
Survey on the use of information sources in the field of aging

By Gwen Bird, M.L.S.

Janet M. Heekin, M.L.S.

Gerontology Research Centre
Simon Fraser University
Vancouver, British Columbia
Canada V6E 3K5

This article presents the results of a survey conducted over the summer of 1992 on the use of information sources by professionals in the field of aging. In particular, factors affecting the use of electronic information sources were investigated. The data provide a demographic profile of North American gerontologists, with a predictably wide range of disciplines and types of practice represented. Several factors were found to have an impact on the gerontologists' utilization of electronic information sources. Respondents who used a larger-than-average number of computer applications were found to make relatively more use of electronic sources, including online searches, CD-ROM indexes, library OPACs, and other databases searched by remote access. Attendance at library workshops was found to increase the amount of end-user searching but not the amount of library-mediated searching. Respondents also reported which databases they used and which they considered most important. MEDLINE was the most frequently mentioned database across all disciplines, including the health and social sciences. Computer databases were ranked least important out of six listed sources of information, and only 5% of respondents reported having used an electronic current awareness profile.

INTRODUCTION

This study was designed to investigate the use of information sources by professionals in the field of aging and to relate their levels of use to a number of independent variables, including discipline, professional function, and computer literacy. In particular, the study explored knowledge and use of electronic information sources such as remote access to online databases, CD-ROM indexes, and library OPACs.

In the foreword to *A Guide to Research in Gerontology*, Dosa describes the dispersed nature of the gerontology literature. "Information resources pertaining to social, economic, legal, medical, psychological, and other [issues] in aging . . . are scattered in the literatures of many knowledge fields as well as in emerging multidisciplinary areas such as medical geriatrics, sociolinguistics, environmental psychology, intergroup behavior, the politics of public participation or medical technology" [1]. This study was developed with the aim of enhancing understanding of aging as an

emerging and discrete field of study, and the information needs and behavior of its practitioners.

The study population was chosen to reflect the interdisciplinary nature of the field of aging. As members of the Gerontological Society of America (GSA), the sample represents a wide range of disciplines and professions, including the life and social sciences, law, architecture, social work, and nursing. This broad range of disciplines provided an ideal foundation for comparing differences in use of electronic information sources among disciplines and, more specifically, the differences between professionals in the health and social sciences.

Some respondents to the survey used in this study may not necessarily consider themselves gerontologists or geriatricians. Few professionals working in the field of aging hold degrees specifically in gerontology; indeed, the majority hold degrees from other disciplines, with a specialization in aging. The survey population is therefore made up of some professionals who consider themselves primarily ger-

ontologists, and others who consider themselves primarily, for example, psychologists specializing in the field of aging.

Prior to conducting the study, investigators reviewed the literature on the use of electronic information sources in the health and social sciences. Within the health sciences, extensive research has been conducted into the role of computers in the information-seeking behavior of physicians, pharmacists, veterinarians and other health care professionals [2-8]. Few studies were found on the relationship between computer literacy and use of electronic information sources [9-12]. The literature search also revealed that most studies investigating information-seeking behavior have been carried out within a single discipline. No studies on information-seeking behavior of gerontologists were found.

RESEARCH QUESTIONS

The study sought to answer the following questions about respondents*:

- What is the relationship between the level of computer literacy and the use of electronic information sources (defined as remote databases, CD-ROMs, and library OPACs)?
- What is the relationship between the primary discipline of practice and the use of electronic information sources?
- What is the relationship between the primary professional function (e.g. clinical practice, research, teaching, etc.), and the use of electronic information sources?
- Does attendance at library-sponsored workshops on the use of information sources affect searching behavior?
- Which databases do professionals in the field of aging regard as the most useful?
- How do professionals in the field of aging rank the usefulness of computer databases as compared to other sources of information?

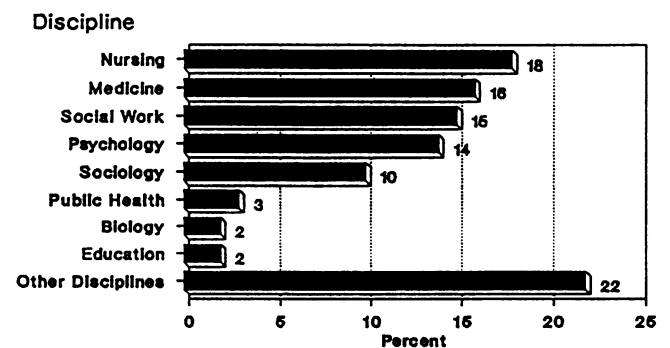
METHODOLOGY

A questionnaire was designed to gather demographic information about respondents, to determine their level of computer literacy, and to gauge their use of electronic information sources and their knowledge of online databases.

The first set of survey questions dealt with demographic characteristics, including discipline, professional function, type of institutional affiliation or practice, and age. The second set of questions at-

* For a copy of the questionnaire used in this study, write to the Gerontology Research Centre, Simon Fraser University, 515 West Hastings Street, Vancouver, British Columbia, Canada V6E 3K5.

Figure 1
Distribution of disciplines



tempted to determine the respondents' level of computer literacy. These questions addressed the frequency of computer use, the length of time respondents had been using computers, and the number and type of applications used.

Finally, the third set of questions asked about use of electronic information sources and knowledge of databases. Specific questions were included regarding both personal searching behavior (i.e., end-user searching) and searches performed for respondents by librarians (i.e., mediated searches). In addition, one question concerned use of electronic current awareness services or selective dissemination of information (SDI). In order to avoid the "halo effect," whereby respondents answer according to how they perceive they should, knowledge of specific databases was explored with open-ended questions (e.g., "What databases do you consider most important in your field?"). The questionnaire was pretested on local gerontologists before mailing.

The study population consisted of all U.S. and Canadian members listed in *The 1991 Membership Directory of the Gerontological Society of America* (n = 6829). A random sample was selected, and questionnaires were mailed to 402 participants. The first mailing was sent on May 14, 1992, and a follow-up mailing was sent to nonrespondents on June 15, 1992. Together, the two mailings resulted in 302 usable questionnaires, for a response rate of 75%. Results were analyzed using SPSS/PC.

RESULTS

Profile of respondents

As expected, a broad distribution of disciplines was reported by respondents. Figure 1 shows the most frequently listed disciplines to which respondents belonged. It is interesting to note that of the fifty-

one respondent (17%) who listed "other disciplines," ten listed gerontology as their primary discipline.

Investigators regrouped the discipline categories into two broad categories of health and social sciences. In total, 53% of the respondents belonged to a social science discipline, while 47% belonged to a health science discipline.

Overall, respondents were highly educated. Forty-five percent ($n = 134$) of respondents held doctorates, 33% ($n = 98$) held master's degrees, and 13% ($n = 39$) held medical degrees. A large percentage of respondents (35%, $n = 101$) indicated that their primary professional function was research, while 19% ($n = 54$) selected teaching, 17% ($n = 50$) administration, and 16% ($n = 45$) clinical practice. The remainder (13%, $n = 40$) concentrated on "direct service/non-clinical," "policy & planning," "consulting," and "other" functions. As discussed in the following section, previous research shows that professional function has an impact on the use of information sources.

Computer usage

More than half of the respondents (60%, $n = 180$) reported daily use of a computer for work, while 28% ($n = 84$) reported using a computer more than once a month but not daily, and 7% ($n = 21$) reported that they never use a computer for work. Forty-two percent ($n = 124$) reported having used a computer for four to ten years, while 26% ($n = 76$) reported using a computer for one to three years, and 19% ($n = 56$) reported computer use for more than ten years. Although no comprehensive and recent study exists of computer use in an interdisciplinary group such as this one, the respondents to this survey would appear to be average computer users.

Respondents used a variety of computer applications. Word-processing applications were used by 85% ($n = 258$), statistical analysis by 51% ($n = 153$), electronic mail by 33% ($n = 98$), spreadsheets by 31% ($n = 93$), remote access to databases by 29% ($n = 86$), database management by 26% ($n = 77$), and "other" by 13% ($n = 39$).

Of special interest is the finding that 29%—nearly one third—reported database searching by remote access. This number is considerably higher than figures reported in most other studies [13–14]. Perhaps the relatively high percentage in the present study is due to an overall increase in online searching by professionals, or perhaps to the broad definition of database searching employed in this study. It also may be a reflection of the fact that the study population was highly educated and includes a relatively large number of researchers, who have been shown to rely on bibliographic sources more than do other groups [15].

Respondents who indicated that they searched da-

tabases by remote access were asked to provide the names of specific databases used. The most frequently listed database was MEDLINE, reported by 12% ($n = 35$) of total respondents. As expected, of the thirty-five respondents who reported MEDLINE, twenty-five were from the health sciences, while ten were from the social sciences. Of the eight (3%) respondents who named Psych Abstracts, one was from the health sciences, while seven were from the social sciences. Only two respondents reported searching AgeLine, and both were from the social sciences. A total of twenty-three "other databases" were listed. The majority were named only once, and they included databases such as ABLEDATA, CINAHL, HEALTH, NTIS, PAIS, and Sociological Abstracts.

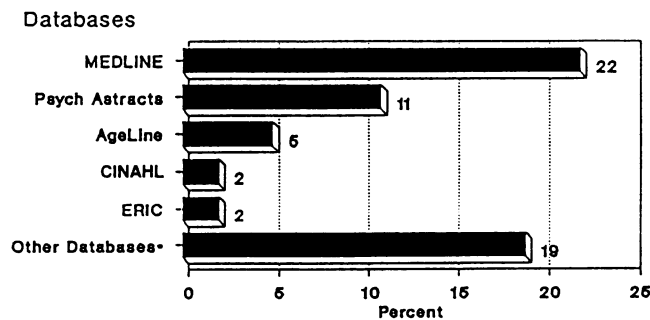
Respondents also were asked to report on their searching behavior. The vast majority (83%, $n = 233$) reported that they never or infrequently (less than once a month) used library-mediated computer searches. Likewise, the majority (74%, $n = 219$) reported that they never or infrequently performed their own computer searches. These results could mean that many respondents either are having searches done by someone else on their staff (nonlibrary) or are not using electronic searching at all. Such behavior may be even more common than indicated. It is possible that the response rates to these two questions may be artificially low, because some survey participants may avoid responding with "never" out of concern for their image.

Of the 23% ($n = 67$) of respondents who said they had attended a library-sponsored workshop in the last three years, the vast majority (80%, $n = 53$) attended workshops on the use of computerized sources. The most popular workshops included "MEDLINE searching" ($n = 13$), "database searching" ($n = 10$), "CD-ROM searching" ($n = 9$), and "PsycLIT searching" ($n = 6$). The data indicate a definite interest in workshops on the use of computerized resources.

Information-seeking behavior

Respondents were asked to rank six sources of information according to importance for keeping up-to-date in their field (1 = most important, 6 = least important). The following information sources are listed in order of importance, along with their mean ranking: journal literature (1.5, $SD = .9$), professional meetings (3.1, $SD = 1.3$), discussion with colleagues (3.2, $SD = 1.2$), books (3.6, $SD = 1.4$), continuing education (4.5, $SD = 1.6$), and computer databases (4.9, $SD = 1.3$). As expected, journal literature was ranked as the most important source, while computer databases were ranked as least important. This finding confirms results of earlier studies [16]. This finding also follows from the fact that the majority of computer databases named by respondents were biblio-

Figure 2
Important databases listed



* There were 36 unique databases listed under "Other Databases"

graphic in nature, rather than factual or full text. (Respondents mentioned a few factual databases such as medical records and demographic information.) In most cases, bibliographic databases are used as tools leading to the journal literature.

It should be noted that the ranking of professional meetings as the second most important source could have been influenced by the fact that all respondents belong to a professional organization.

There was no significant difference between health and social science professionals with respect to their rating of computer databases. On the other hand, there was a significant difference between professionals in research and those from clinical practice. Researchers tended to rank computer databases higher, with 19% (n = 17) ranking databases as either first, second or third, while only 11% (n = 4) of clinical practice professionals ranked these databases as important.

The more computer applications a professional used, the more likely he or she was to rank databases as an important source of information (Kendall's Tau-c = .12, $P < .05$). Likewise, professionals who made greater-than-average use of online searches tended to rank databases higher than did others (Kendall's Tau-c = .24, $P < .01$). This confirms earlier studies, which showed that computer-literate professionals tended to value computerized information sources more than did other professionals [17].

As expected, the majority of respondents (85%, n = 252) had not used a current awareness profile. It was interesting to note that more respondents (10%, n = 30) were unclear as to whether they had used a profile than had used one (5%, n = 14).

The last question, "Which computer databases do you consider important in your field?" was answered by 43% (n = 130) of respondents. There was a slightly

Table 1
Relationship between computer applications used and level of search use

	Number of computer applications used (%)*				
	None	Low	Medium	High	Total
Low search use	41	22	10	5	16
Medium search use	53	65	64	52	62
High search use	6	12	26	43	21
Total	6	43	36	15	100

* Kendall's Tau-c = .26, $P < .01$.

higher response rate from health sciences than from social science professionals. Figure 2 shows the top nine databases listed as important in the respondents' respective fields. As expected, MEDLINE was cited most often (22%, n = 67). Of those sixty-seven respondents who reported MEDLINE as an important database, forty-two were from the health sciences, and twenty-five were from the social sciences. Of the thirty-four who reported Psychological Abstracts as important, thirty were from the social sciences, four from the health sciences.

Contrary to the investigators' expectations, only 5% (n = 16) of respondents reported AgeLine as an important database. Perhaps this low rate is due to the fact that AgeLine does not share the widespread availability and promotion accorded databases such as MEDLINE. Other factors such as cost also may affect AgeLine's popularity. Of the sixteen respondents who reported AgeLine as important, twelve were from the social sciences, and four from the health sciences.

A total of thirty-seven databases were named under "other databases." Of the sixty-two respondents who reported use of "other databases," fifty-three were from the social sciences, twenty-six from the health sciences. The list included medical records databases (n = 2), AGEBASE (n = 2), EMBASE (n = 2), Sociofile (n = 2), Social Science Index (n = 2), and Social Science Citation Index (n = 2). The reported use of library OPACs was greater among social scientists than among health scientists.

Searching behavior

Various composite variables were created to examine factors affecting searching behavior. (Searching behavior includes use of online catalogs, CD-ROM indexes, and remote databases.) The frequencies of personal and mediated searches were combined into a composite variable, "searches," which indicated the overall level of searching. All responses were divided into high, medium, or low use of searching, and this variable then was cross-tabulated with several independent variables.

Table 2
Relationship between workshop attendance and end-user searching

	% workshop attendance*		
	Yes	No	Total
End-user searching			
Never	22	42	37
Low use	40	35	36
High use	38	23	26
Total	23	77	100

* Kendall's Tau-c = $-.17$, $P < .01$.

The number of computer applications used was grouped into four categories: no use, low use (one or two applications), medium use (three or four applications), and high use (five or more applications). A cross-tabulation between level of searching and application use indicates a moderate-to-strong positive relationship (Kendall's Tau-c = $.26$, $P < .01$). Table 1 illustrates that respondents who used a larger-than-average number of computer applications were more likely to search electronic sources to find information.

The frequency of computer use and the length of time respondents had worked with computers also were cross-tabulated with searching behavior. The associations were weak (frequency: Kendall's Tau-b = $.17$, $P < .01$; length: Kendall's Tau-b = $.14$, $P < .05$). These findings indicate that, of these three measures of computer literacy, the best predictor of active searching was the use of a large number of computer applications.

To study the relationship between searching behavior and discipline, the investigators cross-tabulated the composite variable "discipline" with the composite variable "searches." The results indicated no significant difference between the searching behavior of social and health scientists.

The relationship between searching behavior and professional function also was explored. Connelly and Milligan both have reported that computer searching is used more extensively by researchers than by those involved in clinical practice [18-19]. Further, Marshall found that early adopters of end-user searching were more research-oriented than were their non-searching counterparts [20]. In the present study, a weak-to-moderate association was found between the research function and high use of searches (Kendall's Tau-c = $-.16$, $P < .05$). These results confirm the findings of earlier studies.

To discover whether exposure to bibliographic instruction programs affected searching behavior, investigators cross-tabulated the variable dealing with attendance at library-sponsored workshops with the composite variable "searches." Finding no significant

relationship here, investigators cross-tabulated the original variables that differentiated between end-user and mediated searching with the "workshop" variable. The amount of end-user searching conducted by workshop attendees was significantly higher than the amount conducted by those who had not been to a workshop in the last three years (Table 2). The fact that there was no significant relationship between mediated searches and attendance at library workshops explains why the composite variable "searches" was unaffected by attendance at workshops. These results suggest that, among members of the study population, end-user searching increased significantly as a result of attendance at a library workshop, but use of library-mediated searching was not affected.

As noted earlier, only 5% of respondents ($n = 14$) indicated they had ever used an SDI service. Not surprisingly, twelve of the fourteen fell into the medium or high categories for both search use and the number of computer applications used. This result verifies the findings of Grefsheim et al. that computer-literate professionals make greater use of databases for current awareness than do other professionals and Milligan's finding that professionals who conduct online searches also make greater use of SDI than do other professionals [21-22]. No significant difference with respect to discipline was observed here.

CONCLUSION AND RECOMMENDATIONS

This study confirms the findings of a number of previous studies that have investigated the role computers play with regard to the information-seeking behavior of professionals. These data are particularly useful to librarians interested in the factors that influence the use of electronic information sources.

Of particular interest is the finding that end-user searching increases with attendance at library-sponsored workshops. Clearly, the recent trend toward greater availability of databases on CD-ROM and library OPACs has led to an increased need for end-user instruction. Not surprisingly, the majority of respondents reporting attendance at workshops named the use of electronic information sources as the subject. Expanding on this finding, the results show that while end-user searching increases with attendance at workshops, requests for library-mediated searches do not. This result suggests that end users are not returning to librarians for expert literature searches. Additionally, this finding raises a question about the role of bibliographic instruction, with particular reference to end-user searching versus the expert nature of library-mediated searching. Should librarians be satisfied with the evident trend of end-users failing

to use the expertise of librarians for more difficult searches?

As previously mentioned, one of the most surprising findings in this study was the low reported use of AgeLine. As a database geared specifically toward the field of aging, AgeLine is a potentially valuable source for gerontologists with training in a variety of fields, including psychology, sociology, social work, nursing, and medicine. The high use of MEDLINE by respondents across all disciplines suggests that factors such as availability, size of database, cost, and marketing ultimately may be as important to the popularity of a database as its content. Further research in this area would be productive; in particular, studies would be welcome investigating how users learn about databases, and what makes users consider one database more important than another.

REFERENCES

1. DOSA M. Foreword. In: Zito DR, Zito GV. A guide to research in gerontology. New York: Greenwood, 1988:xii.
2. PELZER NL, LEYSEN JM. Use of information resources by veterinary practitioners. *Bull Med Libr Assoc* 1991 Jan;79(1):10-6.
3. GRUPPEN LD. Physician information seeking: improving relevance through research. *Bull Med Libr Assoc* 1990 Apr;78(2):165-72.
4. OSIOBE SA. Use of information resources by health professionals: a review of the literature. *Soc Sci Med* 1985;21(9):965-73.
5. SHUMWAY JM, JACHNOWITZ AI, ABATE MA. Analysis of physicians', pharmacists' and nurses' attitudes toward the use of computers to access drug information. *Meth Inform Med* 1990 Mar;29(2):99-103.
6. STINSON EM, MUELLER DA. Survey of health professionals' information habits and needs. *JAMA* 1980 Jan 11;243(2):140-3.
7. CONNELLY DP, RICH EC, CURLEY SP, KELLY JT. Knowledge resource preferences of family physicians. *J Fam Pract* 1990 Mar;30(3):353-9.
8. MILLIGAN GA. The information-seeking behaviour of users and non-users of a computerized bibliographic search service. *South African J Libr Inf Sci* 1986 Mar;54(1):34-7.
9. HORNER J, THIRLWALL D. Online searching and the university researcher. *J Acad Librarianship* 1988 Sep;14(4):225-30.
10. WOOLF SH, BENSON DA. The medical information needs of internists and pediatricians at an academic medical center. *Bull Med Libr Assoc* 1989 Oct;77(4):372-80.
11. GREFSHEIM S, FRANKLIN J, CUNNINGHAM D. Biotechnology awareness study, part I: Where scientists get their information. *Bull Med Libr Assoc* 1991 Jan;79(1):36-44.
12. MARSHALL JG. Characteristics of early adopters of end-user online searching in the health professions. *Bull Med Libr Assoc* 1989 Jan;77(1):48-55.
13. PELZER, op. cit., 11.
14. HORNER, op. cit., 227.
15. OSIOBE SA. Medical researchers and clinicians as seekers of information: the Nigeria case study. *Soc Sci Med* 1986;23(8):757-61.
16. FOLSTER MB. A study of the use of information sources by social science researchers. *J Acad Librarianship* 1989 Mar;15(1):7-11.
17. GREFSHEIM, op. cit., 42.
18. CONNELLY, op. cit., 358.
19. MILLIGAN, op. cit., 37.
20. MARSHALL, op. cit., 53.
21. GREFSHEIM, op. cit., 41.
22. MILLIGAN, op. cit., 35.

Received December 1992; accepted April 1993