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FEATURE

ARTICLE

Characteristics of Cancer Patients in Internet Cancer Support Groups

EUN-OK IM, PhD, MPH, RN, CNS, FAAN
WONSHIK CHEE, PhD
YI LIU, MSN, RN
HYUN JU LIM, MSN, RN
ENRIQUE GUEVARA, MSN, RN
HSIU-MIN TSAI, PhD
MARESHA CLARK
MELINDA BENDER, MSN
HYUNJEONG SHIN, PhD, RN
KYUNG SUK KIM, PhD, RN
YOUNG HEE KIM, PhD, RN

The purpose of this study was to describe characteristics of cancer patients who were attending Internet cancer support groups and to provide direction for future research. A total of 204 cancer patients were recruited through Internet cancer support groups by posting the study announcement on the Web sites of such groups. The participants were asked to fill out Internet survey questionnaires on sociodemographic characteristics and health/disease status. The data were analyzed using descriptive and inferential statistics, including *t* tests, analysis of variance, and Chi-square tests. Findings indicate that cancer patients recruited through Internet cancer support groups tended to be middle-aged, well-educated, female, and middle class. The findings also indicate that there were significant differences in some characteristics according to gender and ethnicity. Based on the findings, some implications are suggested for future research using and developing Internet cancer support groups.

KEY WORDS

Cancer patients • Internet cancer support groups • Sociodemographic characteristics

Cancer support groups (CSGs) have existed for more than 30 years, and face-to-face groups have traditionally been the primary method of delivery of CSGs.[1] Recently, with the increasing number of Internet users, the Internet has been used as a delivery method of CSGs.[2–4] The advantages of Internet cancer support groups (ICSGs) over face-to-face traditional CSGs have been postulated and examined by many researchers, but little is known about the short- and long-term benefits of them.[1,4] Some of the well-known benefits of use of the ICSGs have been patients' increased social support (by reducing social isolation) and increased personal empowerment and self-esteem.[4–14] Also, participation in ICSGs has been reported to reduce negative moods, including depression and cancer-related trauma.[4,9,11,15]

Despite these positive findings, the ICSGs have been critiqued for their selective membership.[16,17] In the study by Klemm and Hardie,[17] participants in the face-to-face groups (CSGs) were 100% male, whereas those in the ICSGs were 56% male and 44% female. Im et al[18] reported that ethnic minority cancer patients' voices were rarely audible in the ICSGs and that it was difficult to identify ethnic minority cancer patients through the ICSGs. Furthermore, there have been arguments regarding typical characteristics of the participants of ICSGs. Fawcett and Buhle[19] posited that cancer patients in ICSGs tended to be highly educated, high-income white males who were healthier than cancer patients in real settings. Klemm and Hardie[17] reported that participants in ICSGs and CSGs did not differ significantly by income, health insurance status, or days since initial diagnosis, but they did differ

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Author Affiliations: School of Nursing, University of Texas at Austin (Drs Im, Chee, Shin, KS Kim, and YH Kim, Ms Liu, Ms Lim, Mr Guevara, Ms Clark, Ms Bender); Chang Gung Institute of Technology, Taiwan (Dr Tsai).

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Corresponding author: Eun-Ok Im, PhD, MPH, RN, CNS, FAAN, School of Nursing, University of Texas at Austin, 1700 Red River, Austin, TX 78701 (eim@mail.nur.utexas.edu).

significantly on level of depression (the ICSGs participants had higher depression scores than did those of the CSGs). Im and Chee[16] reported that cancer patients accessed through ICSGs tended to be a select group of patients who were highly educated, high-income whites, but also seriously ill (most of them had stage III or IV cancer).

These inconsistent findings indicate the need for further studies on characteristics of cancer patients who are attending the ICSGs. The purpose of the study reported here was to describe characteristics of cancer patients who were attending the ICSGs and to provide directions for future research using and developing the ICSGs. In the study reported here, ethnicity was defined as a cultural group's sense of identification associated with the group's common social and cultural heritage[20] and was operationalized as self-reported ethnic identity. Based on the World Health Organization[21] definition, gender in this study meant the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women. The hypotheses tested through the study were that: (1) there are ethnic differences in sociodemographic characteristics of cancer patients who attend ICSGs (Hypothesis 1: H1); (2) there are gender differences in sociodemographic characteristics of cancer patients who attend ICSGs (H2); (3) there are ethnic differences in health/disease status of cancer patients who attend ICSGs (H3); and (4) there are gender differences in health/disease status of cancer patients who attend ICSGs (H4). This study is part of a larger study on gender and ethnic differences in cancer pain experience, the findings of which are presented elsewhere.[22]

A feminist perspective was chosen as the theoretical basis for the study because it uniquely allows a focus on gender and ethnicity as significant factors influencing the health/illness experience, which provides a perspective on the study topic different from other approaches. Indeed, all feminist theory posits gender as a significant characteristic that interacts with other factors, such as race, ethnicity, and class, to structure relationships between individuals.[23] Feminists first welcomed the Internet because of its non–face-to-face interactions that could mask identifiers such as race, gender, and socioeconomic class, consequently allowing for nonbiased interactions on the Internet.[24–27] However, recent studies have indicated that the Internet has the same normative gender, ethnic, and social constraints of the real world, and that conventional gender and racial power relations have been replicated in the Internet.[24–27] From the feminist perspective, we assumed that the rare usage of ICSGs by a specific group of cancer patients comes from their interactions with their environment and from biases reflecting how they view cancer and ICSGs. For example, when a Chinese man does not use an easily accessible ICSG, he may not be using the ICSG because his culture stigmatizes cancer itself or because his culture emphasizes being stoic about his needs (especially emotional needs).[28] Also, he may not use the ICSG because his culture prescribes disclosing his disease to persons outside his family, even through the non–face-to-face interactions on the Internet.[28] Thus, in this study, it was assumed that the selective characteristics of the cancer patients attending the ICSGs reflect their interactions with their environments, and that gender and ethnicity are critical factors influencing their interactions. It was also assumed that gender and ethnic differences in characteristics of cancer patients online may reflect health disparities attributable to the digital divide (disparities in access to the Internet) and low health literacy among ethnic minority cancer patients.

METHODS

The study was a cross-sectional descriptive and comparative study using the Internet as a data collection method. The study was reviewed and approved by the internal review board (IRB) of the University of Texas at Austin.

Settings and Samples

The settings for this study included general and ethnic-specific ICSGs. The popularity of the ICSGs has been frequently reported in the literature, and ICSGs have become an important research resource for reaching cancer patients in different geographical areas.[5,10,13] To recruit the participants, the ICSGs were located through Internet search engines at the following sites: Google.com, MSN.com, ACOR.org, and Yahoo.com. When data collection was initiated, there existed more than 200,000 general ICSGs (not ethnic-specific), 29,500 Hispanic-specific ICSGs, 82,800 African American-specific ICSGs, and 73,200 Asian-specific ICSGs. Yet, not all of those that were retrieved through the Internet search were appropriate for the study reported here. Retrieved ICSGs were visited to determine their eligibility for the study (eg, they were included only when they had cancer patients involved in their Web sites through message boards, chat-groups, and such), and a list of eligible ICSGs was developed in alphabetical order. Then, administrators of the first 100 general ICSGs and the first 75 ethnic-specific ICSGs (25 per ethnic group among three ethnic minority groups) were initially contacted and asked to post an electronic study announcement. The reason for contacting both general and ethnic-specific ICSGs was to enlarge the pool of ethnic minority cancer patients and to strengthen recruitment strategies to attract more ethnic minority cancer patients. Because ethnic imbalance was prominent at the end of the first month, an additional five ethnic-specific ICSGs (for the least represented ethnic group) from the earlier assembled list were contacted. This process was reiterated until all the ICSGs available on the list were contacted. Some ICSGs that posted the study announcement are the Sisters' Network (www.sistersnetworkinc.org), the Cancer Care Network (http://groups.msn.com/CancerCareNetwork), Gilda's Club (http://www.gildasclub.org/), and the Cancer Survivors Network (www.acscsn.org).

When potential participants visited the project Web site through a link in the study announcement, they were asked to review an informed consent sheet loaded on the project Web site and to give consent to participate by clicking a button below the statement, "I agree to participate." At that point, they were checked against inclusion criteria. Also, Internet protocol addresses of participants were monitored to detect multiple submissions by the same person. Then, at the end of the first month of the announcement, an additional five ethnic-specific ICSGs for the least represented ethnic group were contacted to recruit more cancer patients identifying as that ethnicity. This process was continued until all the eligible ICSGs that were retrieved through the Internet were contacted.

All study participants were online cancer patients aged at least 18 years who could read and write English and whose self-reported ethnic identity was Hispanic, non-Hispanic (N-H) White, N-H African American, or N-H Asian. These four groups were chosen because they were the most common ethnic groups in the US.[29] Because of diversities and complexities even within an ethnic group (more than 70 ethnic groups among Asian Americans), only English was used for the study. Consequently, only those who could read and write English were included.

For the study, 204 research participants were recruited via the Internet by contacting ICSG administrators. To test H1 and H3, with a medium effect size of 0.30 and an alpha of 0.05, 100 participants were required to achieve a power of 0.80 in analysis of variance (ANOVA).[30] For Chi-square tests of H1 and H3, with the same 0.30 effect size and with an alpha of 0.05, 108 to 212 participants were needed.[30] To test H2 and H4, with a conventional effect size of 0.30 and an alpha of 0.05, 47 pairs (47 women and 47 men) were needed to detect a statistically significant difference with a power of 0.68. Thus, the sample size of 204 would be adequate to test H1 through H4, except for some Chi-square tests that require a larger number of participants. Yet, the study reported here included a limited number of Asian and African American cancer patients because they were automatically selected through the recruitment process.

Instruments

The instruments used in the study included: sociodemographic questions and questions on self-reported health/disease status.

SOCIODEMOGRAPHIC CHARACTERISTICS

Questions used in the study reported here asked about age, gender, education, religion, marital status, work, family income, and access to healthcare. The ethnic identity question required by the National Institutes of Health's guidelines was used to measure self-reported ethnic identity.

SELF-REPORTED HEALTH/DISEASE STATUS

To measure self-reported health/disease status, seven questions were used: one five-point Likert scale item rating general health; two items about cancer (primary cancer site, and stage of cancer); one item on previous medical treatments (eg, radiation therapy, chemotherapy, surgery, and hormone therapy); one item on pain medication usage; one item on access to healthcare; and preferred healthcare service. Cancer stages were categorized according to the National Cancer Institute guidelines (for more information, please visit at http://www.cancer.gov/cancertopics/factsheet/Detection/staging): stage 0 = carcinoma in situ; stage I, stage II, and stage III = higher numbers indicate more extensive disease, greater tumor size, and/or spread of the cancer to nearby lymph nodes and/or organs adjacent to the primary tumor; and stage IV = the cancer has spread to another organ. The item on pain medication usage was dichotomous (yes or no). Access to healthcare was measured by asking "Is there a particular place (eg, doctor's office, clinic, health center) that you usually go if you are sick or need advice about your health?," with two response options (yes or no). Preferred healthcare service was measured by asking, "Where do you go to most often when you are sick or need advice about your health?," with four response options available: clinic or health center (including clinics of private physicians and oncologists); hospital outpatient department; hospital emergency room; and other.

Data Collection Procedures

A project Web site was developed according to HIPAA standards, SysAdmin, Audit, Network, Security Institute/Federal Bureau of Investigation recommendations, and the IRB policy of the University of Texas at Austin. The project Web site included an informed consent sheet and Internet survey questions. As described, informed consent from the participants was obtained through the Internet: when a potential participant visited the project Web site, s/he was directed to review the informed consent sheet and give her/his consent by clicking the "I agree to participate" button. Upon obtaining her/his consent, eligibility was checked by asking three screening questions (age, ethnicity, and English literacy). Only when s/he met the inclusion criteria was s/he connected to the Internet survey questionnaire and asked to complete it.

Data Analysis

The data that participants entered were directly saved in ASCII format. To ensure confidentiality, the researchers assigned only serial identification numbers, and no individual identities were used during the data analysis process. In addition, only research staff members had access to data. SPSS (SPSS, Chicago, IL) was used to analyze the data. Sociodemographic characteristics and self-reported health/disease status of participants were described using frequency, percentage, mean, standard deviation, and range statistics. Gender and ethnic differences in the sociodemographic characteristics and health/disease status were determined using inferential *t* tests, Chi-square tests, and ANOVA to test the four hypotheses. For the post-hoc tests in the ANOVA, Tukey's Honestly Significant Differences was used.

Findings

SOCIODEMOGRAPHIC CHARACTERISTICS

Of the 204 participants, 41 (20%)were Hispanic, 26 (13%)Asian American, six (3%) African American, and 131 (63%) white. When the participants were categorized into subgroups according to gender and ethnicity, the largest subgroup was white females (n = 102), and the smallest subgroup was African American males (n = 2). The mean age of the participants was 48.05 years (SD = 12.53 years) and 163 (80%) of them were female. About half (55%) of the participants were unemployed. Of the participants, 196 (96%) had a particular place (eg, doctor's office, clinic, health center) that they usually went if they were sick or needed advice about their health. Forty-five percent of the participants were college graduates or had graduate degrees. Fifty-six percent of the participants were Christians (Protestants and Catholics). The majority (84%) of participants were born in the US. Sociodemographic characteristics of the participants are summarized by ethnicity in Table 1 and by gender in Table 2.

To test H1, ethnic differences in the sociodemographic characteristics were explored (see Table 1). There were significant ethnic differences in education level ($\chi^2 = 73.95$, $P < .01$), religion ($\chi^2 = 64.15$, $P < .01$), and the country of birth ($\chi^2 = 125.15$, $P < .01$). Whereas 73% of Asian participants were college graduates or had graduate degrees, only 12% of Hispanic participants were college graduates. The most popular religion was Protestantism among Asian, African American, and white participants, but it was Catholicism among Hispanic participants. Eighty-eight percent of Asian participants were foreign born, and 17% of Hispanic participants were foreign born. However, only 2% of white and no African American participants were foreign born. When gender differences in the sociodemographic characteristics were explored to test H2 (Table 2), there was no significant gender difference in any of the sociodemographic characteristics.

SELF-REPORTED HEALTH/DISEASE STATUS

The participants' self-reported health/disease status is summarized by ethnicity in Table 3 and by gender in Table 4. About 2% of the participants had stage 0 disease; 16% stage I; about 33% stage II; 17% stage III; 22% stage IV; and 4% had disease in remission. About half (51%) of the participants perceived themselves as healthy. About one third (34%) of the participants were breast cancer patients. For cancer treatment, about 4% of the participants had radiation therapy only; 15% had chemotherapy only; 10% had surgical procedures only; and 68% had two or more treatment modalities.

To test H3, ethnic differences in self-reported health/disease status were explored (see Table 3). There were significant ethnic differences in perceived health status ($\chi^2 = 28.75$, $P < .01$), primary cancer site ($\chi^2 = 111.56$, $P < .01$), cancer stages ($\chi^2 = 66.84$, $P < .01$), and preferred healthcare services ($\chi^2 = 51.76$, $P < .01$). About one third of Asian (35%) and white (28%) participants perceived themselves as unhealthy, whereas more than half of Hispanic (51%) and African American participants (66%) perceived themselves as unhealthy. The most prevalent primary cancer site across the ethnic groups was the breast, but there were certain ethnic differences in other prevalent primary cancer sites. The second most prevalent primary site among Hispanic participants was the cervix (27%), and among Asian and white participants, it was the lung. About 15% of white cancer patients had cancer in multiple sites. Although, across the ethnic groups, the healthcare service that the participants went to most often when they were sick or needed advice about their health was a clinic or a health center, there was a certain ethnic difference in the second choice: Hispanics (28%)

Table 1

Sociodemographic Characteristics by Ethnicity (N = 204)

	N (%)						
Variables	**Hispanic (N = 41)**	**Asian American (N = 26)**	**African American (N = 6)**	**White (N = 131)**	**Total (N = 204)**	**Range**	**F or χ^2**
Age (y) (Mean [SD])	48.84 (10.68)	48.84 (10.68)	48.83 (12.98)	48.56 (11.48)	48.05 (12.53)	21–83	F = 0.55
Gender							$\chi^2 = 2.12$
Female	35 (85.3)	22 (84.6)	4 (66.6)	102 (79.8)	163 (81.4)		
Male	6 (14.6)	4 (15.4)	2 (33.3)	29 (20.2)	41 (18.6)		
Education							$\chi^2 = 73.95^a$
Elementary school	4 (9.8)				4 (2.0)		
Middle school	2 (4.9)				2 (1.0)		
High school	20 (48.8)	3 (11.5)		23 (17.6)	46 (22.5)		
College partial	10 (24.4)	4 (15.4)	4 (66.7)	43 (32.8)	61 (29.9)		
College graduate	4 (9.8)	7 (26.9)	2 (33.3)	46 (35.1)	59 (28.9)		
Graduate degree	1 (2.4)	12 (46.2)		19 (14.5)	32 (15.7)		
Religion							$\chi^2 = 67.15^a$
Catholic	24 (58.5)			36 (27.5)	60 (29.4)		
Protestant	1 (2.4)	8 (30.8)	3 (50.0)	43 (32.8)	55 (27.0)		
Others	3 (7.3)	7 (26.9)	3 (50.0)	33 (25.2)	46 (22.5)		
No religion	13 (31.7)	6 (23.1)		16 (12.2)	35 (17.2)		
Buddhist		5 (19.2)		3 (2.3)	8 (3.9)		
Employment status							$\chi^2 = .90$
Unemployed	25 (61.0)	13 (50.0)	3 (50.0)	72 (55.0)	113 (55.4)		
Employed	16 (39.0)	13 (50.0)	3 (50.0)	59 (45.0)	91 (44.6)		
Income satisfaction							$\chi^2 = 10.58$
Totally insufficient	12 (29.3)	4 (15.4)	1 (16.7)	24 (18.3)	41 (20.1)		
Somewhat insufficient	8 (19.5)	6 (23.1)	3 (50.0)	38 (29.0)	55 (27.0)		
Sufficient for essential needs	19 (46.3)	13 (50.0)	2 (33.3)	47 (35.9)	81 (39.7)		
More than sufficient	2 (4.9)	3 (11.5)		22 (16.8)	27 (13.2)		
Born in the US							$\chi^2 = 125.15^a$
Yes	34 (82.9)	3 (11.5)	6 (100.0)	129 (98.5)	172 (84.3)		
No	7 (17.1)	23 (88.5)		2 (1.5)	32 (15.7)		

$^{a}P < .01$.

tended to prefer a hospital emergency room, whereas African American participants (33%) preferred a hospital outpatient department.

To test H4, gender differences in self-reported health/disease status were explored (see Table 4). There were significant gender differences in cancer stages ($\chi^2 = 31.00$, $P < .01$), primary cancer site ($\chi^2 = 103.12$, $P < .01$), and preferred healthcare services ($\chi^2 = 12.83$, $P < 0.01$). About 18% of women participants had stage I disease; 36% had stage II; 16% had stage III; and 18% had stage IV. About 7% of men participants had stage I disease; 15% had stage II; 15% had stage III; and 37% had stage IV. In other words, male participants tended to have later stages of cancer than did female participants. The most prevalent primary cancer site among men was the gastrointestinal organs, whereas it was the breast among women. The second most prevalent primary cancer site among men was organs around the head and neck, whereas it was reproductive organs among women. About 72% of female participants preferred to use a clinic or a health center most often when they were sick or needed advice about their health, whereas only 44% of male participants preferred a clinic or a health center. Six percent of female participants and 10% of male participants preferred to use a hospital emergency room.

DISCUSSION

The findings support that cancer patients recruited through ICSGs would be a selected group. The sociodemographic characteristics of the participants indicated that they tended to be middle-aged, female, well educated, and middle class. These findings are somewhat different from those of previous studies reporting

Table 2

Sociodemographic Characteristics by Gender (N = 204)

Variables	Women	Men	Total	F or χ^2
Age (y) (Mean [SD])	46.72 (12.34)	53.32 (12.06)	48.05 (12.53)	t = 3.074
Education				$\chi^2 = 2.46$
Elementary school	3 (1.8)	1 (2.4)	4 (2.0)	
Middle school	1 (0.6)	1 (2.4)	2 (1.0)	
High school	36 (22.1)	10 (24.4)	46 (22.5)	
College partial	47 (28.8)	14 (34.1)	61 (29.9)	
College graduate	50 (30.7)	9 (22.0)	59 (28.9)	
Graduate degree	26 (16.0)	6 (14.6)	32 (15.7)	
Religion				$\chi^2 = 3.28$
Catholic	46 (28.2)	14 (34.1)	60 (29.4)	
Protestant	41 (25.2)	14 (34.1)	55 (27.0)	
Others	40 (24.5)	6 (14.6)	46 (22.5)	
No religion	29 (17.8)	6 (14.6)	35 (17.2)	
Buddhist	7 (4.3)	1 (2.4)	8 (3.9)	
Employment status				$\chi^2 = 0.21$
Unemployed	89 (54.6)	24 (58.5)	113 (55.4)	
Employed	74 (45.4)	17 (41.5)	91 (44.6)	
Income satisfaction				$\chi^2 = 1.79$
Totally insufficient	33 (20.2)	8 (19.5)	41 (20.1)	
Somewhat insufficient	45 (27.6)	10 (24.4)	55 (27.0)	
Sufficient for essential needs	66 (40.5)	15 (36.6)	81 (39.7)	
More than sufficient	19 (11.7)	8 (19.5)	27 (13.2)	
Born in the US				$\chi^2 = 4.53$
Yes	133 (81.6)	39 (95.1)	172 (84.3)	
No	30 (18.4)	2 (4.9)	32 (15.7)	

that cancer patients in ICSGs tend to be young, white males, highly educated, and with high family incomes.[2,5,10,13,16,17,19,31–36] A possible reason for the finding of the study reported here could be a drastically changing sociodemographic composition of Internet population and Internet dynamics. Recent studies have indicated that Internet usage among Asian Americans is greater than that of any other ethnic group, and half of Hispanic Americans and 33% of African Americans are now Internet surfers.[37,38] Furthermore, recent statistics reported that women account for 52% of home Internet users.[38,40] Despite that Internet users still tend to be young, the number of older users (age 65 or older) is also increasing, and about 57% of people 65 to 70 years of age in the US are online.[38]

The gender differences that were found in this study may come from the fact that women outnumber men in the cancer survivor population,[39] and that there exists a greater number of gender-specific ICSGs for women.[18] Gender differences also may result from differences in usage of ICSGs. Although ICSG membership tends to have more gender balance than do traditional support groups,[17] studies have reported gender differences in the reasons for using ICSGs. Some reported that men were more likely to seek information, whereas women were more likely to seek encouragement and support.[1,2] Others reported that more women (63%) than men (46%) consulted the Internet for health information.[38]

Although participants were recruited through both general and ethnic-specific ICSGs simultaneously, mainly whites were recruited, which is consistent with the fact that about 89% of cancer survivors in the US are white.[41] This finding agrees with previous findings on traditional CSGs. In the existing studies about CSGs, ethnic minorities have been frequently underrepresented.[42–45] There is a small number of studies on ICSGs, and in the few existing studies ethnic minorities' participation in ICSGs tended to be minimal.[18,46,47] This finding may also come from ethnic minority patients in the US, particularly underserved patients of lower socioeconomic status, tending to present with later stage disease than do nonminority patients[48,49]; thus, such patients would not have as much chance to survive and join ICSGs for support. However, findings on cancer patients' attitudes toward ICSGs tend to be inconsistent. Some report that socially deprived people, including ethnic minority cancer patients, tend to rely more on the Internet than do white cancer patients, although whites tend to have more Internet access than do African Americans.[50,51] However, others report

Table 3

Self-Reported Health/Disease Status by Ethnicity (N = 204)

	N (%)						
Variables	Hispanic (N = 41)	Asian American (N = 26)	African American (N = 6)	White (N = 131)	Total (N = 204)	Range	F or χ^2
Perceived health status							$\chi^2 = 28.75^a$
Very unhealthy	6 (14.6)	4 (15.4)		11 (8.4)	21 (10.3)		
Tend to be unhealthy	15 (36.6)	5 (19.2)	4 (66.7)	26 (19.8)	50 (24.5)		
Do not know	11 (26.8)	5 (19.2)		14 (10.7)	30 (14.7)		
Tend to be healthy	8 (19.5)	9 (34.6)	2 (33.3)	69 (52.7)	88 (43.1)		
Very healthy	1 (2.4)	3 (11.5)		11 (8.4)	15 (7.4)		
Cancer stage							$\chi^2 = 66.84^a$
Stage 0	2 (4.9)	2 (7.7)		1 (0.8)	6 (3.0)		
Stage I	6 (14.6)	6 (23.1)		21 (16.0)	32 (15.7)		
Stage II	19 (46.3)	9 (34.6)	3 (50.0)	36 (27.5)	67 (32.9)		
Stage III	5 (12.2)	3 (11.5)	1 (16.7)	25 (19.1)	34 (16.7)		
Stage IV	5 (12.2)	6 (23.1)	1 (16.7)	33 (25.2)	45 (22.1)		
Not staged				3 (2.3)	3 (1.5)		
Recurrent				8 (6.1)	8 (3.9)		
Do not know	4 (9.8)	-	1 (16.7)	4 (3.1)	5 (2.5)		
Primary cancer site							$\chi^2 = 111.56^a$
Breast	13 (31.7)	18 (69.2)	2 (33.3)	36 (27.5)	69 (33.8)		
Reproductive	17 (41.4)	1 (3.8)	2 (33.3)	15 (11.6)	33 (16.2)		
Multiple	2 (4.9)	-	-	20 (15.3)	22 (10.8)		
Lung	4 (9.8)	3 (11.5)	1 (16.7)	11 (8.4)	20 (9.8)		
Head & neck				16 (12.2)	17 (12.4)		
Gastrointestinal	1 (2.4)	1 (3.8)		13 (10.0)	15 (7.4)		
Others	2 (4.8)	1 (3.8)		17 (13.0)	11 (9.5)		
Hematologic	2 (4.9)	1 (3.8)	1 (16.7)	2 (1.5)	6 (2.9)		
Genitourinary				1 (0.8)	1 (0.5)		
Cancer treatment Combined							$\chi^2 = 10.94$
Combined	31 (75.6)	19 (73.1)		86 (65.6)	139 (68.1)		
Chemotherapy only	4 (9.8)	2 (7.7)	3 (50.0)	21 (16.0)	30 (14.7)		
Surgery only	4 (9.8)	2 (7.7)		15 (11.5)	21 (10.3)		
Radiation only	1 (2.4)	2 (7.7)		5 (3.8)	8 (3.9)		
Others	1 (2.4)	1 (3.8)	3 (50.0)	3 (2.3)	5 (2.5)		
Hormone therapy only				1 (0.8)	1 (0.5)		
Pain medication							$\chi^2 = 2.58$
No	21 (51.2)	17 (65.4)	2 (33.3)	69 (52.7)	109 (53.4)		
Yes	20 (48.8)	9 (34.6)	4 (66.7)	62 (47.3)	95 (46.6)		
Access to healthcare							$\chi^2 = 0.35$
Yes	39 (95.1)	25 (96.2)	6 (100)	126 (96.2)	196 (96.1)		
No	2 (4.9)	1 (3.8)	0 (0)	5 (3.8)	8 (3.9)		
Preferred healthcare services							$\chi^2 = 51.76^a$
Clinics or healthcare centers	24 (58.5)	18 (69.2)	3 (50.0)	84 (64.1)	129 (63.2)		
Others	3 (7.3)	3 (11.5)	1 (16.7)	36 (27.5)	43 (21.1)		
Hospital outpatient department	1 (2.4)	2 (7.7)	2 (33.3)	4 (3.1)	9 (4.4)		
Hospital emergency room	11 (26.8)	2 (7.7)		1 (0.8)	14 (6.9)		

[a] $P < .01$.

opposite findings on ethnic minority cancer patients' use of the ICSGs: ethnic minorities were less likely to use the ICSGs as a source of support.[52]

Existing studies have implied that there are ethnic-specific reasons for these ethnic differences. For example, Searight and Gafford[53] posited that the US model of healthcare, which values autonomy in medical decision making, is not easily used by some racial or ethnic groups, and they also posited that cultural factors strongly influence cancer patients' reactions to cancer. Indeed, studies have reported that families in some racial and ethnic groups concealed the diagnosis

Table 4

Sociodemographic Characteristics by Gender (N = 204)

Variables	Women	Men	Total	F or χ^2
Perceived health status				$\chi^2 = 1.89$
Very unhealthy	17 (10.4)	4 (9.8)	21 (10.3)	
Tend to be unhealthy	43 (26.4)	7 (17.1)	50 (24.5)	
Do not know	23 (14.1)	7 (17.1)	30 (14.7)	
Tend to be healthy	69 (42.3)	19 (46.3)	88 (43.1)	
Very healthy	11 (6.7)	4 (9.8)	15 (7.4)	
Cancer stage				$\chi^2 = 31.0^a$
Stage 0	3 (1.8)	2 (4.9)	6 (3.0)	
Stage I	30 (18.4)	3 (7.3)	32 (15.7)	
Stage II	60 (36.8)	7 (17.1)	67 (32.9)	
Stage III	27 (16.6)	7 (17.1)	34 (16.7)	
Stage IV	30 (18.4)	15 (36.6)	45 (22.1)	
Not staged	2 (1.2)	1 (2.4)	3 (1.5)	
Recurrent	5 (3.1)	3 (7.3)	8 (3.9)	
Do not know	6 (3.7)	3 (7.3)	5 (2.5)	
Primary cancer site				$\chi^2 = 103.12^a$
Breast	68 (41.7)	1 (2.4)	69 (33.8)	
Reproductive	27 (16.6)	6 (14.6)	33 (16.2)	
Multiple sites	18 (11.0)	4 (9.8)	22 (10.8)	
Lung	15 (9.2)	5 (12.2)	20 (9.8)	
Head & neck	10 (4.9)	7 (17.0)	17 (12.4)	
Gastrointestinal	7 (4.3)	8 (19.5)	15 (7.4)	
Others	4 (2.5)	7 (17.0)	11 (9.5)	
Genitourinary		1 (2.4)	1 (0.5)	
Hematologic	4 (2.5)	2 (4.9)	6 (2.9)	
Cancer treatment				$\chi^2 = 14.35$
Combined	120 (73.6)	19 (46.3)	139 (68.1)	
Chemotherapy only	19 (11.7)	11 (26.8)	30 (14.7)	
Surgery only	15 (9.2)	6 (14.6)	21 (10.3)	
Radiation only	4 (2.5)	4 (9.8)	8 (3.9)	
Others	4 (2.5)	1 (2.4)	5 (2.5)	
Hormone therapy only	1 (0.6)		1 (0.5)	
Pain medication				$\chi^2 = 0.10$
No	88 (54.0)	21 (51.2)	109 (53.4)	
Yes	75 (46.0)	20 (48.8)	95 (46.6)	
Access to healthcare				$\chi^2 = 0.13$
Yes	157 (96.3)	39 (95.1)	196 (96.1)	
No	6 (3.7)	2 (4.9)	8 (3.9)	
Preferred healthcare services				$\chi^2 = 12.38^a$
Clinics or healthcare centers	112 (68.7)	17 (41.5)	129 (63.2)	
Others	27 (16.6)	16 (39.0)	43 (21.1)	
Hospital emergency room	10 (6.1)	4 (9.8)	14 (6.9)	
Hospital outpatient department	7 (4.3)	2 (4.9)	9 (4.4)	

[a] $P < .01$.

of cancer from patients because disclosure of serious illness might be viewed as disrespectful, impolite, or even harmful to the patient.[53–55] In those cultures, cancer patients might not want to disclose illness to others, even when they know their diagnosis, and this cultural attitude might inhibit them from participating in the ICSGs.

Another possible reason for the ethnic differences could be contextual factors influencing cancer patients' participation in ICSGs, which might have attracted a selected group of ethnic minority cancer patients to join the ICSGs, or prevented them from joining. Patients who had used the Internet for cancer-related information were significantly younger, better educated, and less satisfied with the amount of treatment-related information given by caregivers than were patients who had not used the Internet to access cancer-related information.[56] Also, those in higher degrees of religious association may be less likely to join CSGs, including the ICSGs. Indeed, cultural beliefs such as spiritual faith were found to influence stage of diagnosis, and a reliance on God to cure cancer without medical intervention was especially prevalent among African Americans.[57–59] When people are faced with health problems, those who maintain strong religious affiliation are more likely to turn to spiritual sources for support.[60,61]

CONCLUSIONS AND IMPLICATIONS

The findings of the study presented here support that cancer patients who can be recruited through the ICSGs would be a selected group. The cancer patients recruited through the ICSGs for the study presented here tended to be white, middle aged, well-educated, middle socioeconomic class women with stage II diagnoses. The findings also support ethnic differences in characteristics of the cancer patients who can be recruited through ICSGs. Yet, since the study was conducted in a specific time period through selective ICSGs, interpretation of the findings needs to be carefully done while considering rapidly changing Internet technologies and dynamics.[62] Furthermore, there may be potential selection bias due to the sampling process of the study, which uses a convenience sampling only through general and ethnic-specific ICSGs that agreed to announce the study.

The findings reported here indicate some implications for future research using and developing the ICSGs. First, researchers who plan to recruit cancer patients through ICSGs need to consider potential selection bias and use multiple strategies to minimize it. Researchers also need to consider potential gender- and ethnic-specific reasons and factors that might have influenced cancer patients' participation in the ICSGs because these also can be the factors influencing the dependent and independent variables that the researchers are investigating. As discussed, these gender- and ethnic-specific factors might have attracted a specific group of ethnic minority cancer patients to join the ICSGs or prevented them from joining the ICSGs.

Future development of the ICSGs also needs to consider gender and ethnic differences. Developing gender- and ethnic-specific ICSGs may be one direction for future development of the ICSGs, or existing general ICSGs could be modified and tailored for a specific gender and ethnic group of cancer patients while considering unique characteristics of the specific group of cancer patients on the Internet.

Finally, more in-depth studies on the use of ICSGs by gender and ethnicity and gender- and ethnic-specific factors that may influence the use of ICSGs are needed for a better understanding of the reasons for the gender and ethnic differences that are reported here. With a more comprehensive understanding of the gender and ethnic differences and the gender- and ethnic-specific factors, ICSGs could be further developed and used to decrease potential health disparities on the Internet and ultimately in the real world.

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