Journal of Pharmaceutical Care & Health Systems
ISSN: 2376-0419

Noguchi, et al., J Pharma Care Health Sys 2015, 2:5
DOI: 10.4172/2376-0419.1000144

Research Article Open Access

Information Channels and Needs of Health Professionals of Clinical Trials in Japan

Satomi Noguchi[1]*, Daisuke Ogino[2] and Hajime Sato[1]

[1]*Department of Health Policy and Technology Assessment, National Institute of Public Health, Saitama, Japan*
[2]*The Faculty of Health and Welfare, Nayoro City University, Hokkaido, Japan*

Abstract

Background: Many studies have reported on the information need and the seeking behavior of health professionals. However, there have been few reports on clinical trial information usage.

Objectives: The purpose of our study was to understand the information-seeking behavior of health professionals and examine the desired provision of clinical trial information with a focus on Internet usage.

Methods: The questionnaire was distributed to health professionals between March and April 2013 at three National Center hospitals in Japan and member hospitals of the Center for Clinical Trials of the Japan Medical Association.

Results: Physicians mostly used the information provided by academic societies or medical journals, nurses mostly used information from colleagues and pharmacists, and CRCs mostly used information from the Internet. Although the proportion of the use of general medical information was higher than clinical trial information for each information source, the trend of information usage was similar between general medical information and clinical trial information among health professionals.

Conclusions: It is suggested that the method of conveying information about clinical trials could be different ways among health professionals for its effectiveness.

Keywords: Clinical trials; Information needs; Websites; Portal sites; Health professionals

Introduction

Until now, many studies have reported on the information need and the seeking behavior of health professionals [1-9]. Some of them have focused on information sources [2,5,7] and the reasons why health professionals have access to these information sources [1,7,9]. However, these have mainly been reported with respect to ordinary medical information usage, and there have been a few reports on clinical trial information usage [10,11].

Clinical trials or clinical research are an essential component of modern health care. When translating basic research into clinical practice, increasing number of clinical trials have been performed to obtain regulatory approval of new drugs and devices [12]. Until now, participation of patients has been the main focus in clinical trials or clinical research field. A number of studies have examined patients' understanding and attitudes [13-16]. On the other hand, when conducting clinical trials or research, health professionals also have an important role. They introduce the option of a clinical trial to patients, decide which patients to refer, and give opportunities to participate in clinical trials. Some studies reported the barriers for health professionals to participate in clinical trials or research: their attitude, lack of resources and time, and concern about patients' relationships [17,18]. For more rapid progress of clinical research, to provide obtainable information is effective for health professionals, and to examine information needs of health professionals is necessary.

With regard to information-seeking of clinical trials or clinical research, the Internet has become an important tool for health professionals [1]. As an example, National Library of Medicine at the National Institutes of Health operates ClinicalTrials.gov which is a Web-based resource that provides patients, their family members, health care professionals, researchers, and the public with easy access to clinical trial information [19]. In Japanese context, the National Institute of Public Health (NIPH) in Japan has a portal site that collects and discloses clinical trial or clinical research information from the Japan Primary Registry Network (University Hospital Medical Information Network Center, Japan Pharmaceutical Information Center and Japan Medical Association) [20]. This portal site began in 2008 and was recognized as the World Health Organization primary registry [21]. However, some problems have been apparent, and these include usability and disclosed items [22].

Against such a background of importance of portal, it should be examined the actual usage and needs including satisfaction about portal. Therefore, the purpose of our study was to understand the information-seeking behaviour of health professionals and what they desire on websites about clinical trials or clinical research. For this, we distributed a self-administered questionnaire to health professionals in order to capture information needs and examine the desired provision of clinical trial information.

Methods

The self-administered questionnaire survey was conducted between

***Corresponding author:** Satomi Noguchi, Department of Health Policy and Technology Assessment, National Institute of Public Health, 2-3-6 Minami, Wako, Saitama 351-0197, Japan, Tel: +81-48-458-6311; Fax: +81-48-469-3875; E-mail: s_noguchi@niph.go.jp

Received September 08, 2015; **Accepted** September 21, 2015; **Published** September 25, 2015

Citation: Noguchi S, Ogino D, Sato H (2015) Information Channels and Needs of Health Professionals of Clinical Trials in Japan. J Pharma Care Health Sys 2: 144. doi:10.4172/2376-0419.1000144

March and April 2013 for health professionals. We defined physicians, nurses, pharmacists, and clinical research coordinators (CRCs) as health professionals at this study. The questionnaire was constructed using the following items: demographic information (gender, age, type of profession, and number of beds), usage of general medical information (channels and usage of websites), usage of clinical trial information (channels and usage of websites and portal sites of clinical trials or research), and desired provision of clinical trial information (desired channels and websites). The questionnaire was printed with ID and password exclusively, and subjects could select the method of paper-based or web-based answering. If the subjects selected the web-based answering, he or she accessed to the website of online questionnaire and logged in with ID and password.

With regard to the distribution methods of questionnaire, the scale of hospitals was different from each other, and we thus adopted different method of distribution; by hand and by mail. The questionnaires were distributed by hand at three National Center hospitals in Japan (National Center for Global Health and Medicine, National Center of Neurology, and Psychiatry and National Cancer Center). Those facilities are large with many staffs and one of our research collaborators distributed the questionnaire directly to the hospital staffs. On the other hand, we distributed the questionnaire by mail to member hospitals of the Center for Clinical Trial of the Japan Medical Association because the scale of those hospitals was relatively small. This study protocol and questionnaire were approved by the institutional review board of the NIPH, the National Center for Global Health and Medicine, the National Center of Neurology and Psychiatry and the National Cancer Center.

Statistical analysis

The questionnaire was basically consisted of multiple choice or closed questions and answers were treated as categorical variables. We compared the information usage and needs of the clinical trials or research among the following health professionals: physicians, nurses, pharmacists, clinical research coordinators (CRCs), and other professionals and Chi-squared/ Fisher's exact tests were performed to compare each categories. Statistical analyses were conducted with Stata/SE 12.1 for Windows (StataCorp LP, College Station, TX). We considered p values less than 0.05 as statistically significant.

Results

Subjects' demographic variables

Of the 2841 distributed questionnaires, 1160 (40.8%) were returned and 1130 (39.8%) of those contained valid information about the type of profession and were eligible for analysis. Table 1 shows the subjects' demographic information. Of the respondents, 485 (42.9%) were males and 645 (57.1%) were females. For the health professions, 350 (31.0%) were physicians, 517 (45.7%) were nurses, 189 (16.8%) were pharmacists, and 74 (6.5%) were CRCs. The age of the respondents were distributed from the twenties to the eighties. More than 50% subjects were affiliated with the National Center for Global Health and Medicine, approximately 40% subjects were affiliated with member hospitals of the Center for Clinical Trials of the Japan Medical Association, and the other subjects were affiliated with the National Center of Neurology and Psychiatry and the National Cancer Center.

Channel and usage of general medical information and clinical trial information

Table 2 shows the results of the usage for general medical information and clinical trial information among health professionals. The proportion of usage for general medical information was higher than that for clinical trial information at each information source, and the statistical significance of this difference was observed for most professional groups. Similarly, as for all of the sources, there were group differences among the professionals. With a focus on the most used source, physicians selected academic societies and medical journals (general medical information, 75.1% and clinical trial information, 36.0% or 23.7%), nurses selected medical colleagues (general medical information, 79.5% and clinical trial information, 16.3%), pharmacists selected the Internet (general medical information, 93.2% and clinical trial information, 64.2%), and CRCs selected the Internet (general medical information, 85.1% and clinical trial information, 54.1%).

	Physicians (n=350) %	Nurses (n=517) %	Pharmacists (n=190) %	CRCs* (n=74) %
Gender				
Male	84.9	9.1	60.8	35.1
Female	15.1	90.9	39.2	64.9
Age				
20-29	6.6	40.4	3.7	4.1
30-39	15.2	37.5	27.4	31.0
40-49	22.1	17.2	26.8	36.5
50-59	33.7	4.5	31.6	21.6
60-69	16.6	0.4	10.5	6.8
70-79	5.2	0.0	0.0	0.0
≥ 80 years	0.6	0.0	0.0	0.0
Facility†				
NCGHM	21.7	91.7	9.0	23.0
NCNP	6.0	4.3	0.0	2.7
NCC	14.9	1.0	6.9	5.4
JMA	57.4	3.0	84.1	68.9
*Clinical Research Coordinators, technicians, data managers, biostatisticians, and clerks.				
†NCGM: National Center for Global Health and Medicine; NCNP: National Center of Neurology and Psychiatry;				
NCC: National Cancer Center; JMA: Japan Medical Association.				

Table 1: Demographic variables of study subjects.

With a focus on Internet usage, search engines were important channels for reaching websites that offered general medical information or clinical trial information. As for website access, websites of pharmaceutical companies were accessed relatively more for general medical information (physicians, 31.1%; nurses, 22.2%; pharmacists, 72.1%; and CRCs, 41.9%) and for clinical trial information (pharmacists, 37.9% and CRCs, 32.4%). In addition, physicians and pharmacists visited National Center websites relatively more compared with other websites for general medical information (physicians, 24.6% and pharmacists, 41.6%) and clinical trial information (physicians, 16.6% and pharmacists, 31.6%). As for the websites of medical facilities, there were no group differences among the professionals seeking general medical information on the websites of the facility that the professional was affiliated with (physicians, 11.1%; nurses, 16.6%; pharmacists, 13.7% and CRCs, 13.5%), and on websites of medical facilities that the professional was not affiliated with (physicians, 12.3%; nurses, 15.3%; pharmacists, 18.4% and CRCs, 23.0%). However, the websites of medical facilities were not used as much as channels of clinical trial information, but pharmacists and CRCs accessed websites of medical facilities that they were not affiliated with slightly more (pharmacists, 11.6% and CRCs, 14.9%).

	Physicians			Nurses			Pharmacists			CRCs†			Group difference	
	General‡ %	Clincial trial§ %	p[1]	General‡ %	Clincial trial§%	p[1]	General‡ %	Clincial trial§%	p[1]	General‡ %	Clincial trial§%	p[1]	General‡ p[2]	Clincial trial§ p[2]
Source														
Academic society	75.1	36.0	***	21.3	5.2	***	53.2	34.2	***	58.1	39.2	*	**0.000**	**0.000**
Medical journal	75.1	23.7	***	54.0	7.9	***	53.7	26.8	***	28.4	21.6		**0.000**	**0.000**
Medical colleagues	58.0	25.7	***	79.5	16.3	***	41.6	16.8	***	67.6	37.8	***	**0.000**	**0.000**
Medical representative	58.3	21.1	***	7.5	4.3	*	74.2	27.9	***	37.8	24.3		**0.000**	**0.000**
Internet	68.9	29.7	***	72.2	10.3	***	93.2	64.2	***	85.1	54.1	***	**0.000**	**0.000**
Internet access														
Search engine	59.4	24.9	***	68.5	9.1	***	75.3	50.0	***	77.0	46.0	***	0.000	0.000
Website of medical facility affiliated with	11.1	7.4	***	16.6	2.3	***	13.7	6.3	***	13.5	6.8	***	0.154	0.003
Website out of medical facility affiliated with	12.3	5.7	**	15.3	2.3	***	18.4	11.6	*	23.0	14.9		0.066	0.000
Website of National Center	24.6	16.6		11.6	3.3	*	41.6	31.6	**	14.9	16.2		0.000	0.000
Website of pharmaceutical company	31.1	8.6	*	22.2	5.4	***	72.1	37.9	***	41.9	32.4	***	0.000	0.000
Others	9.7	3.7	***	2.7	0.6	***	13.2	7.4	***	5.4	6.8	***	0.000	0.000
p[1]: p value for general medical information vs. clinical trial information within a group (* < 0.05, ** < 0.01, *** < 0.001).														
p[2]: p value of group difference for either general medical information or clinical trial information.														
†Clinical Research Coordinators, technicians, data managers, biostatisticians, and clerks.														
‡General medical information,§Clinical trial information														

Table 2: Information source and usage of general medical information and clinical trial information among health professionals.

	Physicians %	Nurses %	Pharmacists %	CRCs† %	p value‡
Have experience of access to portal sites	36.4	10.7	66.7	62.9	***
Access to portal site of					
Japanese government	9.7	5.1	41.1	37.8	***
National Cancer Institute (Japan)	15.1	4.6	23.2	23.0	***
Japan Medical Association	12.6	3.9	46.3	43.2	***
Japan Pharmaceutical Information Center	5.7	1.4	21.6	12.2	***
University Hospital Medical Information Center	20.3	2.7	29.0	25.7	***
National Institute of Public Health (Japan)	1.7	0.8	3.7	4.1	*
Abroad (outside Japan)	7.7	0.6	4.2	6.8	***
Purpose of access was accomplished§					
Yes	79.4	73.7	71.0	82.2	
No	20.6	25.9	29.1	17.8	
‖Reason not accomplished					
Cannot find desired information	69.2	31.3	50.0	50.0	
Cannot search desired information	26.9	56.3	55.6	75.0	*
Problems of site design	38.5	37.5	30.6	37.5	
Others	0.0	12.5	5.6	0.0	
†Clinical Research Coordinators, technicians, data managers, biostatisticians, and clerks.					
‡Difference among groups by Chi-square or Fisher's exact test. * <0.05, ** <0.01, *** <0.001					
§The sample is limited to those who answered yes to "have experience of access to portal sites of clinical trials."					
‖The sample is limited to those who answered no to "the purpose of access to the portal site was accomplished."					

Table 3: Access and satisfaction to portal site of clinical trials in Japan.

Access to portal sites of clinical trial information and satisfaction

Table 3 shows the results of access to and satisfaction with clinical trial portal sites. Pharmacists (66.7%) and CRCs (62.9%) had more experience accessing portal sites of clinical trials or research compared with physicians (36.4%) and nurses (10.7%). This was reflected in which portal site was accessed in that pharmacists and CRCs more frequently visited them compared with physicians and nurses (e.g., for Japanese government portal site: physicians, 9.7%; nurses, 5.1%; pharmacists, 41.1% and CRCs, 37.8%). The proportions of the differences among physicians and pharmacists (or CRCs) were small, and the usage of nurses for the portal site of the National Cancer Institute and University Hospital Medical Information Center was low (e.g., for the portal site of the National Cancer Institute: physicians, 15.1%; nurses, 4.6%; pharmacists, 23.2%; and CRCs, 23.0%). Overall, access to the portal site of the NIPH and abroad was low (e.g., for the portal site of the NIPH: physicians, 1.7%; nurses, 0.8%; pharmacists, 3.7%; and CRCs, 4.1%). Among the subjects who had experience accessing portal sites, 70%–80% were able to access the portal sites. However, non-accomplished or unsatisfied subjects selected the following answers: "cannot find the desired information (physicians, 69.2%)" and "cannot search desired information (nurses, 56.3%; pharmacists, 55.6%; and CRCs, 75.0%)."

Desired methods and providers of clinical trial information for medical professionals

Table 4 shows the results of how methods and providers were

	Physician%	Nurse %	Pharmacist %	CRC and others† %	p value
Desired providing method about clinical trial information for health professionals					
Website	72.2	74.2	79.1	79.7	
Brochure	57.7	64.5	63.1	62.2	
Oral	28.1	26.8	23.0	29.7	
Not neccesary	2.9	3.5	1.6	0.0	
Desired provider about clinical trial information					
Each medical facility	40.8	68.3	36.6	58.6	***
Healthcare corporation	16.1	24.7	12.4	12.9	***
National research center	29.8	24.3	17.2	20.0	**
Pharmaceutical company	30.7	28.8	34.4	38.6	
Academic society	35.1	13.8	22.6	21.4	***
National or local government	14.0	15.4	10.2	14.3	
PMDA‡	39.6	18.1	63.4	42.9	***
Desired method of relation among websites about clinical trials					
Link to specific organization	72.4	81.8	72.5	78.6	
Mirror site of specific organization's website	17.2	9.6	14.5	7.1	
Utilize information of specific organization	3.5	4.6	6.5	4.8	
Each facility make websites	5.6	3.6	5.1	7.1	
Desired information about clinical trials at websites for health professionals					
Search by technical terms	68.9	71.2	69.8	70.6	
Search by multi-languages	56.1	62.2	54.4	59.7	***
Search for region conducting clinical trials	64.1	63.6	63.0	51.9	
Search for hospital conducting clinical trials	62.1	66.6	67.5	59.3	*
Search for disease information	70.3	69.7	66.9	61.8	
Search for eligibility criteria of patients	69.7	64.0	61.0	61.5	*
Ethical consideration	77.9	74.2	77.1	65.2	
Expense	65.2	64.7	61.5	55.3	*
Risk and side effects	78.1	73.6	78.4	64.6	*
Progress report	63.2	62.5	59.8	50.0	
Study results	79.0	71.9	72.3	64.8	*
Follow after participation	73.6	69.9	59.0	65.5	**
Pairwise case deletion was executed for analysis. Percentages are calculated for no missing cases					
†Clinical Research Coordinator, technician, data manager, biostatistician, and clerk					
‡PMDA: Pharmaceuticals and Medical Devices Agency, Japan					
* p<0.05, ** p<0.01, *** p<0.001					

Table 4: Desired providing method, provider, and detailed information of clinical trials.

chosen for clinical trial information. For health professionals, websites were mostly selected for their desired method for providing clinical trial information (physicians, 72.2%; nurses, 74.2%; pharmacists, 79.1%; and CRCs, 79.7%), but statistical differences were not observed among the health professionals. As for the desired providers of websites, physicians (40.8%), nurses (68.3%), and CRCs (58.6%) mostly selected each medical facilities. However, pharmacists (63.4%) selected Pharmaceuticals and Medical Devices Agencies in Japan, similar to 39.6% physicians and 42.9% CRCs. As for the desired relationship method among the websites, links to specific organizations were mostly selected (physicians, 72.4%; nurses, 81.8%; pharmacists, 72.5%; and CRCs, 78.6%), and statistical differences were not observed among the health professionals. With regard to what type of clinical trial information were desired to be searched or offered on websites, the information "search by technical terms terminology search," "ethical consideration," "risk and side effects," and "study results" were majorly needed, while the needs of "search by multiple languages search" and "progress report" were relatively low.

Discussion

Differences in information usage among health professionals

The results of our study showed that there was a difference in information usage and seeking behaviour among health professionals with respect to general medical information and clinical trial information. Important channelling of information depends on each professional group. Physicians mostly use the information provided by academic societies or medical journals, nurses mostly use information from colleagues and pharmacists, and CRCs mostly use information from the Internet. Although the proportion of the use of general medical information was higher than clinical trial information for each information source, the trend of information usage was similar between general medical information and clinical trial information among health professionals.

For physicians, it has been thought that information from academic societies or medical journals are important for discovering research findings for clinical decision making [23,24]. This has characterized clinical practice as physicians get the latest information from scholarly media for decision making. In contrast, nurses mostly use information from colleagues because they serve a role as a medical team member, and these results agreed with previous findings [8,25]. However, pharmacists and CRCs mostly selected the Internet as their information source, and their experience accessing specific websites was relatively better compared with physicians and nurses. From these findings, it is suggested that the method of conveying information could be

different ways among health professionals for their convenience and effectiveness.

Differences in general medical information usage and clinical trial information usage

General medical information includes information that varies from general drug information to treatment information for those involved in daily clinical practice. On the other hand, clinical trial information is important for providing new evidence for the approval of drugs and devices. Previous studies have independently examined general medical information and clinical trial information, and reports on the information usage of health professionals have mainly focused on general medical information [1-9,26]. Our results showed that although the proportions of use were different, the channels for each health professional for clinical trial information had the same trend as that of general medical information. This suggested that the information in clinical trials or clinical research is not extraneous with general medical information. Rather, that the information for clinical trials or clinical research can be seen as an extension of general medical information with respect to the use of health professionals. Based on these findings, tie-in between general medical information and clinical trial information could improve users' convenience when offered.

Internet access and what is desired in websites on clinical trials or research

With a focus on Internet access, it was confirmed that search engines were important methods for seeking general medical information for health professionals. For clinical trial information seeking, which had proportions of usage that were lower than that for general medical information, approximately half of pharmacists and CRCs used search engines. We asked the "search engine" such as Google and Yahoo! etc. (see Appendix questionnaire) and "search engine" contain the MEDLINE and other database. However, some respondents may not define the search engine and we should set the question about "database" or "MEDLINE" for health professionals. For this, it is necessary to examine more valid and appropriated usage of general medical information at future study.

As for website access, health professionals frequented websites of pharmaceutical companies. Pharmaceutical companies have a role in offering information about their products, and some of them offer websites for the exclusive access of only health professionals. Health professionals may access company websites to get something useful information such as their products information. On the other hand, health professionals did not visit the websites of medical facilities much. Nevertheless, "each medical facility" was mainly selected as the desired provider of websites. This showed that there was a gap between actual information usage and desired information providers for clinical trial websites and that there could be some inconvenience for health professionals. In order to fill this gap, the option that each medical facility has a website about clinical trials or research may not be realistic, rather, a relationship among websites is a possible alternative. Previous studies have suggested that the effective use of websites requires discovery of the sites themselves and users need reliable and centralized information [3,4]. Therefore, it might be necessary to strengthen the link functions from specific organizations that offer clinical trial information to each medical facility.

Portal sites are defined as an entrance to many websites, and they have a number of functions, such as search engines and links among websites [27-29]. In the context of offering clinical trial information through portal sites in Japan, the NIPH collects and discloses clinical trial or research information from the Japan Primary Registry Network, and our survey was conducted for the purpose of improving the NIPH portal site and examining usability [19,22]. While Internet searching is an important starting point for information seeking by health professionals, it could also be an obstacle for them to gain appropriate information [1,4]. Adversely, if users could search for clinical trial information comfortably, their satisfaction may increase. Others, to add the contents desired by health professionals could improve level of satisfaction with the information. For instance, the search of "study results" was highly needed at websites, but that results were not always released or searched. At present, the detailed information are not offered at websites in Japanese context. If such information will be implemented at websites and realized to access comfortably, user convenience may be improved.

There were several limitations to our study. First, our survey was conducted at different types of facilities in Japan. Approximately 60% of the respondents were affiliated with the National Center, and the rest were affiliated with various scales (number of beds) of hospitals. Second, we used two methods of distribution (by hand or by mail) for the questionnaire. Though the Web-based reply may be attractive for busy health professionals [30], this method could have influenced the subjects' responses and resulted in biases in the results. Third, the wording of our questionnaire remained problems. For instance, we did not provide the detailed description about what is "general medical information" at the questionnaire. For these problems, more survey with accurate of wording should be conducted in the future study.

Conclusion

In summary, we uncovered a difference in the information channels and the usage of general medical information and clinical trial information among health professionals. However, the trend of use was similar for general medical information and clinical trial information among health professionals. From these findings, it is suggested that the method of conveying information about clinical trials could be different ways among health professionals for its effectiveness. With a focus on Internet usage, it was confirmed that search engines were mostly used, and websites were the desired information method for obtaining clinical trial information for health professionals.

Acknowledgements

We gratefully acknowledge the collaborators of our survey: Toshiyuki Ito, Miki Kondo, and Toshikatsu Kawasaki (National Center for Global Health and Medicine, Japan), En Kimura and Shinichi Takeda (National Center of Neurology and Psychiatry, Japan), Kiyotaka Watanabe (National Cancer Center, Japan) and Manabu Yamamoto (Center for Clinical Trials, Japan Medical Association, Japan). This study was supported by a Health Labour Science Research Grant (Practical research on medical technology, clinical research promoting research project) 2012–2013, "A study on diffusion and enlightenment of clinical trials and research for nation and patients (H24-Clinical research-general-002)" from the Ministry of Health, Labour and Welfare, Japan.

References

1. Bennett NL, Casebeer LL, Kristofco RE, Strasser SM (2004) Physicians' Internet information-seeking behaviors. J Contin Educ Health Prof 24: 31-38.
2. Davies K, Harrison J (2007) The information-seeking behaviour of doctors: A review of the evidence. Health Info Libr J 24: 78-94.
3. Revere D, Turner AM, Madhavan A, Rambo N, Bugni PF, et al. (2007) Understanding the information needs of public health practitioners: A literature review to inform design of an interactive digital knowledge management system. J Biomed Inform 40: 410-421.
4. Greenberg G1 (2002) Internet resources for occupational and environmental health professionals. Toxicology 178: 263.

5. Newnham GM, Burns WI, Snyder RD, Dowling AJ, Ranieri NF, et al. (2005) Attitudes of oncology health professionals to information from the Internet and other media. Med J Aust 183: 197-200.
6. Turner AM, Petrochilos D, Nelson DE, Allen E, Liddy ED (2009) Access and use of the Internet for health information seeking: A survey of local public health professionals in the northwest. J Public Health Manag Pract 15: 67-69.
7. Younger P (2010) Internet-based information-seeking behaviour amongst doctors and nurses: A short review of the literature. Health Info Libr J 27: 2-10.
8. O'leary DF, Mhaolrúnaigh SN (2012) Information-seeking behaviour of nurses: Where is information sought and what processes are followed? J Adv Nurs 68: 379-390.
9. Cheng GY, Lam LM (1996) Information-seeking behavior of health professionals in Hong Kong: A survey of thirty-seven hospitals. Bull Med Libr Assoc 84: 32-40.
10. Ogino D, Takahashi K, Sato H (2014) Characteristics of clinical trial websites: Information distribution between ClinicalTrials.gov and 13 primary registries in the WHO registry network. Trials 15:428.
11. Mori K, Watanabe M, Horiuchi N, Tamura A, Kutsumi H (2014) The role of the Pharmaceuticals and Medical Devices Agency and healthcare professionals in post-marketing safety. Clin J Gastroenterol 7: 103-107.
12. Johan PE Karlberg, Marjorie A Speers (2010) Reviewing Clinical Trials: A Guide for the Ethics committee. USA.
13. Joffe S, Cook EF, Cleary PD, Clark JW, Weeks JC (2001) Quality of informed consent: A new measure of understanding among research subjects. J Natl Cancer Inst 93: 139-147.
14. Ellis PM, Butow PN, Tattersall MH, Dunn SM, Houssami N (2001) Randomized clinical trials in oncology: Understanding and attitudes predict willingness to participate. J Clin Oncol 19: 3554-3561.
15. Comis RL, Miller JD, Aldigé CR, Krebs L, Stoval E (2003) Public attitudes toward participation in cancer clinical trials. J Clin Oncol 21: 830-835.
16. Townsley CA, Selby R, Siu LL (2005) Systematic review of barriers to the recruitment of older patients with cancer onto clinical trials. J Clin Oncol 23: 3112-3124.
17. Ford JG, Howerton MW, Lai GY, Gary TL, Bolen S, et al. (2008) Barriers to recruiting underrepresented populations to cancer clinical trials: A systematic review. Cancer 112: 228-242.
18. Ross S, Grant A, Counsell C, Gillespie W, Russell I, et al. (1999) Barriers to participation in randomised controlled trials: A systematic review. J Clin Epidemiol 52: 1143-1156.
19. www.clinicaltrials.gov/
20. www.rctportal.niph.go.jp/en/index
21. www.who.int/ictrp/network/primary/en/
22. www.mhlw.go.jp/stf/shingi/2r9852000001zf1q.html
23. Green ML, Ciampi MA, Ellis PJ (2000) Residents' medical information needs in clinic: Are they being met? Am J Med 109: 218-223.
24. McAlister FA, Graham I, Karr GW, Laupacis A (1999) Evidence-based medicine and the practicing clinician. J Gen Intern Med 14: 236-242.
25. Turner AM, Stavri Z, Revere D, Altamore R (2008) From the ground up: Information needs of nurses in a rural public health department in Oregon. J Med Libr Assoc 96: 335-342.
26. Hollander SM, Lanier D (1995) Orientation to the Internet for primary care health professionals. Bull Med Libr Assoc 83: 96-98.
27. www.clinicaltrials.gov/
28. www.accrualnet.cancer.gov/
29. www.nhs.uk/Pages/HomePage.aspx
30. Braithwaite D, Emery J, De Lusignan S, Sutton S (2003) Using the Internet to conduct surveys of health professionals: A valid alternative? Fam Pract 20: 545-551.