Recruitment of Oncology Nurses for Internet Research: Issues and Future Directions

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Purpose/Objectives: To provide future directions for Internet research based on issues raised during the recruitment process of an Internet survey of oncology nurses.

Data Sources: Throughout the research process, the research staff recorded issues as they arose and wrote memos regarding recruitment issues and possible reasons for the issues. Weekly group discussions were conducted, and written records of the discussions were kept. The written memos and records were reviewed, and the content was analyzed.

Data Synthesis: The recruitment issues included flexibility required, mutual trust, changing Internet dynamics, and potential selection bias.

Conclusions: As the issues indicated, recruiting nurses for the study only through the Internet did not work well.

Implications for Nursing: For future Internet research, the authors suggest using multiple Internet and real settings for recruitment, a variety of strategies, the quota sampling method, and creative motivation strategies.

Key Points . . .

➤ Internet researchers' strategies to recruit oncology nurses need to be flexible, and mutual trust is an important factor in the recruitment process.

➤ Internet researchers should consider the changing dynamics of the Internet.

➤ Potential selection bias is a critical issue that Internet researchers need to consider throughout the research process.

R ecruiting nurses in the current healthcare environment is more challenging than ever (Kalisch, 2003; Smart & Kotzer, 2003). With nurse-recruitment problems for healthcare systems in general, difficulties recruiting nurses for research projects also have been reported (Barriball & While, 1999). Nurses have been instrumental in recruiting participants for research projects (Donovan et al., 2003; Isaacman & Reynolds, 1996), but they usually are unwilling to participate in research projects. Many factors influencing their participation in research have been postulated (Barriball & While).

Since the 1990s, with advances in Internet technologies and an increasing number of Internet users, the Internet has become an important research setting and data-collection method (Im & Chee, 2003b; Wilmoth, 1995). Wilmoth posited that the Internet can be a viable alternative for subject recruitment through the use of online bulletin boards and support groups for many health-related issues. However, much information regarding the use of computer and Internet technologies in research is anecdotal, and little research has been conducted related to nurses' use of computer networks (Ehrenberger & Murray, 1998). Therefore, very little is known about the effectiveness of recruitment of nurses for research through the Internet.

The purpose of this article is to provide future directions for Internet research based on issues raised in the recruitment process of an Internet survey of oncology nurses. In this article, for the convenience of discussion, the *Internet* means the World Wide Web only, and *oncology nurses* mean RNs working with patients with cancer.

The Study

The purpose of the Internet intervention study that highlighted the recruitment issues to be discussed was to refine and evaluate a standardized decision support computer program (DSCP) by Im and Chee (2003a) that could be used by nurses as an assessment support tool for dealing effectively with gender and ethnic differences in cancer pain experiences. Fuzzy logic (Zadeh, 1965, 1990) was used as a theoretical basis to

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process vague descriptions of cancer pain and validate the DSCP. Fuzzy logic is synonymous with the theory of fuzzy sets, which relates to classes of objects with unsharp boundaries in which membership is a matter of degree (Nguyen & Walker, 1997).

For refinement of the DSCP, sociodemographic characteristics, self-reported ethnic identity, self-identified disease status, and cancer pain of the patients with whom the oncology nurses were working were measured. To evaluate the DSCP, nature (usage profile), accuracy, and acceptance of the DSCP were measured. One hundred twenty-two oncology nurses were recruited through the Internet and e-mail using a convenience sampling method. To be included, participants had to be self-identified RNs with active status who were working in clinical or home-care settings related to cancer pain assessment and management with patients with cancer. Participants also had to be able to read and write English. Sociodemographic characteristics of the participants are summarized in Table 1.

A project Web site containing an informed consent sheet, the DSCP, and instruments for registration, refinement, and evaluation of the DSCP was developed and published on an independent server dedicated to the study. When potential participants agreed to participate in the study by clicking "I agree to participate" on the informed consent sheet loaded on the project Web site, they were asked to register by answering the instruments for registration. Then, they were asked to answer the instruments for refinement of the DSCP. Next, they were asked to generate cancer pain-management strategies by using the DSCP loaded on the project Web site. After using the DSCP, the participants were asked to answer the instruments for evaluation of the DSCP. The data entered for refinement were uploaded automatically to the DSCP, and the DSCP was upgraded automatically through the self-adaptation module. The data entered for registration and evaluation of the DSCP were analyzed using descriptive statistics, including frequency, percentage, mean, standard deviation, and range.

The DSCP was upgraded successfully and refined with the data on 126 cases from 122 nurses. The participants used the DSCP an average of 1.02 times per person. Eighty-eight percent of the participants evaluated the DSCP as appropriate and accurate. The mean scores of overall satisfaction in four major areas of the computer program ranged from 7.46–9.69 (on 1–10 scale: 1 = not at all to 10 = very much). The mean scores in the area of overall satisfaction with the computer program were 7.46–8.67; those relating to screen display and alignment were 8.77–9.26; those relating to terminology and system information were 8.59–9.31; those relating to user learning process were 8.52–9.51; and those relating to system capabilities were 8.75–9.52. In summary, the study findings supported the nature, accuracy, and acceptance of the DSCP.

The Method

Throughout the research process, research staff members recorded issues as they arose and wrote memos regarding recruitment issues and possible reasons for the issues. Weekly group discussions were conducted, and written records of the discussions were kept. The literature related to the issues also was reviewed carefully throughout the research process, and new strategies from the literature review were incorporated into the recruitment process. The written memos and records were reviewed and analyzed using the content analysis method

Table 1. Sociodemographic Characteristics of the Participants

Variable	n	%
Age (years)		
X̄ = 40.26	–	–
SD = 10.36	–	–
Education		
Partial college	6	5
College degree	67	55
Graduate degree	49	40
Ethnic identity		
Caucasian	91	75
Asian	20	16
Hispanic	5	4
African	4	3
Mixed	2	2
Family income status		
Totally insufficient	3	3
Somewhat insufficient	17	14
Sufficient	66	54
More than sufficient	36	30
Gender		
Female	114	93
Male	8	7
Born in the United States		
Yes	89	73
No	33	27
Religion		
Protestant	60	49
Catholic	35	29
Buddhist	8	7
Muslim	1	1
No religion	13	12
Other	5	4
Marital status		
Married	72	59
Divorced	18	15
Partnered	10	8
Single	20	16
Widowed	2	2

N = 122

Note. Because of rounding, percentages may not total 100.

suggested by Weber (1990). The unit of analysis was individual words, and the memos and written records were analyzed using line-by-line coding. Then the codes were categorized according to the contents, and idea categories were developed from the categorization process. The recruitment issues included (a) flexibility required, (b) mutual trust, (c) changing Internet dynamics, and (d) potential selection bias.

The Issues

Flexibility Required

To recruit the planned number of RNs as research participants, the researchers needed to change their recruitment strategies several times. As in Barriball and While's (1999) study, flexibility during data collection was a key to the success of recruitment of nurses for the study. The researchers originally planned to recruit RNs by announcing the study through nursing professional organizations on the Internet. To recruit the research participants, each Web site of nursing

professional organizations on the Internet was visited, and the eligibility of each organization was determined based on the content on the Internet. When an organization included only RNs as members, the organization was regarded as eligible. The study was announced for two months in each of the organizations. Through the process, only two participants were recruited.

Because of the low response rate, the announcement sources were extended from Web sites of nursing professional organizations to Internet communities and groups for RNs. Internet communities and groups were searched using public search engines, including MSN.com and AOL.com. A group was selected when it had more than 10 RNs in the United States. The reason for requiring at least 10 members in a group was to increase sociodemographic diversity of the participants; groups lesser than 10 members may have consisted only of close friends or family members.

For the Internet groups and communities on MSN.com, the researchers used nursing and nurse as key words. A total of 484 Internet groups and communities were retrieved when using the key word nursing. With the key word nurse, 403 Internet groups and communities were retrieved. Because 25 duplicates occurred in the two search outcomes, 862 groups were retrieved as the Internet groups and communities for nurses on MSN.com. However, among the 862 groups, 826 were excluded later because they (a) had fewer than 10 members, (b) were outside the United States, (c) did not use English, (d) were recruiters of hospitals, or (e) were groups for nurses who might not take care of adult patients with cancer (e.g., pediatric nurses, psychiatric nurses, maternal nurses). The eligible Internet communities and groups comprised only 4% of 862 groups. Furthermore, when the eligible Internet communities and groups were contacted for announcement of the study, none responded. As a result of the 0% response rate, the recruitment strategies were changed again to individual e-mailing. Each of the Internet groups and communities that agreed to post the announcement was revisited, and individual e-mail addresses of the members of the Internet groups and communities that were open for the public were obtained through the Web sites. Then, the announcement e-mail was sent to the individual e-mail addresses obtained through the Internet search. Through the process, a total of 1,786 e-mails were sent to potential participants. An overlap may have occurred because some individuals were members of multiple Internet communities and groups at the same time. When considering the potential overlap, the actual number of contacted people was a little bit smaller.

For the Internet groups and communities on AOL.com, the same strategies were used. A total of 190 Internet groups and communities were retrieved. Among them, only 30 were found to be eligible. The eligible Internet groups and communities were contacted by e-mail for announcement of the study, but none responded. A total of 806 individual e-mails were sent to addresses that were identified through AOL.com.

An additional modification in the sampling method was made because of the low response rate, and the snowball sampling method was adopted. Because all research staff members were RNs, colleagues of the research staff members were contacted first to recruit RNs working with patients with cancer. Flyers were distributed via e-mail and in person through the institutions and hospitals where friends and col-leagues of the research staff members worked. Even with the snowball sampling method, the researchers could not recruit the targeted number (100) of participants.

Again, a modification was made in the recruitment strategies. Using Yahoo.com, the Web sites or home pages of 1,721 universities in the United States were retrieved. Then, each of the Web sites was visited and checked to make sure each was located in the United States; to determine whether it had a school of nursing or a program, institution, or organization related to nursing; and to determine whether it provided directories for the public. When a university met the criteria, the directories (e.g., find people, people find, people search) were searched to find graduate nurses affiliated with the institutions. Then e-mail addresses of nurses were obtained, and the study announcement was sent by e-mail to each address. Through the process, 44 of 1,721 university directories could be accessed; a total of 7,590 individual e-mails were sent. In total, 55 oncology nurses were recruited (response rate = 0.72%) in four months. The response rate was higher than that of previous recruitment strategies. The reason might be that most e-mail recipients were graduate students with an RN license who understood the importance of nursing research.

At the same time, nursing managers in diverse nursing organizations and institutions were contacted. Using MSN.com, the researchers contacted 262 student organizations, 402 local nursing managers in nursing organizations and institutions, and 629 health departments and nursing homes across the nation. Only graduate advisors at nursing schools responded to the contact e-mails: 16 of 409 university graduate advisors (response rate = 3.9%) answered the request positively and forwarded the research announcement to their graduate students (potential participants) or posted it on their graduate bulletin boards.

Mutual Trust

Mutual trust between the people involved in Internet research was one of the difficult aspects of recruitment because Internet interactions are not face to face. In other words, all of the interactions could only be assumed to be authentic. Yet, in all self-report studies, researchers must assume that participants are eligible candidates for their studies based only on self-reports. Thus, the concern might not be applicable only to Internet research. However, the researchers had to be extra vigilant regarding the authenticity of the Internet interactions, and their assumptions on authenticity were an essential component of the research process. One possible reason why nursing organizations on the Internet did not respond is the researchers' lack of former relationships with the organizations. Indeed, when approached later through friends and colleagues of the research staff members, some local professional nursing organizations were willing to post the announcement through their e-mail lists and electronic newsletters.

One of the major barriers to recruitment of RNs through Internet communities and groups was the inability to check whether the members were real RNs unless they were willing to disclose themselves. Although the Internet groups and communities claimed that they served RNs and supported nurses through Internet discussions and supports, some people who were not RNs but interested in the groups and communities could join without any problems.

Mutual trust between research participants and research staff members was an important issue to consider. Each research participant was paid $10 per usage of the DSCP for evaluation, and each of them could use the DSCP as many as three times. In other words, the payment amount ranged from $10–$30 per participant. When participants completed the questionnaires, they were contacted and asked to provide their names and mailing addresses by e-mail so that the money could be mailed. Only 45% of the participants responded to the e-mail from the research staff members regarding payment for participation. Some who did not respond to the contact e-mails e-mailed the research staff later regarding the payment, claiming that they thought the contact e-mails were junk mail.

Changing Internet Dynamics

Because of the very low response rate of Webmasters to the study announcement e-mails, the research staff members revisited the Internet groups and communities to observe the dynamics of each group. They found that many of the Internet groups and communities were inactive, or Internet users tended to chat in chat rooms. Individual members of AOL.com or MSN.com preferred to communicate their thoughts or experiences in the chat rooms because of immediate responses or feedback from other members currently logged into the chat rooms. The message boards of the Internet groups and communities were found to be used mainly for posting advertisements or announcement messages from the site owners or Webmasters. This resulted in delays or no responses from the Internet groups and communities.

The researchers also discovered that individuals tended to join several related groups and communities at the same time. As a result, individual e-mails that the researchers sent for the study announcement were duplicated, and individuals who were members of multiple Internet groups and communities received several e-mails with the same content, which could be misinterpreted as spam.

Spam, another recent change in Internet dynamics in the United States, has attracted the concern of everyone involved with the Internet. The U.S. government enacted the CAN-Spam Act of 2003, which requires e-mailers to be truthful in subject lines (Stone & Weil, 2003). The study announcement e-mails were not spam as defined by the CAN-Spam Act of 2003, but the Internet groups and communities had their own policies to define spam. In addition, many states already had enacted legislation related to spam, with provisions related to definitions of commercial e-mail and prohibitions relating to certain e-mail messages, unsolicited mail messages, deceptive trade practices, and civil or criminal liability (Sorkin, 2005). This resulted in many of the study announcement e-mails being identified as spam mail and being filtered before reaching the study population. Filtering of the study announcement e-mails was problematic. Filtering of spam has increased in sophistication to enable Internet mail providers to remove unwanted spam. Bayesian filters, fuzzy logic, and statistical spam filters use rules to recognize specific spam features, which include recognition of certain tokens or words frequently discarded by users, and filter out all e-mails with those tokens (Graham, 2002). In addition, many Internet service providers already use techniques that involve blacklisting known spammers, checking the identities of e-mailers, content filtering, and traffic watching (Stone & Weil).

Academic institutions and organizations that approved the study's announcement were found to have filters for unsolicited commercial e-mails, and the research staff found challenges in differentiating their research from unsolicited e-mails to encourage potential participants to open the e-mail. To redefine the e-mail as nursing research, the study announcement and subject line of the e-mail were rewritten several times to assure potential participants that the e-mails were not spam or commercially related.

Spam definitions, policies, and enforcement are inconsistent in academic institutions, with some defining spam as bulk mailings, others as unsolicited commercial e-mails, and still others (including the institution with which the researchers were affiliated) as any unsolicited e-mail. Although bulk e-mail is legal and protected by the First Amendment, spam is not (Stone & Weil, 2003).

Potential Selection Bias

Potential selection bias, caused by the low response rate and selected characteristics of the participants, was a critical issue to consider throughout the research process. Previous studies have indicated that the advantages of using the Internet to collect behavioral data include rapid access to numerous potential respondents and previously hidden populations, respondent openness and full participation, and reduced research costs (Rhodes, Bowie, & Hergenrather, 2003). With the advantages, a moderate to high response rate (45%–96%) in recruitment has been reported in most Internet studies (Kypri, Stephenson, & Langley, 2004; Leece et al., 2004; Mangunkusumo et al., 2005; McGee & Kypri, 2004). However, some Internet studies have reported a low response rate (0.3%–19%) (Cho & LaRose, 1999; Im & Chee, 2004a, 2004b; Jones & Pitt, 1999). Because the study reported in this article was a nursing study funded by a nursing organization and the study announcement indicated the funding source as the ONS Foundation, a moderate response rate (about 50%) was expected. The rationale for the expectation was the suggestion by previous studies: Conveying the importance and usefulness of a study is the factor that most influences nurses' decision to participate (Albers & Sedler, 2004). Because the researchers emphasized the importance and usefulness of the study as a nursing study among nurses, they expected that nurses would be willing to participate. However, nurses' responses to the study announcement were much lower than that reported among other study populations. Several potential reasons were postulated, including that nurses' busy schedules might burn them out and make them simply too exhausted to participate in any study.

The current study also had a very low response rate from nursing organizations on the Internet and Internet communities and groups to the e-mail asking for their cooperation, although the researchers were willing to pay to have the study announcement posted. Among the 257 nursing professional organizations eligible for the study, only 12 agreed to announce the study, and only 6 actually posted the announcement. Among the eligible Internet communities and groups for RNs, none responded to the contact e-mail. Studies have indicated that, to recruit research participants as an outsider of the communities where potential participants belong, researchers need to establish professional relationships with key informants or gate keepers to succeed in accessing and recruiting individuals into research projects (Fowler, 2002). The research staff's lack of previous relationships with most

of the nursing organizations on the Internet and the Internet communities and groups for nurses might be a reason for their failure to respond.

Studies have reported that Internet populations tend to be a select group of people (ComputersScope Ltd. and others, 2002; Kollock & Smith, 1999). Kendall (2000) reported that white males dominate online interactions. In the Internet study by Han and Belcher (2001), most research participants were Caucasian, were well-educated, and reported annual incomes of more than $50,000. Yet recent studies have indicated changes in Internet populations (ComputersScope Ltd. and others; HispanicBusiness.com, 2002). Although Caucasian people still are regarded as a dominant group on the Internet, usage among Asian Americans is greater than that of any other ethnic groups. Half of U.S. Hispanics and 33% of African Americans are Internet surfers. Also, women account for 52% of home Internet users.

In the study presented in this article, most participants were highly educated RNs with graduate degrees and in high administrative positions, rather than staff nurses working at the bedside: 40% had graduate degrees, the annual family income of 36% was $70,001–$100,000, and 83% reported that their incomes were sufficient or more than sufficient. Because of the selection of highly educated participants with high incomes, the study may have limited generalizability and selection bias.

Implications and Conclusions

As discussed earlier, recruiting RNs for the study only through the Internet did not work very well. Flexibile recruitment strategies were required throughout the recruitment process, and mutual trust was an important factor in the process. The research staff needed to consider the changing dynamics on the Internet. The study announcements sometimes were reported as spam; differentiating the study announcement from spam was very difficult because of various definitions of spam among institutions or organizations. Potential selection bias was a critical issue to consider throughout the research process. A very low response rate of RNs, nursing organizations, and Internet communities and groups occurred. The study participants were a selected group of RNs. Based on the discussion of these issues, this article concludes with the following implications for future Internet research.

To recruit research participants through the Internet, the authors suggest that researchers approach potential participants through the Internet and in physical settings. Because the Internet interactions were not face-to-face and because the research staff did not have former relationships with the nursing organizations on the Internet and the Internet communities and groups, they had difficulties announcing the study through the Internet only. Thus, to approach a specific population on the Internet, as in traditional research projects, the authors suggest that future researchers establish relationships with the Internet communities and groups that they will approach for their studies. Conversely, researchers could develop informational Web sites related to their research topics before actual data collection starts. Internet users who visit a Web site might be more willing to participate in a study.

Second, the authors suggest that researchers use a variety of recruitment strategies to find participants. For recruitment

of under-represented populations, researchers have suggested multiple recruitment strategies (Coleman et al., 1997; Gavaler, Bonham-Leyba, Castro, & Harman, 1999; Gilliss et al., 2001; Gorelick et al., 1996). At the stage of proposal development, the authors strongly suggest that researchers plan multiple strategies to recruit participants so that if one recruitment method does not work, the researchers can proceed to the next recruitment strategy. In that way, researchers will not be frustrated with the low response rate of the potential participants. Examples of multiple strategies that researchers could use for Internet research include (a) direct strategies, such as contacting individuals through e-mail addresses obtained through the member directories of organizations on the Internet, communities, groups, and people-search functions of Internet search engines; and (b) indirect strategies, such as announcing a study through multiple e-mail lists and Web sites or home pages of organizations, communities, and groups on the Internet.

Third, potential selection bias from Internet recruitment is possible. Previous Internet studies have warned about potential selection bias and limitations in generalizability of Internet study findings because of the sociodemographic characteristics of Internet populations (Im & Chee, 2004a, 2004b). For future studies, the authors suggest that researchers consider using a quota sampling method to recruit a similar number of research participants from diverse socioeconomic and ethnic groups. Quota sampling uses a convenience sampling technique with an added strategy that ensures the inclusion of subject types that are likely to be under-represented in the convenience sample, such as women, minority groups, and the aged, poor, rich, and undereducated (Burns & Grove, 1997).

Finally, to increase the response rate of potential participants, the authors suggest that researchers use creative motivational strategies to attract potential participants, as in traditional research projects. Seaton, Cornell, Wilhelmsen, and Vieten (2004) reported that the most effective recruitment strategies were direct mail, press releases, the Internet, and treatment center collaborations. Feil, Noell, Lichtenstein, Boles, and McKay (2003) indicated that, among a variety of traditional and Internet-based recruitment strategies, the most successful was the use of Internet user groups and search engines. Despite their recent findings, very little is known about the effectiveness of any specific recruitment strategy in Internet research. Thus, at the beginning stage of Internet research, researchers need to be creative in the use of recruitment and motivational strategies. They could adopt audio-visual multimedia presentations of the announcement of the study or the informational resources in which potential participants might be interested. They also could use e-mail cards to establish trust with potential participants; cards usually are used to retain research participants in traditional research. Perhaps they can pay research participation with electronic gift certificates or electronic money. Electronic money is an electronic form of money that can be exchanged through the use of "smart cards" on the Internet. For more detailed information about electronic money, visit www.ex.ac.uk/~RDavies/arian/emoneyfaq.html.

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References

Albers, L.L., & Sedler, K.D. (2004). Clinician perspectives on participation in research. *Journal of Midwifery and Women's Health, 49,* 47–50.

Barriball, K.L., & While, A.E. (1999). Non-response in survey research: A methodological discussion and development of an explanatory model. *Journal of Advanced Nursing, 30,* 677–686.

Burns, N., & Grove, S.K. (1997). *Practice of nursing research: Conduct, critique, and utilization* (3rd ed.). Philadelphia: Saunders.

Cho, H., & LaRose, R. (1999). Privacy issues in Internet surveys. *Social Science Computer Review, 17,* 421–434.

Coleman, E.A., Tyll, L., LaCroix, A.Z., Allen, C., Leveille, S.G., Wallace, J.I., et al. (1997). Recruiting African-American older adults for a community-based health promotion intervention: Which strategies are effective? *American Journal of Preventive Medicine, 13*(6, Suppl.), 51–56.

ComputersScope Ltd. and others. (2002). NUA Internet surveys. Retrieved January 14, 2002, from http://www.nua.ie/surveys/

Donovan, J.L., Peters, T.J., Noble, S., Powell, P., Gillatt, D., Oliver, S.E., et al. (2003). Who can best recruit to randomized trials? Randomized trial comparing surgeons and nurses recruiting patients to a trial of treatments for localized prostate cancer (the ProtecT study). *Journal of Clinical Epidemiology, 56,* 605–609.

Ehrenberger, H., & Murray, P.J. (1998). Issues in the use of communications technologies in nursing research. *Oncology Nursing Forum, 25*(10, Suppl.), 11–15.

Feil, E.G., Noell, J., Lichtenstein, E., Boles, S.M., & McKay, H.G. (2003). Evaluation of an Internet-based smoking cessation program: Lessons learned from a pilot study. *Nicotine and Tobacco Research, 5,* 189–194.

Fowler, B.A. (2002). An outsider's experiences in conducting field research in an African-American community. *Journal of National Black Nurses' Association, 13*(1), 31–37.

Gavaler, J.S., Bonham-Leyba, M., Castro, C.A., & Harman, S.E. (1999). The Oklahoma postmenopausal women's health study: Recruitment and characteristics of American Indian, Asian, black, Hispanic, and Caucasian women. *Alcoholism, Clinical and Experimental Research, 23,* 220–223.

Gilliss, C.L., Lee, K., Gutierrez, Y., Taylor, D., Beyene, Y., Neuhaus, J., et al. (2001). Recruitment and retention of healthy minority women into community-based longitudinal research. *Journal of Women's Health and Gender-Based Medicine, 10,* 77–85.

Gorelick, P.B., Richardson, D., Hudson, E., Perry, C., Robinson, D., Brown, N., et al. (1996). Establishing a community network for recruitment of African Americans into a clinical trial. The African-American Antiplatelet Stroke Prevention Study (AAASPS) experience. *Journal of the National Medical Association, 88,* 701–704.

Graham, P. (2002). Will filters kill spam? Retrieved September 3, 2004, from http://www.paulgraham.com/wfks.html

Han, H.R., & Belcher, A.E. (2001). Computer-mediated support group use among parents of children with cancer—An exploratory study. *Computers in Nursing, 19,* 27–33.

HispanicBusiness.com. (2002). Study: Hispanic Internet use reaches 50 percent. Retrieved September 5, 2002, from http://www.hispanicbusiness.com/news/newsbyid.asp?id=6135

Im, E.O., & Chee, W. (2003a). Decision support computer program for cancer pain management. *CIN: Computers, Informatics, Nursing, 21,* 12–21.

Im, E.O., & Chee, W. (2003b). Issues in Internet research. *Nursing Outlook, 51,* 6–12.

Im, E.O., & Chee, W. (2004a). Issues in an Internet survey among midlife Asian women. *Health Care for Women International, 25,* 150–164.

Im, E.O., & Chee, W. (2004b). Issues in Internet survey research among cancer patients. *Cancer Nursing, 27,* 34–42.

Isaacman, D.J., & Reynolds, E.A. (1996). Effect of a research nurse on patient enrollment in a clinical study. *Pediatric Emergency Care, 12,* 340–342.

Jones, R., & Pitt, N. (1999). Health surveys in the workplace: Comparison of postal, email and World Wide Web methods. *Occupational Medicine, 49,* 556–558.

Kalisch, B.J. (2003). Recruiting nurses: The problem is the process. *Journal of Nursing Administration, 33,* 468–477.

Kendall, L. (2000). "Oh no! I'm a nerd!": Hegemonic masculinity on an online forum. *Gender and Society, 14,* 256–274.

Kollock, P., & Smith, M.A. (1999). Communities in cyberspace. In M.A. Smith & K. Peter (Eds.), *Communities in cyberspace* (pp. 3–28). London: Routledge.

Kypri, K., Stephenson, S., & Langley, J. (2004). Assessment of nonresponse bias in an Internet survey of alcohol use. *Alcoholism, Clinical and Experimental Research, 28,* 630–634.

Leece, P., Bhandari, M., Sprague, S., Swiontkowski, M.F., Schemitsch, E.H., Tornetta, P., et al. (2004). Internet versus mailed questionnaires: A randomized comparison (2). *Journal of Medical Internet Research, 6*(3), e30.

Mangunkusumo, R.T., Moorman, P.W., Van Den Berg-de Ruiter, A.E., Van Der Lei, J., De Koning, H.J., & Raat, H. (2005). Internet-administered adolescent health questionnaires compared with a paper version in a randomized study. *Journal of Adolescent Health, 36*(1), 70.

McGee, R., & Kypri, K. (2004). Alcohol-related problems experienced by university students in New Zealand. *Australian and New Zealand Journal of Public Health, 28,* 321–323.

Nguyen, H.T., & Walker, E.A. (1997). *A first course in fuzzy logic.* Boca Raton, FL: CRC Press.

Rhodes, S.D., Bowie, D.A., & Hergenrather, K.C. (2003). Collecting behavioural data using the World Wide Web: Considerations for researchers. *Journal of Epidemiology and Community Health, 57,* 68–73.

Seaton, K.L., Cornell, J.L., Wilhelmsen, K.C., & Vieten, C. (2004). Effective strategies for recruiting families ascertained through alcoholic probands. *Alcoholism, Clinical and Experimental Research, 28,* 78–84.

Smart, G., & Kotzer, A.M. (2003). STAT! A four-step approach to nursing recruitment and retention in a tertiary pediatric setting. *Nursing Leadership Forum, 8*(2), 72–77.

Sorkin, D.E. (2005). Spam laws: United States: State laws: Summary. Retrieved January 31, 2006, from http://www.spamlaws.com/state/summary.html

Stone, B., & Weil, D. (2003, November 24). Soaking in spam. *Newsweek, 142,* 66.

Weber, R.P. (1990). *Basic content analysis* (2nd ed.). Newbury Park, CA: Sage.

Wilmoth, M.C. (1995). Computer networks as a source of research subjects. *Western Journal of Nursing Research, 17,* 335–338.

Zadeh, L.A. (1965). Fuzzy sets. *Information and Control, 8,* 338–353.

Zadeh L.A. (1990). The birth and evolution of fuzzy logic. *International Journal of General Systems, 17,* 95–105.