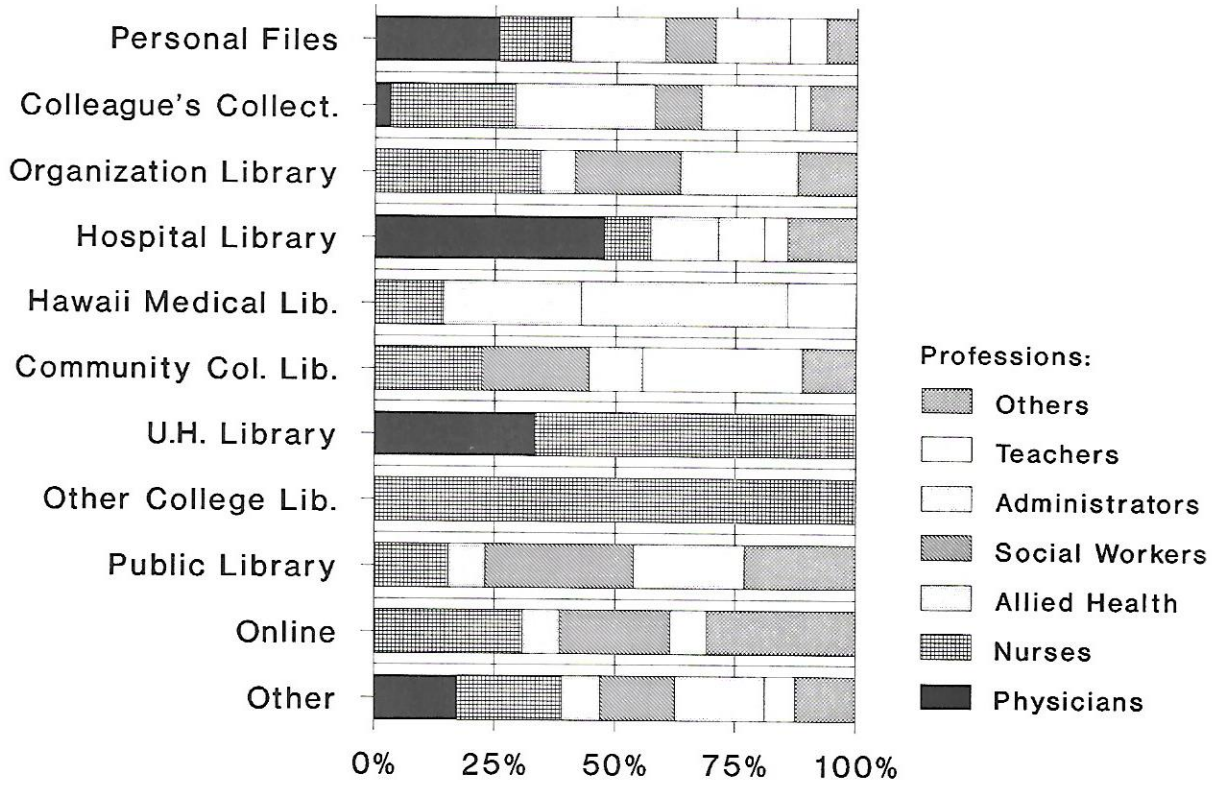


Figure 7

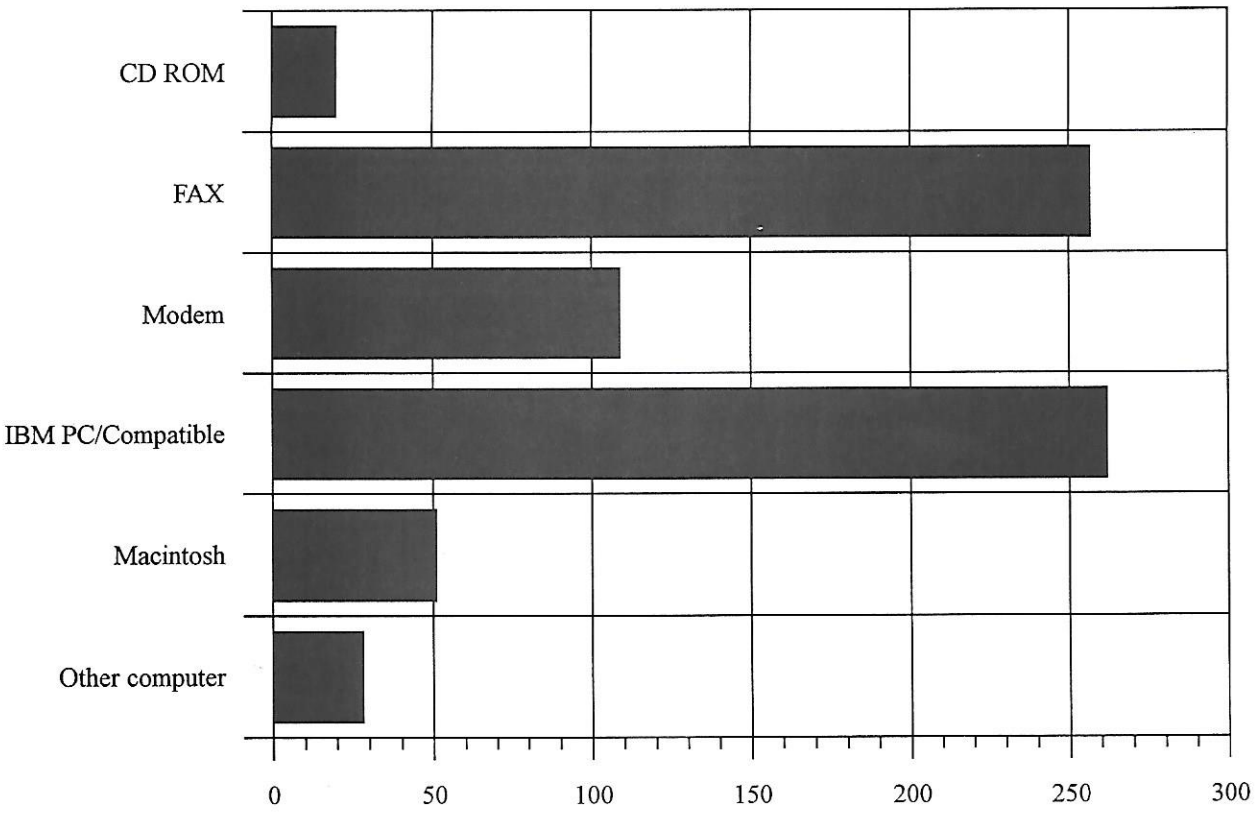
Document Sources Ranked by Professions



100% Bar Graph

Over 70% of the health care workers who responded to our survey have FAX machines, as can be seen in Figure 8. Approximately 85% have a computer, either an IBM-compatible (71.8%) or a Macintosh (14%). The choices for information access with these computers are somewhat limited, however, as only approximately 30% have modems and only 5.5% have a CD ROM player. Document delivery via FAX thus seems feasible with just a small investment in additional FAX machines. Distribution of a rural health database on floppy disks also seems a feasible option at this time to reach the greatest number of users, rather than dial-up access via modem.

Figure 8 Hardware Ownership



Few health care workers use the many state and national online information systems available to anyone with a microcomputer and modem or through library terminals. As Figure 9 shows, 16% search MEDLINE online using Grateful Med, 13.7% search NLM Medlars directly, 13.1% search MEDLINE on other systems, and 15.4% search other online databases. Many of these are the same people searching more than one way. On the average, respondents who search online search two or more systems. Teachers are most likely to use electronic resources (86.4% do), followed by administrators (60.6%), and physicians (52.5%). (See Figure 10.) For all other categories, less than half use any electronic resources.

Figure 9 Percent of Respondents Using Electronic Sources

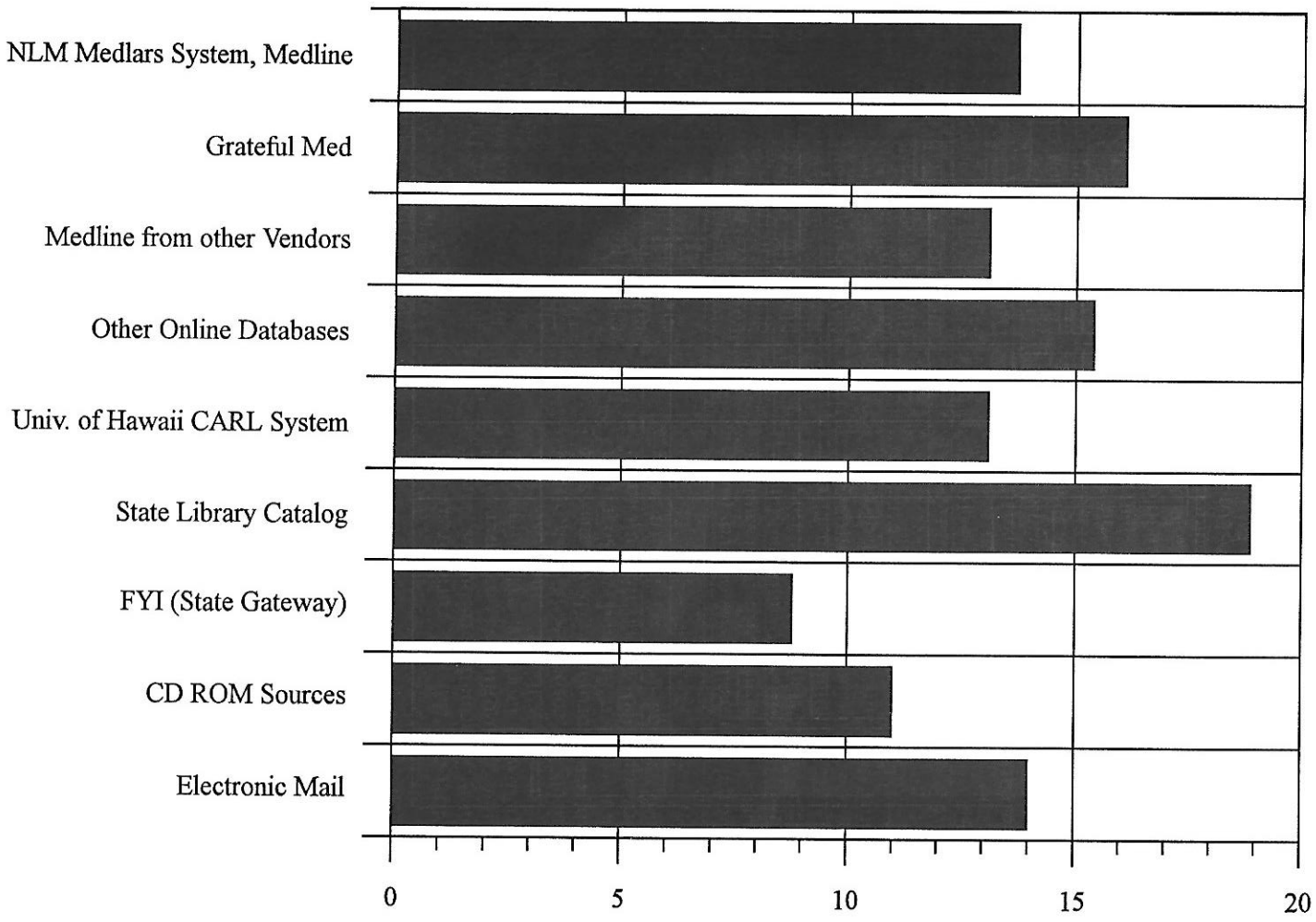
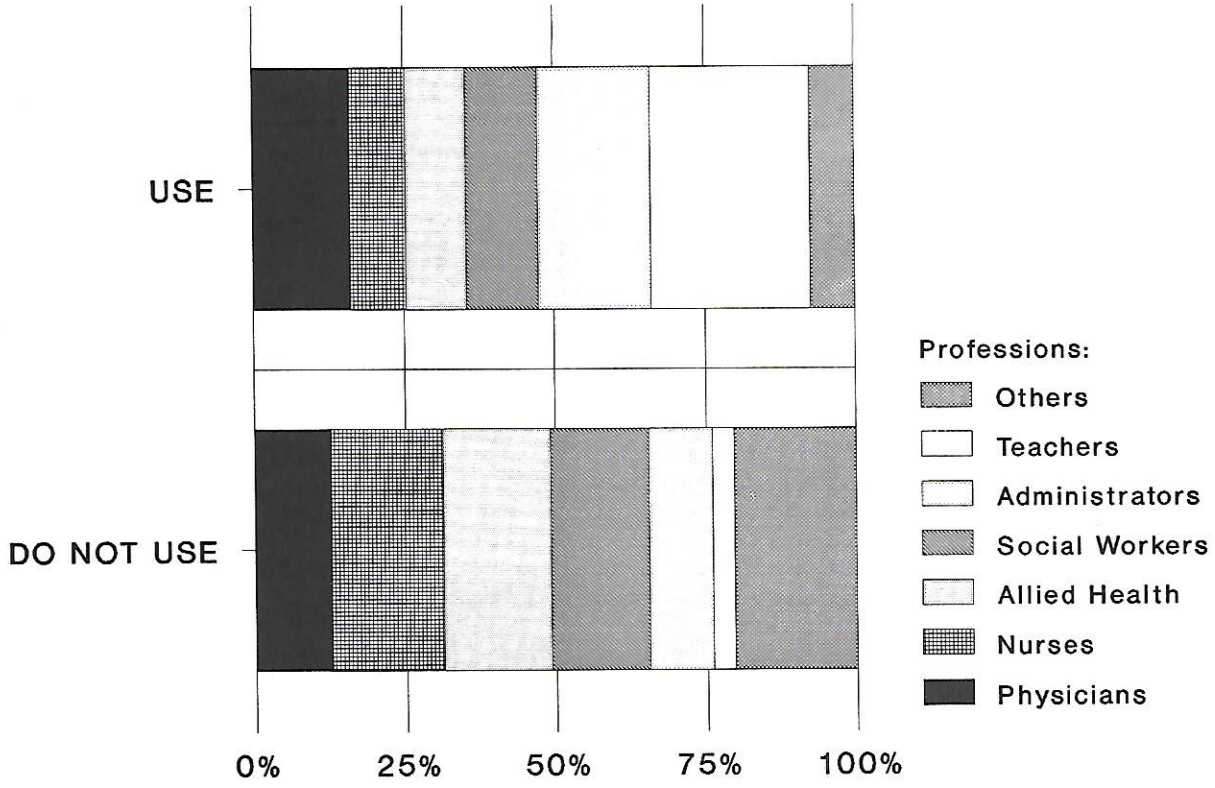


Figure 10

Use of Electronic Source by Professions



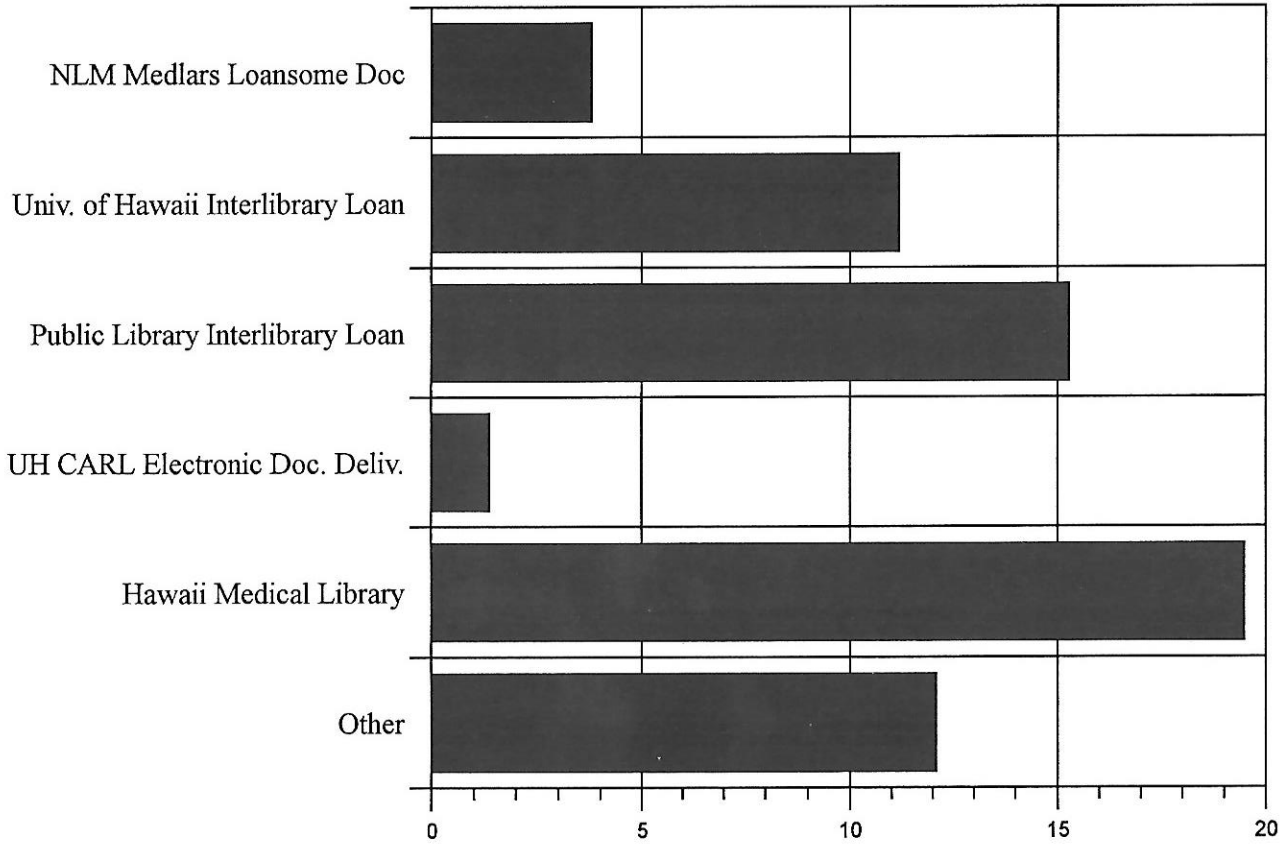
100% Bar Graph

Since these external database systems cost money, require a modem and passwords, and are best used after training and practice, perhaps the low usage should not be surprising. More surprising is that nearly 87% of the respondents never use the University of Hawaii Libraries CARL system, 79.2% never use the state library system, and over 80% never use the state FYI gateway. All of these systems are available free to anyone who has a modem or through all public library branches, community college libraries, and many hospital libraries. CD ROM databases are available at many libraries, but they too are seldom used by the respondents.

Most respondents indicated they needed information, but most are not using automated systems to locate or retrieve it. Lack of time, inadequate equipment, the need to go to another location like a library, and inexperience using these systems are probably all barriers to use. It appears that many health care workers in rural areas do without information if it is not readily available because they cannot take the time out of a busy schedule to track down or learn new information systems.

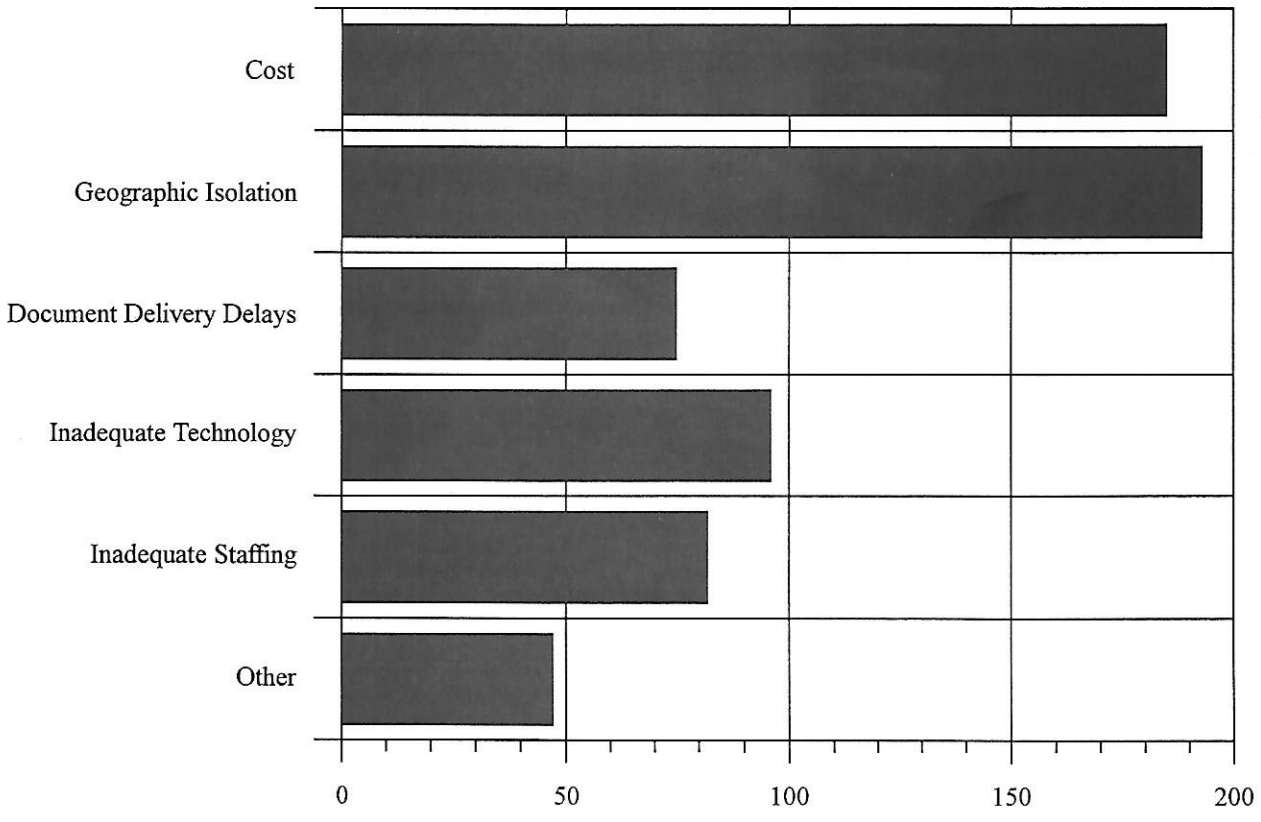
To acquire copies of documents, health are workers again make little use of formal channels. Figure 11 shows how many use the various document delivery options available in Hawaii. The majority use none of them, probably relying instead on personal or colleague's collections. Interlibrary loans from Hawaii Medical Library, followed by the Public Library system interlibrary loan, and U.H. interlibrary loan were the most commonly used of the formal channels.

Figure 11 Percent Using Document Delivery Services



Respondents named a variety of barriers to information use. Most often mentioned was geographical isolation, followed closely by cost. Other barriers and their frequency of mention are shown in Figure 12.

Figure 12 Perceived Barriers to Information Use



A final, open-ended question asked health care workers to name three things they would like to see changed or introduced to improve health information access and use. Most often named was not knowing what is available or how to access it, second was the need for funds to support purchase of computer-related equipment. Other desired changes that were frequently mentioned included more local/regional information, improved library resources, and better access to all types of libraries, improved access to online and CD ROM databases, better networking, better document delivery services, and an individual available as an information resources person.

RECOMMENDATIONS

Health care providers in Hawaii's rural areas can have access to many information resources, either through libraries, telephones, or personal computers equipped with modems. The time and cost to access, identify, locate, and use this overwhelming variety of resources is prohibitive, however. Health care providers have pressing priorities and, even when trained to search a system such as Grateful Med, find it difficult to be information specialists as well as health care specialists.

The five traditional approaches to providing information resources to rural health professionals has been described by Jensen, Sisco, and Maddalena [9]. They include using a regional core library as backup, a consortium of small libraries, a circuit rider, an extension program of a university medical center, and providing information directly to health professionals through various outreach services.

After surveying Hawaii's rural health care providers, it became clear that information access and use could be greatly improved by: 1) providing the personalized services of a health *information specialist* working from a centralized rural health clearinghouse, to relive the burden on already overextended health care specialists; 2) subsidizing the costs of information identification and delivery so needed information will be equally available to all who need it, when they need it; and 3) avoiding duplicating resources already available, as much as possible, while maximizing access to them. Duplication is necessary only for: a) heavily used resources, b) information that is so timely, or likely to be in such demand, that delays are unacceptable, or c) locally generated information. Other information can better be distributed via FAX or other means from a central clearinghouse.

We suspect that the information needs and problems of Hawaii's health care providers in rural areas are not so different from the needs and problems of rural health care workers in other states. Information is needed in an easy, inexpensive, and timely manner, with a personal touch. No one proposed solution will meet all of the needs.

NOTES

[1] Theresa C. Strasser, "The Information Needs of Practicing Physicans in North-Eastern New York State," Bulletin of the Medical Library Association, 66 (April 1978) 200

[2] Anne W. Kabler, Ellen Tinkler, and Katina P. Strauch, "Delivery of Health-Related Information to Rural Practitioners," Bulletin of the Medical Library Association, 69 (October 1981) 382.

[3] Phyllis Gillikin et al., "A Self-Supporting Library Service in a Rural Region: A New Look at Hospital Consortia," Bulletin of the Medical Library Association, 70 (April 1982) 216.

[4] James K. Cooper, Diane D. Cooper, and Timothy P. Johnson, "Medical Library Support in Rural Areas," Bulletin of the Medical Library Association, 71 (January 1983) 13.

[5] Cheryl Rae Dee, "Information Needs of the Rural Physician: A Desciptive Study." Ph.D. diss., Florida State University, 1990.

[6] Stephen A. Osiobe, "Use of Information Resources by Health Professionals: A Review of the Literature," Social Science and Medicine, 21 (September 1985) 965.

[7] Ray E. Stinson and Dorothy A. Mueller, "Survey of Health Professionals' Information Habits and Needs Conducted through Personal Interviews," Journal of the American Medical Association, 243, no. 2 (1980) 140.

[8] Osiobe, 971.

[9] Marilyn Anne Jensen, Alma Sisco, and Betty Maddalena, "Implications of an AHEC Library Program Evaluation: Considerations for Small Rural Hospitals," Bulletin of the Medical Library Association, 73 (January 1985) 59.

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