A Descriptive Study of Point-of-Care Reference Resource Use by Advanced Practice RNs in Texas

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Using evidence from research and clinical literature is an important part of providing safe and effective advanced practice nursing care through informed clinical decision making. Traditionally, this evidence has been presented in scholarly journals, books, and published practice guidelines. Advanced practice RNs (APRNs) may learn about new research and best practices at conferences and other continuing education opportunities as well as from colleagues. Increasingly, resources for evidence-based practice are offered in electronic format accessible via computers including portable electronic handheld devices, such as PDAs, tablets, and smartphones. These devices can be used to access clinical evidence in journal articles, prescribing information, clinical guidelines and protocols, and continuing education offerings.

Previous studies investigating reference use in practice by baccalaureate-prepared nurses in rural settings in South Dakota, Montana, and Oregon have identified the top three sources of knowledge for practice as personal experience (n = 197 [89.3%]), content learned in school (n = 197 [89.3%]), content learned in college/university, and information learned about each patient/client as an individual. Responses for Hispanic respondents as well as electronic device users were similar. Content and features accessed daily by handheld computer devices were reference materials, e-mail, address/phonebook, Internet access other than e-mail, calendar/date book, alarm/reminder, calculator, and memo pad. Software installed on handheld devices and used daily included drug references, medical text/reference book, medical math/formula calculator, practice guidelines, and language translator/dictionary. Respondents who did not report using handheld devices at work were older, had more years in advanced practice nursing, and were more likely to work in a hospital, birthing center, or institution such as a prison, school, or military facility. There was no difference in resource or electronic device use by Hispanic advanced practice RNs. Electronic resources for practice are growing and being used by advanced practice RNs. Consideration should be given to incorporating evaluation and implementation of electronic clinical resources into advanced practice RN educational programs. Future research should include greater detail about the origin of information used in practice. Patient responses to the use of electronic handheld devices in clinical settings needs illuminating.

KEY WORDS
APRN • Evidence for practice • Hispanic • PDA • Texas

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Drugs information and diagnostic reference information were the most frequently noted information needs reported for APRNs in Texas in 2003. In a study of 126 APRNs who used PDAs, Stroud et al noted that drug databases were the most used applications on their handheld devices. Wyatt and Krauskopf noted the growing ownership of smartphones by physicians and nurses and the explosion of clinical applications for use at the point of patient care. Krauskopf and Farrell found that novice APRNs performed accurately and in a timely fashion when conducting a search for therapeutic information on a handheld computer device compared with peers searching textbooks for the same information. Abell et al in a sample of 159 nurse practitioners found that the level of PDA use was positively correlated with age and years of experience as well as age and years of experience as an NP. Finally, Zhang et al surveyed 91 Canadian home healthcare nurses who used PDAs regularly at work. They demonstrated empirically that technology adoption intention in their sample was ultimately related to perceived ease of use and perceived usefulness.

The parallel rise in clinical applications available electronically and the number of nurses using this evidence to guide their practice is clear. Simultaneously, ownership of handheld computer devices is growing among healthcare professionals. The authors wanted to know if this trend had reached the greater South Texas region, a predominantly rural area with a large Hispanic population, in order to tailor both graduate education and library holdings to meet the demands of APRNs in the area. The purpose of this study was to learn about (1) availability of resources at the workplace, (2) sources of information for practice, and (3) use of PDA, smartphone, or tablet computers during practice. As part of educating a diverse healthcare workforce for Texas, it is important to identify characteristics of Hispanic APRNs practicing in the region to determine whether they are having a practice experience similar to non-Hispanic APRNs in the same area.

Methods

Design and Setting

A descriptive study was conducted using a questionnaire to determine the types of reference resources used at point of care by APRNs in Texas Public Health Region (TPHR) 11. Texas Public Health Region 11 was selected for recruitment of participants because it has both rural and urban areas and a predominantly Hispanic population; also, mailing addresses were available for APRNs licensed with the Texas Board of Nursing. All the counties in TPHR 11 are designated by the US Department of Health and Human Services Health Resources and Services Administration as health professional shortage areas and medically underserved areas.

Texas Public Health Region 11 contains 19 counties in three distinctly different regions of Texas known for tourism, fishing, military bases, ranching, and proximity to the border with Mexico. The latter presents issues related to immigration of undocumented persons. Many residents of this region speak Spanish exclusively or primarily, which can be problematic for providers who do not share this language.

Another aspect of this region is that cell phone coverage can be spotty with pockets having “dead zones.” Internet access, when available, can be unreliable to a greater extent than in metropolitan areas. This region also includes the authors’ educational institution and is the most likely practice area for the school’s APRN graduates.

Sample

The Texas Board of Nursing’s APRN license renewal address file was the source of the sample. All licensed APRNs with mailing addresses in the 19 counties of TPHR 11 were selected from this database. Persons with more than one advanced practice designation were pared down to one entry, which left an unduplicated list of 657 APRNs in TPHR 11.

Ethical Considerations

The Texas A&M International University (TAMIU) institutional review board (IRB) committee granted IRB approval for this study. The invitation to participate in the study included investigator information as well as an informed consent agreement. The IRB committee advised the investigators that the mailing envelope and the response postcard could have either the name and address (envelope) or the participant ID number (response postcard), but they could not have both so as to protect the participants’ confidentiality. Thus, postcard follow-up with nonrespondents was difficult and was not attempted.

Questionnaire

Researchers who developed the questionnaires used in previous studies on reference resource use (Cronbach’s α of .643–.863) and NP use of PDAs in practice (developed from the literature on PDA use with an expert panel reviewing the questions for content validity) graciously shared their questionnaires for the current study. The two questionnaires were combined. Existing questions were adapted, and new questions were added to reflect current literature on the use of PDAs in practice and the range of software and applications available for PDAs, smartphones, and tablets in 2011. The questionnaire for the current study included questions in four sections: (1) section A contained 16 questions on availability of resources at the workplace; (2) section B contained 21 questions addressing sources of information used in professional practice; (3) section C contained 24 questions on PDA, smartphone, or tablet...
computer use in practice; and (4) section D concluded with 12 questions for the participant profile (demographics).

Several APRNs and nonnurse colleagues with handheld computer expertise reviewed the questionnaire for content validity. The questionnaire was tested with APRNs and revised prior to beginning the pilot study. Finally, the questionnaire was piloted with the cohort of APRNs in 1 of the 19 counties to ensure that the mailing and response procedures worked as expected. Once satisfied that the procedures were solid, the invitation letters with response postcards were mailed to the rest of the APRNs in TPHR 11.

Data Collection

Data collection was initiated via a letter mailed to the 657 APRNs from TPHR 11 inviting them to complete an electronic survey about their use of references/evidence at the workplace and their use of handheld computer devices in the clinical setting. The invitation included a coded postcard with the survey URL and the participant’s ID number. Return of the postcard confirmed (1) completion of the survey, (2) the decision not to participate, or (3) a request for a paper version of the questionnaire with return envelope to be sent to the respondent. Every person who returned a postcard was entered into a drawing for an iPad 3.

**Data Analysis**

Collection of data was accomplished using the Survey Monkey (Survey Monkey, Palo Alto, CA) online survey tool and analyzed using IBM SPSS Statistics 20 (SPSS Analytics, IBM Inc, Armonk, NY). Descriptive analysis was used to summarize the data on the sources of information used in practice and the use of handheld computer devices in the clinical setting among APRNs in TPHR 11. Descriptive analysis also provided the demographic summary information on participants. The questionnaire asked for participants’ written comments on how using a handheld

<table>
<thead>
<tr>
<th>Demographic</th>
<th>All Respondents (n = 79)</th>
<th>PDA/Smartphone/Tablet Users (n = 56)</th>
<th>Hispanic Respondents (n = 29)</th>
<th>PDA/Smartphone/Tablet Nonusers (n = 23)</th>
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<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>62 (78.5%)</td>
<td>42 (75%)</td>
<td>19 (65.5%)</td>
<td>20 (87%)</td>
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<tr>
<td>Male</td>
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<td>14 (25%)</td>
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<tr>
<td>Age, y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>50.41 (SD, 11)</td>
<td>48.17 (SD, 11)</td>
<td>43.20 (SD, 9)</td>
<td>55.86 (SD, 8.9)</td>
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<td>29</td>
<td>38</td>
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<tr>
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<tr>
<td>Diploma</td>
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<td>2 (3.6%)</td>
<td>1 (4.3%)</td>
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<td>1 (1.3%)</td>
<td>1 (1.8%)</td>
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<tr>
<td>Bachelor's nursing</td>
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<td>3 (5.4%)</td>
<td>1 (3.4%)</td>
<td>1 (4.3%)</td>
</tr>
<tr>
<td>Master's nursing</td>
<td>66 (83.5%)</td>
<td>47 (83.9%)</td>
<td>27 (93.1%)</td>
<td>19 (82.6%)</td>
</tr>
<tr>
<td>Doctorate nursing</td>
<td>4 (5.1%)</td>
<td>3 (5.4%)</td>
<td>1 (3.4%)</td>
<td>1 (4.3%)</td>
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<td></td>
<td></td>
<td>1 (4.3%)</td>
</tr>
<tr>
<td>Nationally certified as an advanced practice nurse</td>
<td>75 (94.9%)</td>
<td>53 (94.6%)</td>
<td>28 (96.6%)</td>
<td>22 (85.7%)</td>
</tr>
<tr>
<td>Yes</td>
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<td>3 (5.4%)</td>
<td>1 (3.4%)</td>
<td>1 (4.3%)</td>
</tr>
<tr>
<td>No</td>
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<td></td>
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<tr>
<td>Employment setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital, birthing center</td>
<td>20 (25%)</td>
<td>14 (25%)</td>
<td>5 (17%)</td>
<td>6 (26.1%)</td>
</tr>
<tr>
<td>Clinic</td>
<td>50 (63%)</td>
<td>37 (66%)</td>
<td>23 (79%)</td>
<td>13 (56.5%)</td>
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<tr>
<td>Institution</td>
<td>8 (10%)</td>
<td>4 (7%)</td>
<td>1 (3%)</td>
<td>4 (17.4%)</td>
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<td>Average commute to work</td>
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<td></td>
<td></td>
<td></td>
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<td>14 (SD, 14)</td>
<td>14 (SD, 12)</td>
<td>22 (SD, 7.5)</td>
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<tr>
<td>site 2</td>
<td>38 (SD, 56)</td>
<td>47 (SD, 65)</td>
<td>35 (SD, 41)</td>
<td>7 (SD, 14.9)</td>
</tr>
<tr>
<td>site 3</td>
<td>46 (SD, 59)</td>
<td>63 (SD, 24)</td>
<td>2 (SD, - )</td>
<td>6 (SD, 68.5)</td>
</tr>
<tr>
<td>Years of APRN practice</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>8.97 (SD, 10)</td>
<td>8.63 (SD, 10)</td>
<td>7.39 (SD, 7)</td>
<td>15 (SD, 21.7)</td>
</tr>
<tr>
<td>Median</td>
<td>7.5</td>
<td>7.8</td>
<td>6</td>
<td>12.5</td>
</tr>
</tbody>
</table>
computer device was beneficial in patient care. Those qualitative responses are reported verbatim from the questionnaires.

RESULTS

Response to Invitations

Invitations to participate in this study were mailed to 657 APRNs in TPHR 11; 19 were returned for bad addresses. Attempts were made to readdress these invitations from publicly available information on the Internet with no success, leaving 638 prospective participants. Ninety response postcards were returned. Of the 90 respondents, nine declined to participate or were reported deceased; 66 responded to the survey online, and 13 completed paper surveys. Two surveys were incomplete, yielding 79 usable surveys for a response rate of 12.5%.

Participant Profile (Demographics)

Table 1 shows selected demographics of the participants, including the subsets of PDA/smartphone/tablet users and nonusers as well as individuals identifying themselves as Hispanic. Table 1 compares the participants and subgroups in terms of gender; age; highest level of nursing education; national certification; employment setting; average commute in miles to first, second, and third work sites; and years working in advanced practice.

This sample of APRNs in Texas TPHR 11 was predominantly female (n = 62 [78.5%]), with the Hispanic subgroup also predominantly female but with a smaller percentage of women within the group (n = 19 [65.5%]). The highest percentage of females was found in the nonuser group. All respondents and nonusers were older on average than the Hispanic subset. As expected, respondents had a variety of educational backgrounds in nursing, including diploma and associate degree as their highest level of nursing education. The Hispanic subset was educated at the baccalaureate, master, and doctoral levels, most likely because they are a younger group of people who entered the profession more recently. The average years of APRN practice confirmed a slightly lower number of years of practice for the Hispanic group (mean, 7.39; median, 6 years) than for the group as a whole (mean, 8.97; median, 7.5 years), whereas the nonusers had the most experience with a mean of 15 years and a median of 12.5 years. A greater percentage of the Hispanic subgroup was employed at a clinic (n = 23 [79%]) than the group as a whole (n = 50 [63%]), whereas the nonusers were less likely to work at a clinic (n = 13 [56.5%]) and reported employment at a hospital/birthing center (n = 6 [26.1%]) or institution (n = 4 [17.4%]).

Location

Responses came from six of the 19 counties in the region (Figure 1); handheld computer device users came from all six of these counties (Figure 1), and Hispanic and nonuser respondents came from four of the six counties (Figure 2). One respondent and handheld computer device user did not provide enough information to identify the respondent's license renewal address county. The majority of respondents had at least one practice site (n = 73 [90%]). More than one-fourth reported two practice sites (n = 23 [28%]), and nearly one in 10 listed three practice sites (n = 8 [9.8%]).

Sources of Evidence

Availability of Resources at the Workplace

The majority of APRNs (n = 79) reported that their work sites had current journals (n = 60 [76%]), professional journals (n = 44 [55.7%]), and available journals appropriate
to setting (n = 63 [79.7%]), and their workplace environment encouraged the use of research findings (n = 62 [78.5%]). Respondents also noted that available reference materials are current (within the past 5 years) (n = 66 [83.5%]). Other sources of practice information included that published clinical guidelines are available (n = 57 [72.2%]) and current (n = 54 [68.4%]). Regarding Internet accessibility at the work site, respondents reported that generally the Internet is available (n = 75 [94.9%]), and if available, the Internet connection is reliable (n = 74 [93.7%]).

Sources of Information Used in Professional Practice

Advanced practice RNs always or frequently based their professional practice on personal experience of caring for patients/clients over time (n = 69 [87.3%]), information learned in college/university (n = 65 [82.2%]), information learned about each patient/client as an individual (n = 64 [81%]), what coworkers discuss with them (n = 44 [55.7%]), their intuition about what seems to be right for the patient/client (n = 43 [54.5%]), articles published in general nursing journals (n = 42 [53.2%]), articles published in nursing research journals (n = 39 [49.4%]), articles published in general medical journals (n = 35 [44.3%]), articles published in medical research journals (n = 27 [34.2%]), articles published in other professional journals (n = 23 [29.1%]), articles published in other professional research journals (n = 21 [26.6%]), and information learned from pharmaceutical industry representatives (n = 17 [21.5%]).

Sources of Information Used in Professional Practice by Handheld Computer Device Users

Advanced practice RN handheld computer device users (n = 56) reported basing their professional practice on the same information in roughly the same order.

Use of PDA, Smartphone, or Tablet Computer

Advanced practice RNs who used handheld computer devices at work (n = 56) reported using the following features of their device daily: clinician reference materials (n = 48 [85.7%]), e-mail (n = 41 [73.2%]), address/ phone book (n = 40 [71.4%]), Internet access other than e-mail (n = 37 [66.1%]), calendar/datebook (n = 31 [55.4%]), alarm/reminder (n = 26 [46.4%]), calculator (n = 25 [46.4%]), and memo pad (n = 15 [26.8%]). Responses to questions about medical software applications installed on handheld computer devices included drug references (n = 46 [82.1%]), medical text/reference book (n = 32 [57.1%]), medical math/formula calculator (n = 28 [50%]), practice guidelines (n = 15 [26.8%]), and language translator/dictionary (n = 13 [23.2%]). Forty-six respondents (82.1%) purchased their device themselves for the purposes of clinical decision-making assistance (n = 40 [71.4%]) and personal information management (n = 37 [66.1%]).

Handheld computer device users identified the following popular features, ordered by most frequently mentioned: references, address/phone book, calendar/datebook, calculator, tasks/to-do list, memo pad, and patient management. These APRNs reported using these applications daily.

Handheld computer device users reported the following as their top three most useful medical software/applications: ePocrates (ePocrates, Inc, San Mateo, CA) with 18 mentions, Medscape (WebMD, New York, NY) with 11 mentions, Skyscape (Skyscape, Inc, Marlborough, MA) and Medical Prescribing Reference (Prescribing Reference, Inc, Congers, NY) with six mentions each.

Qualitative information from handheld computer device users provided some of the richest data. Qualitative responses fell into three general categories: (1) photographic clinical
documentation, (2) current treatment protocols, and (3) medication safety; handheld computer devices were reported as particularly useful in these areas. Respondents noted these benefits when submitting free-text information in response to the question: “Describe an incident or situation in which you used a PDA/smartphone/tablet in clinical practice that best illustrates the value of using these mobile devices.”

Photographic Clinical Documentation

With regard to using the camera feature of the handheld computer device, one user commented: “We take pictures of wound[s] and incorporate them into the note to allow clinicians to monitor the progress.”

Current Treatment Protocols

Appropriate and cost-saving use of hospital services was the result of using the GBS Guide application (Wilson Family Practice Residency and Binghamton University, Binghamton, NY) as stated by one user: “The Gram B streptococcus controller is an app that I downloaded to help me stay current with the latest GBS prophylaxis guidelines. I had a complicated case, and it was wonderful to have a reference that walked me through the algorithm. This was within 2 weeks of the latest guidelines coming out. Having the app allowed me to avoid intervention for the newborn, high costs, hospital admission. It was wonderful!”

Medication Safety

Another participant noted the safety aspect of using information available on a handheld computer device: “I was planning on prescribing a particular antibiotic, and the patient was on a lot of different psych meds that I don’t normally come across. I checked the interactions, and there were significant ones so I changed my choice of antibiotics. I also used it to show a patient how to use a particular medical device that was prescribed—I actually found a demo on YouTube.”

As enthusiastic as the providers are about the clinical productivity that comes from using handheld computer devices in practice, the patients are the clear beneficiaries as evidenced by these anecdotes.

DISCUSSION

Participant Profile (Demographics)

Although the sample was small, participants in this study came from the most populated counties in TPHR 11. The sample contained practitioners with a diversity of age, education level, years of practice, practice site, gender, and race/ethnicity. Hispanics represented 38% of the sample. It is hoped that efforts to increase the diversity of the healthcare workforce in Texas by specifically encouraging Hispanic students to major in nursing will result in a greater percentage of Hispanic nurses working in this region with a predominantly Hispanic patient population.

Participant Location

As previously mentioned, respondents came from 6 of the 19 counties in TPHR 11. The number of respondents indicating more than one work site is similar to those of Stroud et al, whose sample included fewer Hispanic respondents and none in the certified registered nurse anesthetist (CRNA) category. Working at more than one practice site is indicative of the dearth of providers in TPHR 11 and the need for their services. Interestingly, several nurses indicated work sites that were in counties other than their license renewal address county, indicating that these rural areas are in need of providers.

Sources of Evidence

Availability of Resources at the Workplace

In general, APRNs in TPHR 11 have access to adequate and current reference resources to provide evidence-based care. The subsets of Hispanic practitioners, handheld computer device users, and nonusers have similar reference resource use (Table 2). This is consistent with the findings of a previous study that looked at clinical information resources among rural BSN nurses in South Dakota, Montana, and Oregon.

Sources of Information Used in Professional Practice

Although the majority of respondents reported that the workplace environment encourages use of research findings, these APRNs reported basing their professional practice on personal experience, information learned in college/university, and information learned about each patient/client as an individual. It is not known whether the information used in clinical decision making as reported by these APRNs is based on research or tradition. This would certainly warrant closer scrutiny to uncover the original source of their information for practice.

Use of PDA, Smartphone, or Tablet Computer

The responses to the questions in the current study on patterns of electronic handheld computer device use in practice mirror those of previous investigators, with drug reference programs the most frequently named resources followed by medical text/reference books. The main difference between the current study and that of Stroud et al is the hardware/operating systems used by the respondents. Current study participants used iOS-based (iPhone, iPod, iPad; Apple, Cupertino, CA), Blackberry (Blackberry, Waterloo, Ontario, Canada), and Android (Google, Inc, Mountain View, CA) devices, whereas participants in the previous study used devices with PalmOS (now webOS; Hewlett Packard,
Palo Alto, CA) and WinCE (now Windows Embedded Compact; Microsoft, Redmond, CA) operating systems and their respective brands of hardware.\(^3\)

Figure 3 demonstrates the same relative popularity of the device features in daily use among the respondents in this study as those reported by Stroud et al\(^3\) in 2009. The graph shows that with the addition of newer features identified in the present survey, Internet connectivity of modern handheld computer devices is not only a technological feat but also an increasingly popular, if not essential, attribute of these handheld computer devices.

The most frequently mentioned software was drug reference material, which could be related to the critical need for accurate prescribing information on new medications.
coming to market and new indications for old medications, as well as newly updated warnings about drug-drug interactions, contraindications, or adverse effects. Drug references are some of the oldest electronically available resources as the need for current information about these common therapies is vital.

Thirteen handheld computer device users, almost 25%, reported having a language translator/dictionary installed on their handheld devices. In this region of the country where many individuals speak Spanish predominantly or prefer to speak Spanish during healthcare encounters, the ready availability of a language translator/dictionary is key to helping the provider and the patient feel that their messages have been communicated accurately.

Internet availability and reliability were surprisingly common given local experience with Internet outages and lack of cell phone coverage in many pockets of this rural region. The notable exception was for the nonusers, who reported less Internet availability and less reliability (Table 2). It was encouraging that APRNs could be working in remote areas and still be connected, via the Internet, to cutting-edge research, evidence, and online course offerings to keep their knowledge current. Finally, 70.8% of APRNs responding used a handheld computer device in their practice, demonstrating that APRNs find them useful in practice and that schools of nursing would do well to designate courses where practice resources available electronically are discussed, evaluated, and deployed. Clinical courses might include information about which electronic resources are available at each clinical site as there is no doubt a wide variation. Some electronic resource adoption in practice will be driven by the practice site and what preceptors are using or providing at the work site. The authors will be investigating availability of clinical electronic resources for the university’s library as one outcome of this study.

The 30% of the sample who were nonusers of handheld computer devices in clinical settings were more likely to work in a hospital, birthing center, or institution where reference resources for practice might be more abundant, creating less need for resources on handheld computer devices.

LIMITATIONS

The limitation of this study is the low response rate to the survey by APRN participants in the greater South Texas region. Those who did respond are a heterogeneous group of providers working in hospital and community settings, in both primary care and tertiary care, and may not be representative of all APRNs in this region.

Although it is hoped that the knowledge used in professional practice is based on solid clinical evidence, the responses given do not clearly indicate that this is the case. The APRNs in this study primarily base their professional practice on information learned about each patient/client as an individual and personal experience of caring for patients/clients over time. This may reflect the experience level of the respondents and the way they have integrated research evidence into their practice, and not necessarily a lack of evidence-based practice.

FUTURE RESEARCH

Schools of nursing need to move toward helping practitioner students evaluate and utilize electronic reference resources in practice to provide evidence-based care that is safe and effective. Policies banning handheld computer devices in some workplaces may be a barrier to this evolution in practice. In addition, academic libraries must also consider ways to facilitate access to diverse new resources available through these evolving technologies.

The authors’ institution has just inaugurated a fully online RN/BSN program to be advertised throughout the region. Having students in the school of nursing from TPHR 11 and surrounding areas will offer further opportunities to discover the information and resource needs of nurses working in rural and border areas beyond the scope of the current study.

CONCLUSION

Regardless of where in the 19-county area of TPHR 11 they work, APRNs have similar sources of reference information available to them at their work sites and base their advanced practice on similar information. As Internet access in this region has become widespread and handheld computer devices more common, APRNs are using them to enhance their evidence-based practice in ways previously identified,2,3 such as drug and reference materials, address/phone book, calendar, calculator, to-do list, memo pad, patient management, alarm/reminder, and camera, as well as features that require Internet access, such as e-mail and non-e-mail Internet resources. The many features of modern electronic handheld devices that have video, audio, and the capacity to store volumes of reference materials that can be easily updated as information changes mean that these devices will be increasingly used by healthcare workers in all settings. Thus, the current study met the authors’ need to understand the role of handheld computer device use among APRNs in their catchment area; the authors will use this information to guide curriculum development and library holdings.

As the electronic health record becomes more prevalent and incorporates multimedia and decision support features, clinicians will likely find electronic handheld devices an indispensable resource for practice. Education programs for APRNs should anticipate this change and begin incorporating information and opportunities for students to learn...
about the features and benefits of point-of-care practice resources available for PDAs, smartphones, tablets, and the next generation of handheld electronic devices.

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REFERENCES


Questions for the current study were derived from these instruments:

2. “Use of Personal Digital Assistants Among Practicing Nurse Practitioners Questionnaire” by Stroud SD, Smith CA, Erkel EA.