Nurses' Information Seeking Behavior for Clinical Practice: A Case Study in a Developing Country

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Abstract. We used a valid questionnaire to survey Iranian nurses' seeking information behavior and their confidence on different information sources. The frequently used sources were Internet" and "personal experiences"(54.8% and 48.2% respectively). English medical journals" (61.9%) and "English textbooks" (41.3%) were the least frequently used sources. Nurses felt high confidence in sources such as "International instructions/guidelines" (58.6%) and "English medical textbooks" (50.4%). The main reasons for selecting sources were easy accessibility, being up to date and reliability. Google, Pubmed and Up to Date were the most used electronic sources. In addition, there were differences in terms of using some of these resources and nurse' age and gender. In developing information sources for nurses, factors such as reliability level, availability, and updatedness of resources should be more emphasized.

Keywords. nurse, evidence based practice, information, information seeking

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1. Introduction

Evidence-based medicine (EBM) helps nurses make the best decisions based on the valid evidence [1, 2].Information seeking is a main stage in problem-solving process and EBM. Nurses consider quality of information very important [3].The purpose of professional nursing is to increase the use of the best information for the best practice. Achieving this purpose requires identifying information resources [4, 5]; however identifying resources for making informed decisions is a difficult task. Doctors and nurses encounter some problems such as lack of access to related information [6]. Nurses use resources such as books, discussion with colleagues, as well as e-journals, e-books, and the Internet [7]. In this regard, there is not much information in Iran. The purpose of this study is to consider nurses' information seeking behavior in clinical practices. Determining nurses' information seeking behavior can be helpful in planning for nursing education, designing and accessing the required information resources, and ultimately approaching the objectives of evidence-based medicine.

2. Methods

A cross-sectional study was conducted during August-October 2013 using a questionnaire in all of the five academic hospitals affiliated with Mashhad University of Medical Sciences, Iran. The nurses' participation was voluntary and uncompensated. The criteria for selecting nurses were willingness to participate, availability and having at least three years' work experience in hospitals. The questionnaire was offered to 164 nurses; however, 131 nurses (80%) completed the questionnaire. Two medical informatics specialists and three nurses were asked to provide feedback on format, clarity and meaning of questions and response options. Furthermore, a pilot test-retest study was conducted to test the questionnaire (r=85 percent). The data were analyzed using the SPSS version 16.0 using Mann-Whitney and Pearson's correlation coefficient tests.

3. Results

Most nurses (76%) were female, less than 30 years old (46.2%).The most frequently used sources were "Internet" (54.8%) and "personal experiences" (48.2%). The sources that nurses felt high confidence in were "International instructions/guidelines" (58.6%) and "English medical textbooks" (50.4%) (Table1). The nurses counted easy accessibility, being up to date and reliability with the mean of 2.4, 2.9 and 3 (from 1-7 scores), respectively, as their primary reasons for the selection of their information sources. Also nurses reported that "English medical journals" (61.9%) and "English textbooks" (41.3%) were the least frequently used sources. There was a significant difference between using some information sources such as weekly seminar (p=0.03), CME virtual courses (p=0.04) and nurse's gender. Women used more of these information sources in comparison with men. There was a positive relationship between using some information sources ("English textbooks"(p<0.001), "English medical journals"(p<0.001), "Persian medical journals"(p=0.01), "Seminar/Congress "(p=0.02), "Discussion with colleagues"(p=0.001), "Pharmaceutical companies

instructions"(p=0.04), "Media (TV and Radio)" (p=0.02), "Professional newsletters"(p=0.006)) and nurse's age.

Sixty nine percent of nurses did not have access to the Internet in consultation room, and the skill of using the Internet in 49.2 percent of them was at the average level. Most of the nurses (40.6 percent) used the Internet daily, and most of them (37.8%) used the Internet for obtaining medical information weekly. Most of the nurses used the Internet for seeking information for their own health (49.6%) or for their person of interest (47.2%). Most of the nurses (65.1%) mentioned the ease of access to information as the most important reason for using the Internet to seek health-related information. Most of the nurses used electronic resources of Google (80.2%) and Medline/PubMed (19.8%) for obtaining information (Table 2). Nurses considered slow internet connection speed (76%), unavailability of some medical resources due to untargeted filtering (53.6%) and language barriers (45.6%) respectively as the most important reasons of dissatisfaction with the Internet.

Table 1. Frequency of use and Confidence in use of information sources

Source of Information	Use of information sources N, (%)			Level of confidence N, (%)		
	Always	Some	Never	High	Some	None
English textbooks	6(5.8)	55(52.9)	43(41.3)	60(50.4)	53(44.5)	6(5)
Persian textbooks	50(43.5)	61(53)	4(3.75)	42(33.9)	79(63.7)	3(2.4)
English medical journals	6(6.2)	31(32)	60(61.9)	43(39.8)	50(46.3)	15(13.9)
Persian medical journals	10(10)	60(60)	30(30)	31(27.4)	76(67.3)	6(5.3)
Seminar / congress	11(9.7)	85(75.2)	17(15)	31(25.8)	81(67.5)	8(6.7)
Weekly conferences	27(23.9)	63(55.8)	23(20.4)	23(19.7)	86(73.5)	8(6.8)
CME (Courses)	40(35.4)	64(56.6)	9(8)	45(38.1)	65(55.1)	8(6.8)
CME (virtual courses)	26(23)	63(55.8)	24(21.2)	35(29.4)	73(61.3)	11(9.2)
Educational classes	51(42.5)	65(54.2)	4(3.3)	50(41.3)	65(53.7)	6(5)
Discussion with colleagues	40(33.9)	67(56.8)	11(9.3)	23(19.8)	83(70.7)	11(9.5)
Internal instructions	48(42.1)	57(50)	9(7.9)	40(34.2)	73(62.4)	4(3.4)
International instructions	16(15.4)	52(50)	36(34.6)	65(58.6)	33(29.7)	13(11.7)
Pharmaceutical companies instructions	16(14.3)	82(73.2)	14(12.5)	37(31.4)	70(59.3)	11(9.3)
Media (TV and Radio)	33(28.9)	69(60.5)	12(10.5)	29(25)	76(65.5)	11(9.5)
Professional newsletters	19(17.4)	58(53.2)	32(29.4)	19(17)	84(75)	9(8)
Web/internet	68(54.8)	53(42.7)	3(2.4)	43(35.5)	74(61.2)	4(3.31)
Electronic documents (Offline)	15(13.6)	80(72.7)	15(13.6)	18(16.1)	83(74.1)	11(9.8)
Personal experiences	54(48.2)	54(48.2)	4(3.6)	24(21.8)	80(72.7)	6(5.5)

4. Discussion

Nurses should effectively face large volume of information so that they can make informed decisions about patients' care. Without updating their knowledge, they cannot have high performance in their profession [5]. Access to valid information is a cost-effective strategy for constant improvement of health care [6, 8]. We found that the Internet and personal experience are the most widely used resources. The least reliable information resources were offline electronic documents and newsletters. Resources that had the least utilization by nurses were English journals and medical books respectively. Nurses' most preferable reasons for choosing a resource were easy and quick access, updatedness and reliability.

Table 2.Use of electronic information resources

Electronic Sources	Use of electronic information sources N, (%)		
	Always	Some	Never
Medline/ PubMed	20(19.8)	39(38.6)	42(41.6)
Web of knowledge	6(6.5)	31(33.3)	56(60.2)
Scopus	3(3.3)	20(22.2)	67(74.4)
Science Direct	9(9.9)	22(24.2)	60(65.9)
Cochrane	1(1.1)	20(22.5)	68(76.4)
MD Consult	8(8.8)	24(26.4)	59(64.8)
Embase	4(4.4)	20(22)	67(73.6)
EBSCO	5(5.9)	16(18.8)	64(75.3)
Up To Date	17(17.7)	28(29.2)	51(53.1)
Google	97(80.2)	18(14.9)	6(5)

In spite of our results, Bernard concluded that books and printed journals are the first preference of general practitioners [9]. Kapiriri mentioned books as the doctors' most used resource after discussion with colleagues and doctors' proclamations [8]. Research indicated that the third reason for choosing an information resource by nurses is its reliability level. Previous research shows that among different resources, nurses and doctors' most reliability belongs to English medical books. For example, Cullen's indicated that GPs were more relying on medical books and journals than other resources [10]. In our study, offline electronic resources and newsletters had the lowest reliability; however, less than 4 percent of nurses did not rely on the Internet. Despite positive and useful features of internal resources, such as having low cost and being written in native language, it seems that Persian journals failed to meet criteria such as reliability level and updatedness. Additionally, in Iranian universities students are trained based on international texts therefore, we think that this results in more confidence of nurses on international and English materials.

Nurses mentioned the use of web-based resources as their most widely used resource. Kitchin and Applegate's results confirm the present results. They showed that radiology residents have also selected the use of Internet as the most important information resource [11]. Another study about Canadian nurses showed that nurses consider the Internet as an obstacle for patient's contact [12].

In this study, most of the nurses used the Internet daily for obtaining information, even more than medical books and journals. Their most important reason was ease of access to information. Another reason for using the Internet was the access to much information from different resources. Schwartz states that information retrieval technology, compared to other information resources, improves access to updated medical knowledge [13].Previous studies show that nurses' use of Internet for medical research and personal gain and for contacting with patients and colleagues is increasing [14]. In this study, regarding searching the Internet, most people were satisfied with the obtained information. Internet provides general information such as health education, enhancement, prevention, prognosis and disease treatment, which are helpful in making decisions about different patients. This information may include texts, images, audios and educating videos from databases as well as digital libraries, computerized clinical guidelines, electronic journals or text-books, and electronic medical websites [15, 16]. According to findings, although Internet is the favorable sources, the nurses did not

appropriate access to Internet in point of care probably due to the infrastructure issues or their work loads. In addition, we found that most nurses seek information for their own health or for their person of interest not for patients. We think that these two problems may lag EBM in nursing practices in Iran. Furthermore, there is also low-quality information resources in the Internet, nurses should be fully trained about evaluating the quality of the retrieved information for EBM.

In sum, in creating information resources that are going to be used by nurses, factors such as reliability level, availability, and updatedness of resources should be more emphasized. Further, increasing nurses' information literacy can be effective in better access to information.

Acknowledgments

References

[1] R. Saitz, Evidence-based medicine: time for transition and translation (to practice). Ev*idence Based Medicine***15**(2010), 103-104.

[2] M.Dawes, W. Summerskill , P. Glasziou, A. Cartabellotta, J. Martin, K. Hopayian K, et al, Sicily statement on evidence-based practice. *BMC Medical Education***5**(2005),1.

[3] K. Kimiafar, F. Sadoughi, A. Sheikhtaheri, M. Sarbaz, Prioritizing factors influencing nurses' satisfaction with hospital information systems: a fuzzy analytic hierarchy process approach, *Computer Informatics Nursing***32**(2014), 174-181.

[4] J. Roberts, Senior student nurses information seeking skills: a comparative study. *Nurse Education Toda*y **24**(2004), 211-218.

[5] A.J. Ross, C.A.Estabrooks, Sources of information used by nurses to inform practice: an integrative review. *International Journal of Nursing Studies***45**(2008), 954-970.

[6] N.L. Bennett, L.L.Casebeer, R.Kristofco, B.C. Collins, Family physicians' information seeking behaviors: a survey comparison with other specialties. *BMC Medical Informatics and Decision Making***5**(2005),9.

[7] C.Dee, E.E Stanley, Information-seeking behavior of nursing students and clinical nurses: implications for health sciences librarians. *Journal of the Medical Library Association***93**(2005), 213-222.

[8] L.Kapiriri, S.J.Bondy, Health practitioners' and health planners' information needs and seeking behavior for decision making in Uganda. *International Journal of Medical Informatics***75**(2006), 714-721.

[9] E.Bernard, M.Arnould, O.Saint-Lary, D.Duhot, G.Hebbrecht. Internet use for information seeking in clinical practice: a cross-sectional survey among French general practitioners. *International Journal of Medical Informatics***81**(2012),493-499.

[10] R.J.Cullen, In search of evidence: family practitioners' use of the Internet for clinical information. *Journal of the Medical Library Association*. **90**(2002), 370-379.

[11] D.R.Kitchin, K.E.Applegate. Learning *radiology: a survey investigating radiology resident use of textbooks, journals, and the internet. AcademicRadiology***14**(2007), 1113-1120.

[12] C.A.Estabruuks, M.Milner,*Measuring Knowledge Utilization in Health Care.International Journal of Policy Evaluation and Management* (2003).

[13] K.Schwartz, J.Northrup, N.Israel, K.Crowell, N.Lauder, A.V.Neale. Use of on-line evidence-based resources at the point of care. *Family Medicine***35**(2003), 251-256.

[14] F.Lupiáñez-Villanueva, M.Hardey, J.Torrent, P.Ficapal, The integration of information and communication technology into nursing. *International Journal of Medical Informatics***80**(2011), 133-140.

[15] Y.Kagolovsky, J.R.Moehr. Terminological problems in information retrieval. *Journal of Medical Systems***27**(2003), 399-408.

[16] K.Masters. Access to and use of the Internet by South African general practitioners. *International Journal of Medical Informatics* **77**(2008), 778-786.