

Nurse Practitioners' Information Needs and Information Seeking: Implications for Practice and Education

This report is an exploratory study of the information needs and information seeking in a sample of nurse practitioners (NPs) approved to practice in North Carolina. A search and review of relevant literature revealed no studies on this topic. In this study, NPs report their most frequent information needs relate to drug therapy, diagnosis, and other therapy. Their most frequently used information resources are physicians, drug reference manuals, and textbooks. They most frequently confer with physicians on diagnosis and other therapy and other NPs on psychosocial issues. Key words: *information needs, information seeking, nurse practitioner*

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THE EXPLOSION of information is a tremendous challenge for nurse practitioners (NPs). It is impossible for the conscientious NPs to keep up with the growing numbers of articles published in biomedical and nursing journals each year. In addition to traditional resources of clinical information for practicing NPs, such as journal literature, reference manuals, and textbooks, new information technologies have emerged in the last three decades that can provide NPs with powerful tools for seeking information to aid them in their decision making regarding patients care. Computer-based resources, which were previously used only with the assistance of research librarians, have also become more accessible to clinicians. These include resources, such as MEDLINE and CINAHL, which may be available through personal computers in the clinician's office.

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Although there have been exciting technological advances in the information resources available to NPs, it is possible that practicing NPs have not kept up with the emerging technologies and are not taking advantage of all they may offer to improve the currency and efficacy of their clinical practice. There is little knowledge or understanding of the nature of the information needs of NPs and whether or not new technologies can address those needs. The growing demand for primary care and the increasing importance of NPs in meeting that demand, makes it imperative that we understand the ways in which these clinicians address information needs. To date, studies of the information needs and information seeking of clinicians have focused on physicians.

The purpose of this study was to examine the perceived information needs of NPs and the ways in which NPs seek to resolve those needs. Specifically, the study sought to address the following questions:

1. How frequently do NPs experience information needs as a result of patient encounters?
2. For what proportion of their information needs do NPs seek information?
3. How frequently do NPs use different types of information resources to resolve their information needs?
4. Are there differences in the content of NPs' consultations with a primary supervising physician, other physicians, and other NPs?

Respondents were asked about their access to computers and the World Wide Web, both in their practice sites and at home. However, data were not gathered on their use of these resources for clinical practice.

RELATED LITERATURE

Within library and information sciences, there is a growing body of research on information needs and information seeking. A number of theoretical works have emerged in an attempt to provide greater understanding of these needs.¹⁻⁶ However, empirical studies of the needs of health care professionals have concentrated, almost exclusively, on the needs of physicians. A search and review of the literature revealed no previous studies of the information needs and information seeking of NPs. The following review concentrates on the empirical studies that have been done, primarily with physicians.

Studies based on the use of questionnaires are among the earliest explorations of health professionals' information needs and information seeking. Survey research, using questionnaires, continues to represent a significant proportion of the research efforts in the area of health professionals' information needs and seeking. These studies, focusing on the individual health professional, rely on that professional's beliefs about their experience of information needs and seeking to resolve those needs.

One of the earliest investigations of clinicians' information needs was done by sending a questionnaire to physicians in upstate New York.⁷ Results of that study suggested that these physicians perceived the greatest need for information related to (1) new developments in their area of specialization and (2) drug information. New developments in the respondent's area of specialization and government regulations related to health care were the two categories in which these physicians perceived a need for improvement. A similar questionnaire was

sent to nurses in the same geographical area and found that nurses identified the same areas of concern. However, the nurses tended to have more and greater perceived information needs. Nurses also expressed more perceived need for improvement in information about the psychological aspects of disease.

A questionnaire-based investigation of information needs of residents and faculty physicians at an academic hospital found that the most frequent types of needs for both were treatment recommendations and differential diagnosis.⁸ Residents reported more frequently need information directly pertaining to patient care, whereas faculty physicians more frequently reported information needs that were unrelated to patient care.

The use of information resources has also been investigated using questionnaire-based studies. These studies have found that the most commonly occurring categories of information resources used are textbooks, journal articles, colleagues, continuing medical education (CME), and computer resources.

Of the studies that have investigated the use of textbooks, one study found that both residents and faculty in a teaching hospital identified textbooks as the most frequently identified resource for both groups, but residents reported using them more frequently.⁸ Another study also found that residents tended to use textbooks as a primary resource compared with attending physicians who primarily relied on journals.⁹ In addition to journal articles and textbooks, other studies identified physician colleagues as information resources.^{7,10,11}

METHODS

The current investigation was a questionnaire-based survey of the information needs and information seeking of NPs approved to practice in North Carolina. For the purpose of this investigation an information need was operationalized as any question that occurs to an NP that is not entirely patient-specific—that is, any question that could potentially be resolved through the use of information resources such as a colleague, reference manual, journal article, or textbook. Information seeking was operationalized as any attempt to resolve an information need.

A questionnaire was developed from questionnaires used in previous studies done with physicians. Additional items were developed through discussions with experienced NPs. Issues addressed in the questionnaire included the relative frequency of use of specific categories of resources, the nature of consultations with colleagues, the frequency of information needs, and the frequency of information seeking. Most items in the questionnaire focused on the NP's information seeking in response to patient encounters. Two additional items addressed information gathering related to advances in therapy and diagnosis.

The questionnaire was piloted by surveying 25 NPs approved to practice in North

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Carolina. The questionnaire was revised based on results of the pilot study. The final questionnaire had 25 closed-response items and required 10–20 minutes to complete. Both the 25 pilot subjects and the final sample of 300 NPs (excluding the 25 pilot study subjects) were randomly selected, separately, from a list of NPs approved to practice which is maintained by the North Carolina State Board of Nursing

FINDINGS

Findings from the questionnaire were obtained primarily through descriptive statistical procedures. In addition, inferential statistical procedures (primarily χ^2 and t tests) were used to test for associations among the data. Of particular interest were possible associations between the data about subjects' practice and educational backgrounds and their responses about needing and seeking information.

The overall response rate for the survey was 44.6%. One hundred and thirty four of the original questionnaires were returned; 12 were returned blank or indicated no desire to participate in the study. One hundred twenty-five respondents (93%) were women. Three respondents (2%) were men. Six respondents (5%) did not specify gender. The average age of respondents was 45 ($SD = 8$, median, 43) years, and the average years of experience as an NP was 10 ($SD = 8$, median, 8). Fifty-three respondents (40%) indicated that their professional preparation was through a master's program; 17 (13%) through a post-master's program; and 61 (46%) were prepared through a nondegree, certificate program. The 46% who had not received a master's

degree was relatively consistent with that proportion (38%) in the population of NPs in North Carolina who had not received a master's degree.

Respondents saw patients an average of 33.1 hours per week ($SD = 10.9$, median, 36). The average number of patients seen per week was 61.6 ($SD = 38.7$, median, 60). Ninety-nine (74%) indicated that they worked full-time as an NP and 29 (22%) indicated that they worked part-time as an NP. Six (4%) did not respond to this item.

Frequency of information needs

In one item of the questionnaire, respondents were presented with an array of categories and asked to indicate the weekly frequency of their information needs. Respondents were also given the opportunity to identify "other" needs and to specify those needs in writing. As seen in Table 1, the most frequent needs were for information related to drug therapy (mean = 8.6, $SD = 8.3$, median, 5), diagnosis (mean = 5.8, $SD = 5.8$, median, 3.75) and other therapy, excluding drug (mean = 5.4, $SD = 5.4$, median, 3). Three respondents indicated "other" and indicated "assistance with lab interpretation" (15 times a week specified by two respondents) and "dermatology" (4.5 times a week specified by one respondent). When normalized by the number of patients seen per week, the categories and priorities of the needs chosen were unchanged.

Of the top three categories of frequency of information needs, drug therapy information need was reported as the most frequent need. Two questionnaire items asked respondents to indicate, from a range of

Table 1. Reported frequency of information needs

Need	Frequency	SD	n	Min.	Max.
Drug therapy	8.6	8.4	130	0	50
Diagnosis	5.8	5.8	130	0	30
Other therapy	5.4	5.4	130	0	30
Referral	3.1	3.9	129	0	20
Etiology	3.0	3.9	130	0	20
Psychosocial	2.6	3.4	130	0	20
Disposition	2.4	2.7	130	0	10
Epidemiology	2.1	3.2	130	0	20

Note: Values are averages of reported weekly frequencies. The category of disposition refers to information needs about where to send a patient, other than referral to a provider.

resources, the frequency with which they received information about advances in drug therapy. Over half of the respondents indicated that they used the top five categories of resources (ie, pharmaceutical representatives, journal articles, advertisements, drug reference manuals, and drug data sheets supplied by pharmaceutical companies) "at least once a month" for information about advances in drug therapy.

Proportion of needs pursued

Two items in the questionnaire asked respondents to estimate the percentage of information needs for which they sought information (item 7) and the weekly frequency of their information seeking (item 8). The frequency of information seeking was divided by the total weekly frequency of information needs to obtain an estimate of the percentage of information needs pursued (mean = 32.9%, $SD = 38.9\%$, median, 19.2%); the difference was significantly less than zero; $t(127) = 19.0$, $P = .0001$. There were no significant differences between NPs prepared in different types of

programs. Also, respondents' years of experience as NPs were not significantly correlated with total frequency of needs or proportion of needs pursued. However, the total frequency of needs was significantly correlated with the frequency of information seeking ($r = .57$, $P = .0001$).

Information resources

Respondents were presented with a range of information resources and asked to indicate the relative frequency of their use of each (item 1). Respondents indicated that their supervising physician (63%), drug reference manuals (61%), and textbooks (51%) were used "a few times a week or more." Only 25% of respondents indicated that they consult other NPs "about once a year" or "never" (see Table 2).

Diagnosis-related concerns and issues about drug therapy and other therapies accounted for the largest proportions of consultations...

Diagnosis-related concerns and issues about drug therapy and other therapies accounted for the largest proportions of consultations with the primary supervising physician, other physicians and other NPs. However, respondents indicated that they were more likely to consult with other NPs about psychosocial issues (see Table 3).

Computer access and use

Eighty-six respondents (64%) indicated that they have access to a computer in their practice settings. Of those with practice setting access to a computer, 57 (66%) have access to electronic mail and 50 (58%) have access to the World Wide Web.

DISCUSSION

Results from the study suggest that NPs' most frequent information needs are those that relate to drug therapy, followed by diagnosis, and therapy other than drug. Respondents also reported that they pursue more than half of their information needs.

However, when asked about their frequency of information seeking, respondents reported a frequency equivalent to one-third of those needs being pursued.

Information on drug therapy was reported as the most frequent information need by these respondents. In the analysis of sources of information for drug therapy, it is interesting to note that for most of the respondents, the most common source of information for advances in drug therapy were either materials or representatives from the pharmaceutical industry. These can be excellent sources if clinicians are aware of the range of sources within the industry and how to use them properly.

Respondents indicated their most frequently used resources for resolving questions that arise as a result of patient encounters were consultations with their supervising physician, drug reference manuals, and textbooks. Journal articles are an example of a resource that was not frequently used; however, these articles are often more current than the other sources used.

Table 2. Reported frequency of information resource use

Resource	Frequency of Use					
	A few times a week or more	At least once a month	Once every few months	About once a year	Never	Not reported
Primary supervising physician	84 (63%)	33 (25%)	12 (9%)	0 (0%)	1 (1%)	4 (3%)
Drug reference manual	82 (61%)	37 (28%)	11 (8%)	0 (0%)	0 (0%)	4 (3%)
Textbook	68 (51%)	50 (37%)	11 (8%)	1 (1%)	0 (0%)	4 (3%)
Journal article	40 (30%)	62 (46%)	24 (18%)	4 (3%)	0 (0%)	4 (3%)
Other NP	35 (26%)	24 (18%)	37 (28%)	26 (19%)	8 (6%)	4 (3%)
Other physician	33 (25%)	45 (34%)	37 (28%)	12 (9%)	3 (2%)	4 (3%)
Pharmacist	19 (14%)	55 (4%)	39 (29%)	15 (11%)	0 (0%)	6 (5%)

Table 3. Reported consultations with colleagues

Need	With primary supervision physician, %		With other physicians, %		With other NPs, %	
	Mean	(SD)*	Mean	(SD)†	Mean	(SD)‡
Diagnosis	24.1	(15.3)	25.0	(22.2)	18.1	(18.6)
Other therapy	20.9	(17.0)	21.0	(18.4)	23.4	(20.7)
Drug therapy	20.6	(15.0)	16.5	(14.8)	19.2	(17.2)
Referral	10.6	(12.3)	15.2	(19.9)	10.9	(17.6)
Disposition	8.3	(10.4)	8.3	(12.7)	8.1	(14.3)
Etiology	6.1	(7.0)	4.7	(8.3)	4.6	(7.2)
Psychosocial	4.1	(5.1)	3.7	(10.1)	8.7	(13.6)
Epidemiology	3.6	(4.4)	3.6	(5.7)	3.5	(6.7)

It is interesting to note that NPs consult with their physician colleagues most frequently about diagnoses and therapy, whereas they consulted more frequently with other NPs about psychosocial issues. Although this is consistent with what is often considered a strength in nursing, this finding is interesting in light of the fact that the NPs surveyed had an average of 10 years' experience as NPs.

The respondents also indicated that many of them have access to a computer, electronic mail, and the World Wide Web. These are sources of new information resources that may be exploited for current information for clinical practice. The patterns of use in this area were not explored in this study but it is possibly a fruitful area for future research. Some interesting questions would include the ability of NPs to knowl-

edgeably use these resources and to make judgments about the reliability of information obtained through these resources.

In summary, there is a paucity of research on information needs and information seeking of NPs, a growing segment of the health care professional population. As a key provider in the provision of primary care, NPs can have an important and direct impact on the health of the patients they serve. It is important that they have access to current and accurate information by which they can use as the basis for decision making for diagnosis and treatment of patient conditions. This study suggests important issues related to the effective use of information resources in the context of clinical practice. Findings from this research will inform the development of educational interventions for practicing NPs as well as NP students.

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