Assessment of physicians’ information needs in five Texas counties*

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In 1990, a questionnaire was mailed to all physicians in four counties in the lower Rio Grande Valley of Texas and to a random sample of physicians in Bexar County, Texas (San Antonio). Two hundred and eighty of 573 Valley physicians (48.9%) and 162 of 273 Bexar County physicians (59.3%) responded to the survey, for an overall response rate of 52.2%. The two groups were compared primarily to determine differences between physicians who have access to established medical libraries and physicians who practice in remote areas without local access to medical information. Demographic variables, professional practice characteristics, and patient characteristics were compared. Information resource use, particularly reasons for use and non-use of MEDLINE, was explored. Questions also were asked about the availability of various types of information technology. The results indicated that differences in the health care profile did not affect the information usage of the physicians but that differences did exist between the two groups in the use of MEDLINE and libraries. There was no statistically significant difference in either group’s rating of experience with using databases, with more than 40% in each group rating themselves as not at all experienced.

INTRODUCTION

Do differences in availability of information resources affect the use of medical information by physicians in different communities? How is the use of information resources affected by the health care profile of the communities? How frequently are information resources used and for what purposes? These questions guided a 1990 survey of the total physician population of four counties in the lower Rio Grande Valley area of Texas. A random sample of physicians in Bexar County also was surveyed to gain perspective on whether information use by physicians was affected by location and proximity to an academic health sciences library.

This study was conducted as part of a project to examine the efficacy of a circuit librarian program designed to improve the availability and use of medical information in four counties of the lower Rio Grande Valley. The project had three components: information needs assessment, evaluation of the Circuit Librarian Health Information Network (CLHIN) program, and evaluation of the flat-rate MEDLINE access program, the GRATEFUL MED®/South Texas

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The five Texas counties

The five counties are located in the southern portion of Texas, which differs from other areas of the state in terms of its high percentages of Mexican-American citizens, extreme poverty, and limited educational resources. Cameron, Hidalgo, Starr, and Willacy counties are in the lower Rio Grande Valley in the southernmost tip of Texas bordering Mexico, an area commonly referred to as "the Valley." The fifth county is Bexar, one of the northernmost counties of south Texas (Figure 1). Bexar has strong links to the Valley due to the Hispanic heritage of its population, although it is approximately 250 miles north of the Valley. Three of the state's metropolitan areas are located in south Texas: about one million persons live in San Antonio in Bexar county; approximately 250,000 persons live in the cities of Brownsville, Harlingen, and San Benito in Cameron County; and about 375,000 persons live in McAllen, Edinburg, Mission, and Weslaco in Hidalgo County. Starr and Willacy counties are rural. The Hispanic population ranges from 47.6% in Bexar County to 97.4% in Starr County, while the poverty rate ranges from 22.4% to 51.6%, respectively.

Information from the Valley Primary Health Care Review indicated that a full range of diagnostic and treatment services for acute illness as well as prenatal care and family planning is available from community health centers, private physicians, and hospitals in the Valley. Barriers to health care access include economics, transportation, culture, and knowledge of health plans and health information [2]. More than 80,000 persons in the Valley live in unincorporated settlements known as colonias, which often lack septic tanks, sewers, or running water [3].

In 1989, a circuit librarian program managed by the Briscoe Library of The University of Texas Health Science Center at San Antonio (UTHSCSA) was established in the Valley through funding from the UTHSCSA's South Texas Health Research Center. In 1990, funding for the CLHIN was continued through the Lower Rio Grande Valley/South Texas Area Health Education Center program. At the time of the study, ten hospitals and one family-practice residency program received library services through the CLHIN.

Until the CLHIN was initiated, the major health information resource for Valley physicians was the Texas Medical Association (TMA) Library in Austin. All members of the TMA are entitled to request, at no charge, literature searches from TMA librarians. Photocopying and prompt delivery by fax are available for a fee. In 1990, TMA's three reference librarians conducted more than 9,000 literature searches, with half of the requests received from nonmetropolitan areas of Texas [4]. The eleven institutions participating in the CLHIN program had no local professional library support and minimal medical library collections.

Bexar County has several medical libraries, the largest being the Briscoe Library of the UTHSCSA. The Briscoe Library serves as a resource library in the National Network of Libraries of Medicine, South Central Region, and has an extensive collection and a variety of services, including miniMEDLINE™, the Micromedex Computerized Clinical Information Service®, and CD-ROM-based services. Several military installations maintain extensive medical libraries in Bexar County, including the Brooks Air Force Base School of Aerospace Medicine, Wilford Hall U.S. Air Force Hospital at Lackland Air Force Base, the Brooke Army Medical Center at Fort Sam Houston, and the Academy of Health Sciences at Fort Sam Houston. Libraries are also maintained at four area hospitals and at a private research institution.

METHODOLOGY

Three assumptions influenced the decision of whom to survey. The first assumption was that physicians...
Physicians’ information needs in Texas

would be major users of the CLHIN services. The project team thus limited the baseline survey to physicians, for whom a computer database of addresses and demographic and practice information was readily available. The second assumption was that the information-seeking patterns would be affected by local access to a large medical library. By surveying both Valley physicians and Bexar County physicians, the project team could determine whether such differences existed. The third assumption was that it was acceptable to survey only a sample of physicians in Bexar County, even though the complete population of physicians in the Valley was surveyed. This decision was logistical, because there were approximately 600 physicians in the Valley and more than 2,900 in Bexar County. The project team also was interested in behavior change in the Valley following the initiation of the circuit librarian service, and no similar service had been initiated in Bexar County.

Questionnaire development

The Physician Information Needs Assessment Questionnaire used in this project was based on the Generic Questionnaire for Outreach Enhancement Projects developed at the National Library of Medicine (NLM) in February 1990. This questionnaire was modified by a team of Briscoe librarians and an evaluation specialist in consultation with the NLM planning and evaluation staff during the spring of 1990. The questions covered several major topic areas: information resources (how frequently specific resources were used and what resources had been used prior to January 1990); use of MEDLINE (reasons for using or not using MEDLINE, databases used, how MEDLINE was accessed); available technology; and professional practice information.

Two versions of the questionnaire were developed—one for the Valley counties and one for Bexar County. The only difference between the two versions was that the latter questionnaire asked about local medical library use, a topic not included on the Valley questionnaire. The questionnaires were given to a sample of physicians in both Bexar County and the Valley for field testing in May 1990. The feedback from this sample was favorable, and only a few editorial changes were made.

Sampling and response rates

A computer tape was purchased from the Texas State Board of Medical Examiners (TSBME) as a source for the physicians’ addresses. The tape contained records for all physicians then residing in Texas and with current licenses to practice medicine in Texas. The first mailing of the questionnaire took place in June 1990. Questionnaires were coded so that respondents could be identified.

There were 2,993 physicians in Bexar County who were licensed to practice medicine in Texas at the time the questionnaire was distributed. A random sample of 284 physicians (9.5% of the total) was selected from this pool using a computer-generated random-number table. There were 627 physicians in the Valley, according to the TSBME database. Thus, 911 questionnaires were distributed in the first mailing. This number later was reduced to 846, eliminating sixty-five physicians (eleven in Bexar County, fifty-four in the Valley) who did not have current addresses or were deceased, retired, or requested removal from the list. After two follow-up questionnaires and a postcard reminder were mailed to nonrespondents, a total of 442 surveys were returned, yielding a 52.2% response rate.

RESULTS

Comparison of respondents and nonrespondents

Demographic factors were analyzed comparing respondents and nonrespondents. The factors that differed statistically were practice type (P < .009) and location (P < .004). Within practice types, a greater number of physicians in administration (82.9%), teaching (69.4%), and research (100%) responded than did not respond, while an equal number of physicians in direct patient care responded as did not.

The response rate from the Valley was 48.9% (280 of 573), which was significantly lower than the response rate of 59.3% (162 of 273) from Bexar County. One factor that may have lowered the Valley’s response rate is the large number of surveys sent to these physicians; the Valley has been studied repeatedly. “A continuing complaint regarding research along the border is that they are researched to death but see no resultant services” [5].

Description of respondents

Overall, the majority of those who responded may be categorized as being between thirty-one and fifty years of age (61.8%); specializing in internal medicine or family practice (54.3%); working more than forty hours per week (84.2%); involved in direct patient care (91.9%); and, within the Valley sample only, affiliated with an institution using the circuit librarian program (87.5%).

Valley counties versus Bexar County. The two groups’ responses to each of the questions on the survey were compared, primarily to determine if differences exist between physicians who have access to established medical libraries (Bexar County) and physicians who practice in a remote area without local, direct access to medical information (the Valley). Each comparison of the two groups was evaluated with a \( X^2 \) test of
American, rural, migrant, and more than sixty years of age. Thirty-seven percent of the Valley physicians, as opposed to only 6.7% of Bexar County physicians, said 75% to 100% of their patients were Mexican-American. Thirty-five percent of Valley physicians, as opposed to less than 5% of Bexar County physicians, said at least 50% of their patients were rural. The most dramatic difference was in migrant patients. Eighteen percent of Valley physicians said at least 50% of those served were migrant, whereas 67% of the physicians in Bexar County said they had no migrant patients.

### Frequency of information resource use

The primary information resource used on a daily, weekly, or monthly basis was personal or office collection of books and journals (85.7% of Valley respondents and 82.1% of Bexar County respondents). The second most frequently used resource was consultation with colleagues (76.1% of Valley respondents and 72.2% of Bexar County respondents). Statistically significant differences existed between Bexar County and Valley physicians in frequency of using MEDLINE personally, a medical school library, the TMA Library, and continuing medical education (CME) (Table 1).

A large proportion of physicians in the Valley counties reported they never used either MEDLINE on their own (44.6%) or a medical school library (52.2%), while only 23.3% and 10.1%, respectively, of the Bexar County physicians responded “never” to these items. The majority of Bexar County physicians (82.4%) reported that they never used the TMA Library, while only 40% of the Valley physicians so reported. In terms of CME, the majority (54.6%) of Valley physicians reported using it on a monthly basis, while physicians in Bexar County reported CME less frequently. In fact, 16.2% of the physicians in Bexar County reported never using CME. These differences reflect the expected pattern. That is, physicians in the Valley report not having access to a medical library, which may decrease their awareness of MEDLINE and increase their use of the TMA Library and CME.

Physicians also were asked to describe shortcomings in the information services they used. Those in Bexar County most often mentioned the inconvenience of the Briscoe Library (UTHSCSA), finding time to use the services, and a lack of computer training to use online services. Valley physicians cited the overall lack of services and the lack of time needed to track down information. In addition, once information was located, the length of time spent waiting for information to arrive was reported to be too long. Finally, Valley physicians also referred to their lack of expertise in computers for online services.

### Table 1

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Information resource use by respondents</th>
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<tr>
<td></td>
<td>% MEDLINE by self</td>
</tr>
<tr>
<td>Valley</td>
<td>Bexar</td>
</tr>
<tr>
<td>(n = 148)</td>
<td>(n = 133)</td>
</tr>
<tr>
<td>Daily</td>
<td>1.4</td>
</tr>
<tr>
<td>Weekly</td>
<td>6.8</td>
</tr>
<tr>
<td>Monthly</td>
<td>12.8</td>
</tr>
<tr>
<td>Rarely</td>
<td>34.5</td>
</tr>
<tr>
<td>Never</td>
<td>44.6</td>
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significance unless indicated otherwise. A significance level of .05 was used to evaluate the significance of each test.

### Demographic differences

Respondents were compared using the following demographic variables: practice specialty, practice type, practice setting, and age. The only variable yielding a significant difference between the two groups was specialty type (P = .00015). A greater percentage of Valley respondents were family practitioners, while a greater number of Bexar County respondents had specialized practices.

### Professional practice information

Physicians were asked to indicate their primary workplace and primary professional activity. In both geographic areas, the majority indicated that their primary workplace was a private-practice setting; however, more physicians in the Valley (72.1%) indicated this setting than did those in Bexar County (50.6%). Bexar County physicians were more likely than were Valley physicians to indicate an academic health science center as their primary workplace. This finding is obvious because there is no academic health center in the Valley.

In terms of primary professional activity, the overwhelming majority of respondents in the Valley (95%) and in Bexar County (72.8%) were involved with patient care. More physicians in Bexar County indicated research (6.2%), teaching (9.3%), and training (8.6%) as their primary professional activity than did physicians in the Valley. The lower degree of involvement with patient care in Bexar County is most likely due to affiliation with an academic health science center.

### Patient population

Several characteristics of the patient population differed between physicians in the Valley counties and Bexar County. Valley physicians were more likely than Bexar physicians to indicate that their patients were predominantly Mexican-American, rural, migrant, and more than sixty years of age. Thirty-seven percent of the Valley physicians, as opposed to only 6.7% of Bexar County physicians, said 75% to 100% of their patients were Mexican-American. Thirty-five percent of Valley physicians, as opposed to less than 5% of Bexar County physicians, said at least 50% of their patients were rural. The most dramatic difference was in migrant patients. Eighteen percent of Valley physicians said at least 50% of those served were migrant, whereas 67% of the physicians in Bexar County said they had no migrant patients.
Method of obtaining articles prior to January 1990

Physicians were asked to indicate how they had obtained articles prior to January 1990, when the circuit librarian program was established. Because respondents could indicate more than one answer, the sum of the percentages may be greater than 100. Statistically significant differences did exist between the two groups and are indicated with an asterisk in Table 2. A greater percentage of the Bexar County sample reported obtaining journal articles by going to the library personally or sending a staff member and by requesting reprints from authors than did the Valley respondents. Physicians in the Valley were more likely to report that they received articles through the mail from a library or that they simply did not obtain the articles at all.

Respondents also were asked to estimate the number of articles they received in a typical six-month period. The means and standard deviations for each group were as follows: Bexar County, 32.34 (SD = 57.06) and Valley, 10.68 (SD = 21.87). Bexar County physicians reported obtaining a significantly greater number of articles than did Valley physicians ($t = 4.43, P < .0001$).

MEDLINE use

If respondents used MEDLINE or other databases, they were asked to answer a series of questions. (Persons who did not use databases were instructed to skip to the next section of the questionnaire). Respondents who had used MEDLINE were asked to indicate the specific reasons they had done so. Because respondents could indicate more than one answer, percentages may add up to more than 100. The question did not differentiate among persons who did their own MEDLINE searches or who used mediated searches or who did their own and also used mediated searches. The percentages of respondents within each geographical group that indicated a reason for using MEDLINE are shown in Table 3.

For Bexar County physicians, the most frequently noted reasons for using MEDLINE were preparing a lecture or paper (58.6%), patient care (43.8%), and staying current (42.0%). Physicians in the Valley counties cited their most frequent reasons as patient care (27.9%), staying current (24.3%), and preparing a lecture or paper (22.9%). For each significant difference in Table 3 (as indicated with an asterisk), physicians in Bexar County were more likely to indicate that reason for having used MEDLINE than those in the Valley counties.

Reasons for using MEDLINE that specifically related to patient care were also probed. These results are shown in Table 4. Again, respondents could indicate more than one answer.

Both Bexar County and Valley physicians indicated treatment, diagnosis, and drug information as their top three reasons for using MEDLINE for patient care. Significantly more Bexar County physicians than Valley physicians indicated treatment and drug information as reasons for use.

To further investigate the patient care reasons for using MEDLINE, only those physicians ($n = 406$) who

<table>
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<th>Table 3</th>
<th>Reasons for using MEDLINE</th>
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<tbody>
<tr>
<td>Reason</td>
<td>% Valley ($n = 280$)</td>
</tr>
<tr>
<td>Patient care (in general)*</td>
<td>27.9 43.8</td>
</tr>
<tr>
<td>Confirm an opinion</td>
<td>18.2 24.1</td>
</tr>
<tr>
<td>Lecture/paper*</td>
<td>22.9 58.6</td>
</tr>
<tr>
<td>Learn about a new field*</td>
<td>14.3 31.5</td>
</tr>
<tr>
<td>Stay current*</td>
<td>24.3 42.0</td>
</tr>
<tr>
<td>Research*</td>
<td>7.5 21.0</td>
</tr>
<tr>
<td>Legal or regulatory questions</td>
<td>12.5 8.8</td>
</tr>
<tr>
<td>Other</td>
<td>3.9 3.1</td>
</tr>
<tr>
<td>No response</td>
<td>58.2 32.1</td>
</tr>
</tbody>
</table>

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<tr>
<th>Table 4</th>
<th>Patient care reasons for using MEDLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason</td>
<td>% Valley ($n = 280$)</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>26.0 32.1</td>
</tr>
<tr>
<td>Physical signs/symptoms</td>
<td>11.1 15.4</td>
</tr>
<tr>
<td>Treatment*</td>
<td>27.1 46.9</td>
</tr>
<tr>
<td>Lab tests</td>
<td>10.7 13.0</td>
</tr>
<tr>
<td>Drug information*</td>
<td>14.3 23.5</td>
</tr>
<tr>
<td>Referral</td>
<td>2.1 1.2</td>
</tr>
<tr>
<td>Provide info to family</td>
<td>8.6 9.3</td>
</tr>
</tbody>
</table>

* Indicates statistically significant difference.
had indicated patient care as their primary professional activity were compared. The results for this group of physicians mirror the results of all respondents using MEDLINE for patient care reasons. A significantly greater proportion of Bexar County physicians indicated treatment and drug information as reasons for using MEDLINE for patient care concerns.

Physicians were asked to indicate what system they used to access MEDLINE. Nineteen physicians in the Valley (6.8%) and nine physicians in Bexar County (5.6%) reported using GRATEFUL MED. Most respondents did not answer this question. More than 80% of the respondents also did not answer the question about use of databases other than MEDLINE.

**Reasons for not requesting MEDLINE searches**

Physicians were asked to indicate their reasons for not doing MEDLINE searches themselves or having them done by a librarian. Regarding asking a librarian, physicians in Bexar County indicated their main reasons as the search not being needed (13.0%), an inconvenient location (10.5%), and having to wait to have the search done (8.0%). Physicians in the Valley responded that there was no local access (20.0%), they had never heard of it (16.4%), or the search was not needed (11.8%). Significantly more physicians in the Valley than in Bexar County indicated that there was no local access for obtaining a MEDLINE search or that they had never heard of it.

When asked why they did not search MEDLINE by themselves, physicians in both geographic areas were consistent in their responses. The major reason was that respondents did not know how to do MEDLINE searches by themselves. More physicians in Bexar County indicated lack of time as a reason for not doing MEDLINE searches on their own (22.8%) than did those in the Valley counties (14.3%).

**Technology**

Physicians were asked to report on the availability of microcomputers, modems, fax machines, and their experience in working with computer databases. Physicians in Bexar County were more likely than were Valley physicians to have access to microcomputers in the office or lab (52.5% versus 45.4%), at home (45.7% versus 32.1%), and in a local library (30.2% versus 9.3%). There were no differences in terms of the availability of fax machines and modems at home or at the office. One hundred forty-nine Valley physicians (53.6%) reported having fax machines, 118 (42.9%) reported having modems at the office, and 62 (22.4%) reported having modems at home. Ninety-nine Bexar County physicians (61.9%), reported having FAX machines, seventy (44.3%) reported having modems at the office, and thirty-eight (23%) reported

having modems at home. More physicians in the Valley (63.2%) considered themselves to be not at all experienced database users than did those in Bexar County (42.9%).

**DISCUSSION**

The results of this study were based on self-reported data and, therefore, must be interpreted with caution. However, that the responses were consistent with results of other information-use studies lends credibility to the findings.

There were no statistically significant differences between the Valley and Bexar County physicians in terms of the primary information resources used on a daily or weekly basis—personal or office collections of books and journals and consultation with colleagues. These findings are consistent with reviews of health professionals' information usage by Stinson and Mueller [6], Northup et al. [7], Osiobe [8], and Gruppen [9].

There were statistically significantly differences between physicians in the Valley and in Bexar County in their personal use of MEDLINE, use of a medical school library, use of the TMA library, and use of CME courses for obtaining information. That Bexar County physicians were more likely to use MEDLINE themselves is consistent with the results of a 1986 study of characteristics of early adopters of end-user online searching in the Canadian health professions [10]. In that study, Marshall found that the typical adopter was living in a large urban center, was in a group practice, and was affiliated with a hospital; she concluded that the findings underscored the importance of interpersonal networks in the adoption of innovations.

It is not surprising that Bexar County physicians were significantly more likely to use a medical school library, because the Briscoe Library is located in that county. Similarly, the finding that the Valley physicians used the TMA Library significantly more than did Bexar County physicians was expected. That the Valley physicians reported using CME as an information resource significantly more than did the Bexar County physicians was surprising. However, this finding is consistent with a 1983 study by Stross of eighty-five physicians in small community hospitals [11].

Significantly more Valley physicians than Bexar County physicians were unaware of MEDLINE or did not request MEDLINE from a librarian because of lack of local access. However, both Valley and Bexar County physicians' main reason for not searching MEDLINE by themselves was "don't know how." There was no statistically significant difference between the respondents' ratings of their experience with databases, with more than 42% of both groups considering
themselves “not at all experienced.” Shumway, Jacknowitz, and Abate studied physicians’, pharmacists’, and nurses’ attitudes toward the use of computers for accessing drug information and concluded that the lack of computer use by physicians probably does not represent resistance but may be attributed to lack of familiarity and work style [12].

Patient care was the major reason MEDLINE was used. The survey subdivided patient care reasons into seven categories. Of these, the three major MEDLINE uses for both groups were treatment, diagnosis, and drug information. The Bexar County physicians used MEDLINE significantly more than did the Valley physicians for patient care reasons, particularly for treatment and drug information. These reasons are consistent with the findings of Woolf and Benson [13], Covell et al. [14], Williamson et al. [15], and Marshall [16].

Personal access to a microcomputer at the office or lab and access to modems were not statistically different for the two groups. More than 42% had modems at the office, and more than 22% had modems at home. A 1987 survey of American College of Obstetricians and Gynecologists members indicated that more than 50% use or plan to use computers in their practice [17]. Of the 49% who did not perceive the need to use computer technology, one fifth indicated that with more information they could conceivably change their minds. Bexar County physicians were significantly more likely than were Valley physicians to have access to a microcomputer for personal use at home or library or for staff use at office or library. There was no statistically significant difference between the two groups in the availability of fax machines, because more than 53% of both groups had a fax machine.

Bexar County physicians reported lack of time as a reason for not doing MEDLINE searches by themselves significantly more often than did Valley physicians. Williamson reported that physicians in solo practice indicated that finding the time to look for information was less of a problem than did physicians in other practice settings [18]. “Lack of time” is a very subjective reason for not doing something. Covell et al., in a study of California internists, found that “reported use of information sources” was different from “observed use” [19]. In that study, the physicians believed they used print sources more than they were observed to do.

CONCLUSIONS

Contrasting the health care profile, the health information resources, and the self-reports of physicians in the lower Rio Grande Valley and Bexar County helped to provide some perspective on the needs of the areas. There were major differences between the two areas in health care profiles and health information resources, but the overall differences in physicians’ self-reported use of information were not great.

The major findings of the needs assessment were as follows:

■ There was no evidence that differences in the health care profile affected the information use of the physicians in the five counties. That is to say, the different types of patients seen and the types of illnesses did not appear to be dominant factors in information use.

■ The statistically significant differences in information use between the physicians in the Valley and the physicians in Bexar County were related to the use of MEDLINE and libraries. For both groups, the primary information resources were personal collections of books and journals and consultation with colleagues. These findings have been reflected in most studies of physicians’ information use. However, the present study found differences between the physicians in the Valley and Bexar County in use of libraries, MEDLINE, and other databases and in awareness of information resources.

■ When asked why they did not search MEDLINE by themselves, physicians in both locations were consistent in their responses. The major reason was that respondents did not know how to do MEDLINE searches by themselves. This response was consistent with there being no statistically significant difference between the groups’ ratings of their experience with using databases. These assessments of ability indicate that increased opportunities for training are needed, with a variety of options being made available.

Further investigation is needed into the information use patterns and needs of health care professionals in areas remote from academic medical institutions by methods other than questionnaire studies. The results would help determine how best to reach these professionals with the latest information on diagnosis and treatment of their patients.

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