

Health information seekers in Japan: a snapshot of needs, behavior, and recognition in 2008*†

Yukiko Sakai, MSIS, AHIP, JHIP; Chihiro Kunimoto, MLS; Keiko Kurata, MLS

See end of article for authors' affiliations.

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Objectives: The purpose of this study was to explore the latest information-seeking behavior among health care consumers in Japan and to compare these behaviors with those recorded in similar surveys administered in Japan and the United States after 2000.

Method: The authors conducted a randomized, population-based, door-to-door survey in 2008. A total of 1,200 Japanese adults over 15 years of age completed the questionnaire.

Main Results: The results from 1,189 valid responses indicated that slightly more than half the number of participants had actively sought health information

during the previous 2 years. Most seekers looked for information on a specific disease. "Physicians" remained the respondents' first choice as an information source, while "Internet" has gained greater popularity as a resource since the previous survey in 2000. Half the number of participants stated that they were willing to read academic or professional medical journal articles if written in Japanese and provided free of charge.

Conclusion: The evidence indicates that Japanese health care consumers are now proactively seeking health information. These consumers feel reassured by the information they can access and would like to read clinical research in their native language.

INTRODUCTION

Japanese health care consumers were formerly recognized as inactive health information seekers. This inactivity was attributed to the relatively equal access to qualified health care provided by the universal health care insurance system since 1961 and the dominant ideology of medical paternalism [1, 2]. However, recent changes in the Japanese health care and information environment may have affected the attitudes of consumers toward information relevant to their health.

First, as in the global health care industry, patients' rights and duties have been expanded. For example, after informed consent and free access to medical records were granted by law in 1997 and 2000, second opinions became more popular [3, 4] and more health care options became available. Technological and other advances in the field of medicine further increased options for care [5]. Second, physicians' responsibility for patient care expanded over the last few decades. Over time, patients' expectations that physicians would provide comprehensive explanations of their conditions and treatment options, in order to keep them informed, have grown. Physicians are also expected to apply evidence-based medicine practices and comply with the Medical Service Act [6]. Third, the Internet has grown in popularity among

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A supplemental appendix is available with the online version of this journal.

Highlights

- Half the number of participants had actively sought health information during the previous two years, most often on diseases and conditions, drugs, and doctors and/or hospitals.
- As in earlier surveys, physicians were the respondents' first choice as an information source, but the Internet has gained popularity as an information source.
- Reassurance or comfort was the most common impact of the information; however, the frequency of this impact was less than that found in a similar US study.

Implications

- In Japan, more citizens will go online for health information in the near future.
- Health information seekers in Japan are interested in open access academic or professional medical journal articles written in Japanese and provided free of charge.

Japanese citizens. The percentage of the Japanese population above the age of 6 years that uses the Internet has doubled from 37.1% in 2000 to 75.3% in 2008 [7]. In contrast with the general information available from traditional information sources such as magazines and television, people can systematically retrieve and obtain targeted health information through the Internet [8]. Information on the Internet includes academic or professional medical journal articles that have become more accessible to consumers through the open access movement [9].

As awareness of consumer health information has risen in Japan since 2000, consumer demand for such information has also risen, as documented in several studies [10–12]. However, there has been no comprehensive study investigating the active information-seeking behavior of Japanese health care consumers. Other advanced countries, such as the United States, have meanwhile accumulated research on health information-seeking behavior through a number of population-based surveys [13–15].

The purpose of this study was to explore how the latest consumer health care information-seeking behavior in Japan has been affected by the changing health care environment and the popularity of the Internet. In addition, the demand for academic or professional medical journal articles was examined in order to consider the relative utility of open access to such articles on the Internet.

LITERATURE REVIEW

Health information seekers in Japan

In 2000 and 2001, the Kosei Kagaku Kenkyu, a research body funded by the Ministry of Health, Labour and Welfare (MHLW), conducted the first comprehensive surveys on health information needs among patients [10] and citizens [11] in Japan. The 2 studies (patients in 2000, citizens in 2001) shed light on the high interest level in health information (96.0% and 78.6%, respectively). At that time, people relied heavily on traditional information sources such as doctors and nurses (70.5% and 61.3%, respectively), books and magazines (42.2% and 43.6%, respectively), family and friends (33.4% and 34.2%, respectively), and newspapers and television (33.4% and 20.3%, respectively). The Internet was not commonly used then (9.8% in 2000, 12.8% in 2001), and relevant information might not have been available or easily accessible via the Internet. Similar results were found in another study of citizens by Nippon Telegraph and Telephone Corporation in 2002 [16]. Further, an Internet-specific survey of patients and their families in 2000 showed a moderate rate of Internet use and a low rate of online health information seeking. In that study, 35.0% of respondents used the Internet, and 40.7% of Internet users (14.0% of total respondents) looked for health information online at least once a year [17].

Since then, the importance of the Internet as a health information source has increased. A web survey of residents in the Tokyo area in 2004 reported “family and friends” (69.3%) as the top information source when selecting medical institutions, followed by “primary care physicians” (67.4%) as the second and “Internet” (56.6%) as the third most popular sources [18]. In a population-based study in 2008, which asked respondents to indicate their source of health information (such as treatment), the Internet finally had an equivalent status as a health information source as other traditional sources (with 60.6% for “Internet” vs. 61.8% for “family and friends”),

while “family doctor” recorded a relatively lower rate of usage (47.2%) [12].

Not surprisingly, the topics of interest differed in the MHLW’s studies in 2000 and in 2001. Patients mostly wanted to know about “diseases” (67.7%), “drugs” (49.5%), and “treatment” (37%), while citizens were more interested in “prevention” (59.1%) and “drugs” (45.3%). Information on “doctors and hospitals” was less commonly sought (29.3% for patients, 33.6% for citizens). With respect to the topic of interest, the results of the Internet-specific survey of patients and their families in 2001 were similar to those of the MHLW’s patient survey, with “diseases” being most common (73.7%), followed by “treatment” (59.2%) and “drugs” (54.9%), with comparatively less interest in “hospitals” (39.0%) [19].

As reported above, the growing demand for health information was evident, and some studies were conducted on information sources and topics in Japan through the early 2000s. However, these studies focused only on information needs and sources and did not inquire into consumers’ actual information-seeking behavior. Among the few studies that approached the subject of general health information seeking among citizens was a population-based study in 2009. Two of the multiple answers for a question about activity for health showed that some of the respondents had sought health information: 31.2% for disease or drugs, and 17.9% for doctors or hospitals [20]. These rates were much lower than that found in previous studies on health information sources, as noted above. An exception to the aforementioned data was a survey in 2006 of patients belonging to 3 patient advocacy groups. This study reported that 85.3% of respondents, the highest rate among all studies, actively sought health information [21].

Health information seekers in the United States

US consumers began going online for health information much earlier than those in Japan did. This might be attributed both to the increasing quantity, availability, and ease of access to this information on the Internet and to pressures on the health care system, which resulted in physicians and other health care providers having severely limited time for interaction with each patient, whether in the exam room or in an inpatient bed [22]. The first population-based survey of online health information seekers, conducted by Harris Poll in 1998, showed that 27% of US adults had already used the Internet to obtain health information [23]. Surveys have been conducted since then by Harris Poll in addition to similar studies by Pew Internet & American Life Project since 2002 [24]. A more specialized series, the Health Information National Trends Survey was conducted in 2003, 2005, and 2008 by the National Cancer Institute, focusing on cancer information [15].

The latest survey by Harris Poll in 2010, reported that 76% of US adults have searched the Internet for health information [14]. The demographic characteristics of Internet health information seekers have been repeatedly confirmed by these surveys: they tend to

be female, white, young, well educated, and with a relatively high income [13, 24–28].

Americans still choose traditional sources in addition to the Internet. “Physicians” was the first choice of respondents (86%) in the 2008 Pew survey [13], and “friends and family” (68%) and “books or other printed materials” (54%) were selected by more than half of all respondents. “Insurance provider” (33%) was also a particular choice in the United States, where insurance providers actively provide health information [29].

Internet searches pertained to several topics. The 5 most common health-related search categories were “disease” (66%), “treatment” (55%), “exercise or fitness” (52%), “doctors” (47%), and “drugs” (45%). The rates for each topic searched in other media were relatively low, 49% for “disease” for example, but the top 5 items were the same.

The impact of the health information obtained by consumers on the Internet has also been analyzed. The 2006 Pew survey indicated that 58% of respondents felt that information obtained on the Internet had actually affected their “decision about how to treat an illness or condition”: 56% felt “relieved or comforted” and 56% felt increasingly “confident to raise new questions or concerns about a health issue with their doctor” [26].

RESEARCH DESIGN

Previous studies in Japan and continuing studies in the United States indicate the growing need for health information in both countries. The Internet has become one of the most popular sources of information—*notwithstanding a certain dependency in Japan on friends, family, and physicians, however*—and the frequency of use of any information source is relatively lower in Japan than that in the United States. The three most sought topics are common (i.e., diseases, drugs, and treatment) to both countries.

However, some problems are evident in previous studies that need to be further analyzed with regard to health information-seeking behavior in Japan. First, actual health information seeking in Japan is uncertain because of very general survey questions (e.g., “what kind of health information are you interested in?”) or questions about very specific information needs (e.g., “which information source do you generally use to select medical institutions?”) in most Japanese studies. Second, there is no consistent nationwide study in Japan that covers all aspects of health information seeking (i.e., actual seeking, topics, sources, and impacts) and provides comprehensive options in each question in order to determine actual differences between multiple studies in Japan and enable comparison of the findings with those of US studies. Third, the result of actual information seeking (e.g., specific topic-source-impact) has not been revealed in any previous studies.

The purpose of this study was to explore the latest consumer health care information-seeking behavior in Japan to confirm the frequency of actual health

information seeking by examining active seeking behavior and the impact of the information thus obtained. The study was designed to clarify the relationship between specific topics, information sources, and their impacts and document the impact of the diffusion of the Internet. In addition, the study explored the need for academic or professional journal articles because so far no study has focused on health care consumers’ possible use of open access articles, which are of primary interest in medical research.

METHODS

A population-based survey was designed for a comprehensive nationwide study on health information-seeking behavior in Japan. The topic and information source options were derived from Pew studies [13, 24–26], because the Pew options cover a wide variety of topics and information sources that have been validated in repeated studies. Because large differences in the impact of the information obtained were not expected, the various Pew options for impact were consolidated and condensed. The specific questions are described in the next section. A commercial survey service was used for the current study, because a nationwide study using a paper questionnaire with appropriate sampling would not have been possible by individual researchers.

A randomized, population-based, door-to-door survey was conducted by a commercial scheduled omnibus survey service. One thousand two hundred adults in Japan between the ages of 15 and 79 years completed the form in November 2008. The sample size was designed to keep the margin of sampling error under 3 percentage points, which was in fact plus or minus 2.9 percentage points with a 95% confidence level. The survey service selected 200 locations based on the proportional distribution of the population in areas categorized by residential regions, city scales, and random digits of city or town code numbers. In each of these 200 locations, a survey administrator visited a maximum of 30 sampled households in order to collect 6 survey sheets from residents who qualified according to the assigned profile (i.e., sex and age). The survey was halted when 1,200 survey sheets were collected. It took 13 days.

The survey consisted of seven questions in total (Appendix, online only). The first question (Q1) asked if the respondent had seen a doctor or taken medicine for illness or injury during the previous two years, because previous studies had shown an increased need for health information among patients as opposed to average citizens. The subsequent four questions (Q2–Q5) were derived from the Pew survey and were related to health information-seeking behavior, such as health topics, information sources, and impact of the information on the respondents’ emotions and behavior. Unlike the Pew survey, the questions were constructed to address a sequence of specific topics, sources, and impacts in order to distinguish the patterns of health information seeking.

Table 1
Distribution of health information seekers among patients or non-patients by age

Age in years	Number of respondents	Health information seekers		Patient information seekers			Non-patient information seekers		
		n	(%)	Number of patients	n	(%)	Number of non-patients	n	(%)
15–19	74	21	(28.4%)	35	16	(45.7%)	39	5	(12.8%)
20–29	178	81	(45.5%)	72	46	(63.9%)	106	35	(33.0%)
30–39	212	112	(52.8%)	112	75	(67.0%)	100	37	(37.0%)
40–49	182	96	(52.7%)	86	58	(67.4%)	96	38	(39.6%)
50–59	219	119	(54.3%)	119	81	(68.1%)	100	38	(38.0%)
60–69	193	112	(58.0%)	135	92	(68.1%)	58	20	(34.5%)
70–79	131	80	(61.1%)	109	71	(65.1%)	22	9	(40.9%)
Total	1,189	621	(52.2%)	668	439	(65.7%)	521	182	(34.9%)

This type of question has been used by Tenopir et al. [30] and is called a “last reading” survey. Tenopir asked respondents to think of specific recent behavior in article searching and reading and to report the type and features of the article. The advantage of this method is that the relationship between the three items (i.e., topic, source, and impact) can be examined from an analysis of specific cases. In the case of the present survey, respondents were asked to think about the last time they had looked for information on health or medical issues.

Q6 focused on the respondent’s willingness to read articles published in academic or professional journals. This question was designed to help evaluate respondents’ interest in reading scholarly journals, now that the number of freely available articles has increased and the proportion of open access articles has actually increased [31]. The authors felt that these articles could be a new type of health information resource.

Finally, a question on whether the respondents were health- or information-related professionals (Q7) was added to identify possible bias from those in professions who are familiar with health information. The cover sheet of the survey included questions that collected demographic information: age, sex, residential region, city scale, family income, educational background, and employment.

The survey questions were thoroughly reviewed by the authors, using the commercial service’s routine procedure, before distribution.

RESULTS

The demographic features of the 1,200 respondents reflected those of the Japanese population (i.e., proportional distribution of residential regions, city scales, sex, and age) and included 29 individuals in total who identified their professions as health or medical research ($n=26$, 2.2%), conducting research in fields other than medicine ($n=1$, 0.1%), or librarian or searcher ($n=2$, 0.2%). One thousand one hundred eighty-nine valid responses on actual seeking were obtained (Q2), and 1,193 were obtained on willingness to read articles (Q6). After excluding those who responded to question Q2 that they had not looked for health information in the last 2 years, 540 valid responses to Q3 to Q5 were available for analysis.

Differences were analyzed using either a chi-square test or Fisher’s exact test, as appropriate. Unless otherwise noted, differences were not reported as statistically significant unless a probability of 0.01 or less was obtained due to the limitation of the paper length.

Health information seekers

Slightly more than half the number of the respondents ($n=621$, 52.2%) had actively sought health information during the previous 2 years. Females sought health information more times (55.4%) than males (49.0%), but not significantly, at a 1% level according to the chi square test (chi square=4.900, $P=0.028$).

Age, employment, and educational background significantly affected information-seeking behavior (chi square=28.244, $P=0.000$; chi square=41.546, $P=0.001$; and chi square=13.538, $P=0.009$, respectively). The rate of information seeking tended to increase with age (Table 1). Under employment, “students” and “workers in agriculture, forestry, and fisheries industries” were less likely to seek health information (29.0% and 33.3% respectively), while “housewives,” “self-employed workers,” and “managerial workers” were more likely to seek health information (63.3%, 62.5%, and 61.4%, respectively). Of the 5 levels of educational background, the least likely to seek health information was “primary or junior high school,” while the most likely was “2-year college” (Table 2). The average likelihood of respondents from higher education groups (i.e., vocational college, 2-year college, and university or graduate school) was higher than that of respondents from the high school education group and below (57.3% and 48.7%, respectively).

In addition, participants who saw a doctor or who took medicine themselves (56.2% of respondents) were significantly more likely to seek health information than those who had not done so (chi square=111.187, $P=0.000$). Excluding teenage respondents, more than 60% of “patient” respondents who had experienced illness or injury reported seeking health information (Table 1).

Differences in residential area, city scale, and family income had no significant impact on information-seeking behavior (chi square=0.922, $P=0.921$; chi square=1.751, $P=0.626$; chi square=9.071, $P=0.525$). Similarly, there was no difference in information-seeking

Table 2
Distribution of health information seekers by educational background

Educational background	Health information seekers		Total respondents
	n	(%)	
Primary or junior high school	53	(44.9%)	118
High school	278	(49.5%)	562
Vocational college	72	(54.5%)	132
Two-year college	70	(66.0%)	106
University or graduate school	144	(55.2%)	261
Total	617	(52.3%)	1,179

behavior for professionals who were familiar with health information ($P=0.030$).

Topic

Topics (Q3), information sources (Q4), and impacts of health information (Q5) were analyzed from the responses of 540 health information seekers who answered all 3 questions as instructed and did not select "nothing was useful" when asked which of several sources was the most useful in answering their information need (Q4). The seekers included 18 respondents (3.3%) in health-related professions.

Among the 9 answer choices to the question on respondents' recent information searches, "specific diseases and/or conditions" was the most common (79.4%). About half had researched "doctors and/or hospitals," "drugs," and/or "treatment and/or surgery." Approximately 20% of respondents researched other topics (Table 3).

Demographic factors did not affect the topics. However, health information seekers who had experienced or were experiencing illness or injury searched for "drugs" more than other seekers (chi square=8.434, $P=0.005$). Those who had recently ill family or friends searched for "treatment and/or surgery" and "mental health" more than other seekers (chi square=14.042, $P=0.000$; chi square=7.387, $P=0.006$, respectively). Respondents with health-related professions researched "drugs" more than non-health-related respondents did (88.9% vs. 48.6%, $P=0.001$).

Source

The most used sources were "doctors" (57.0%) and "Internet" (44.3%). Traditional mass media such as "newspapers," "TV/radio," and "magazines" were

considerably less popular for information seeking (17.0%, 14.3%, and 12.6%, respectively). Professionals other than doctors, such as "pharmacists" and "nurses," were not common sources of information either (13.1% and 12.6%, respectively).

Significant differences in respondent age were evident in the choice of information source, especially with regard to "Internet" and "doctors" (chi square=103.832, $P=0.000$; chi square=36.254, $P=0.000$, respectively). The younger generation used "Internet" more often, while the elder generation relied on "doctors." Seekers in their 50s chose "doctors" (60%) slightly more than "Internet" (40%), representing the average values of respondents as a whole (Figure 1). Other than "doctors" and "Internet," "newspapers" (chi square=24.214, $P=0.000$) and "TV & radio" (chi square=36.254, $P=0.000$) were chosen by respondents in their 60s significantly more often than by those in other age groups.

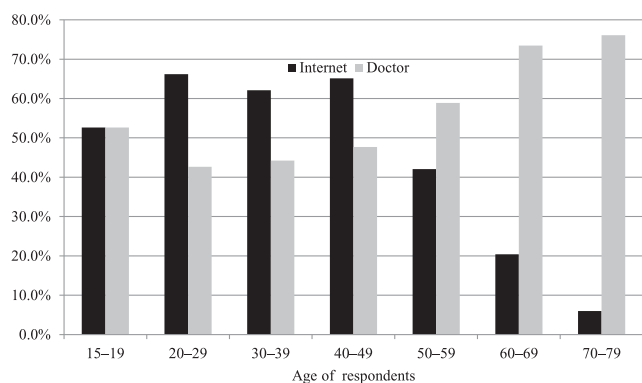
Significant differences in choice of information source were also shown to correspond to employment, educational background, household income, and health-related professions. Over half the number of respondents who identified themselves as office workers (67.1%), students (56.0%), and managerial workers (54.2%) chose "read information on the Internet." Unemployed people relied heavily on "doctors" (82.5%) and were unlikely to state that they used "Internet" (11.3%) (chi square=65.317, $P=0.000$ for "Internet"; chi square=30.022, $P=0.000$ for "doctors"). Health information seekers with higher educational backgrounds (2-year college and university or graduate school) were more likely to use "Internet" (65.5% and 64.8%, respectively). In contrast, those with primary or junior high school backgrounds used "Internet" less (13.6%) and relied

Table 3
Topics that participants searched for the last time they looked for information*

Topics (n=540)	n	(%)
Specific disease and/or conditions	429	(79.4%)
Doctors and/or hospitals	285	(52.8%)
Drugs	268	(49.6%)
Treatment and/or surgery	246	(45.6%)
Exercise and/or fitness	126	(23.3%)
Health insurance and/or health care cost	105	(19.4%)
Nutrition, diet therapy, vitamins, and/or health food	95	(17.6%)
Mental health (e.g., depression, anxiety, and/or stress)	90	(16.7%)
Alternative medicine (e.g., traditional oriental medicine, acupuncture, moxibustion)	51	(9.4%)
Other	4	(0.7%)

* More than one choice could be selected.

Figure 1
Sources used by respondents*



* Respondents could choose both Internet and doctor.

more on “doctors” (77.3%) (chi square=61.288, $P=0.000$ for “Internet”; chi square=15.939, $P=0.003$ for “doctors”). Within the 9 household income classes, specific classes showed a higher rate of “Internet” use (e.g., 72.7% in the above 12 million Japanese yen [JPY] per year class and 66.7% in the 6–7 million JPY class) (chi square=56.385, $P=0.000$). Meanwhile, lower household income classes reported a higher use of “doctors” as information sources (e.g., 85.3% in the less than 2 million JPY class; 63.9% in the 2–3 million JPY class; and 64.5% in the 3–4 million JPY) despite weaker significance (chi square=20.964, $P=0.021$). Respondents in health-related professions reported using “books” for information more frequently than other respondents (66.7% vs. 26.4%, chi square=14.072, $P=0.001$). There was no significant difference corresponding to other demographic characteristics.

Impact

The majority response for overall impact of the information obtained was “relieved or comforted” (45.7%), followed by “affected the decision about how to treat an illness or condition” (19.8%), “changed the way you coped with the illness or pain” (12.4%), “affected the choice about doctors or hospitals” (10.7%), and “led you to ask a primary care doctor a new question or to get a second opinion” (9.1%). Twelve (2.2%) respondents selected “other,” stating “gained knowledge,” “understood more about disease or what doctors says,” “changed the preventive care,” and “understood the direction of the health care industry.” The only negative statement was “depressed” by 1 respondent. Forty-three respondents who answered “nothing was useful” were excluded from the above analysis. They were assumed to have had no impact or a possible negative impact from the information obtained.

Sequence of topic, source, and impact

Table 4 lists the four most frequently sought topics that respondents were interested in, the most useful

three sources for each topic that they found in their research, and the impact of the information that they gained from these sources. Generally, “doctors” and “Internet” were the most common information sources. An exception was that, for information on “doctors and hospitals,” respondents were just as likely to search through “Internet” and “family and friends” as through “doctors.” The third most commonly used sources for other topics varied (Table 4).

“Relieved or comforted” was generally the most selected impact of the information gained, especially with regard to “drugs.” Effects related to decisions or changes were less common; only seekers who wanted information on “doctors and/or hospitals” and who gained information from “Internet” or “family and friends” were likely to have felt that the search affected their “choice about doctors or hospitals” (73.3% and 60.0%, respectively, for each search medium). They must have looked for practical information for actual choices of doctors or hospitals.

Willingness to read academic or professional medical journal articles

Q6 asked about the willingness of the respondents to read academic or professional medical journal articles when the respondents or someone close to them was seriously ill or injured. The responses to this question were: the first choice was “if it was in Japanese and free” (26.8%) and the second was “even if it had to be paid for but was written in Japanese” (22.1%), other than “I don’t know” (26.0%). The two groups (i.e., “if it was in Japanese and free” and “even if it had to be paid for but was written in Japanese”) combined account for about half the number of respondents (48.9%), indicating a general willingness of the public to read academic or professional medical journal articles if they are provided in Japanese and free of charge (Table 5).

DISCUSSION

The changing and unchanging nature of health information-seeking behavior in Japan

This study found a higher proportion of active health information seekers (52.2%) than did a Japanese study for general seekers conducted in 2009 (31.2%), which included only diseases or drugs [20]. The higher rate among patients and aged respondents suggests that illness and aging were important factors leading to health information-seeking behavior, as shown in other studies in Japan [20, 21].

“Disease” and “drugs” were the 2 most frequently sought topics, as found in previous surveys in 2001 [19] and 2000 [10]. However, the topic of “doctors and/or hospitals” was unexpected as a commonly sought research topic (52.8%); the proportion of this topic was much higher than that in the 2 patient studies in 2000 (i.e., MHLW’s survey and e-patients’ survey: 29.3% and 25.1%, respectively) [10, 17]. The higher rate of “doctors/hospitals” seekers must be

Table 4
Relationship of topic of interest, source chosen, and impact of information*

Q3: Topics of most interest† (n=540)	n	n (%)	Q4: Source chosen‡	n (%)	Q5: Impact from the information that they gained					
					Affected decision on treatment	Affected choice of doctor or hospital	Led them to ask a primary care doctor a new question or to get a second opinion	Changed the way illness or pain	Relieved or comforted	Other
Specific disease and/or conditions	231	42.8%	Doctor	102 (44.2%)	→24 (23.5%)	9 (8.8%)	10 (9.8%)	11 (10.8%)	48 (47.1%)	0 (—)
			Internet	76 (32.9%)	→10 (13.2%)	5 (6.6%)	5 (6.6%)	13 (17.1%)	39 (51.3%)	4 (5.3%)
			Book	18 (7.8%)	→1 (5.6%)	0 (—)	0 (—)	6 (33.3%)	10 (55.6%)	1 (5.6%)
Treatment and/or surgery	89	16.5%	Doctor	50 (56.2%)	→14 (28.0%)	1 (2.0%)	5 (10.0%)	5 (10.0%)	24 (48.0%)	1 (2.0%)
			Internet	24 (27.0%)	→7 (29.2%)	3 (12.5%)	4 (16.7%)	4 (16.7%)	6 (25.0%)	0 (—)
			Family and friends	7 (7.9%)	→1 (14.3%)	1 (14.3%)	0 (—)	0 (—)	4 (57.1%)	1 (14.3%)
Drugs	61	11.3%	Doctor	22 (36.1%)	→2 (9.1%)	2 (9.1%)	4 (18.2%)	1 (4.5%)	13 (59.1%)	0 (—)
			Internet	15 (24.6%)	→4 (26.7%)	0 (—)	1 (6.7%)	1 (6.7%)	9 (60.0%)	0 (—)
			Pharmacists	8 (13.1%)	→0 (—)	1 (12.5%)	0 (—)	0 (—)	6 (75.0%)	0 (—)
Doctors and/or hospitals	56	10.4%	Internet	15 (26.8%)	→1 (6.7%)	11 (73.3%)	0 (—)	0 (—)	3 (20.0%)	0 (—)
			Family and friends	15 (26.8%)	→1 (6.7%)	9 (60.0%)	1 (6.7%)	0 (—)	4 (26.7%)	0 (—)
			Doctor	14 (25.0%)	→4 (28.6%)	2 (14.3%)	1 (7.1%)	6 (42.9%)	0 (—)	

* Responses of those individuals who did not answer "nothing was useful" when asked about useful information.

† Top four topics only.

‡ Top three sources for each topic only.

Table 5
Willingness to read academic or professional medical journal articles

	n	(%)
Even if it was in English	65	(5.4%)
If it was free	21	(1.8%)
If it was in Japanese	264	(22.1%)
If it was in Japanese and free	320	(26.8%)
Don't want to read	213	(17.9%)
I don't know	310	(26.0%)
Total	1,193	(100.0%)

associated with the growth of Internet use, considering the relationship between topics and information sources. "Internet" is probably used as a search tool more frequently than "doctors" for information on "doctors and/or hospitals" because potential conflicts of interest make impersonal searches easier and more trustworthy [32]. However, in addition to serious issues, patients also require practical information such as location, treatment policy, achievement, and physicians' specialties, all of which are available on the Internet [12, 18].

The percentage of respondents using the Internet as a health information source was more than 4 times larger than that observed in the 2000 patient survey (10.0%). A much more rapid increase, from 10.8% in 2003 to 60.6% in 2008, was shown in another Japanese survey [12], but those results may have been limited as use of the Internet was explored only for the 3 most frequently used information sources. The current study confirmed a significant correlation between chosen information sources and respondent age groups. The association between the younger age group and Internet use suggests that the Internet will become more popular among health information seekers in the future. Regardless, "doctors" are still the primary information source (57.0%) in general for current health information, with the exception of information searches regarding "doctors and hospitals."

Cultural differences and similarities

The current study in Japan and the 2008 Pew Internet study in the United States [13] have 4 of the top 5 topics in common (disease, treatment and/or surgery, drugs, and doctors and/or hospitals). The major difference is that the results of the Japanese study show much lower search percentages for less mainstream topics such as "exercise and/or fitness" (23.3% in Japan vs. 38.0% in the United States), "health insurance and/or cost" (19.4% vs. 27.0%, respectively), "alternative medicine" (9.4% vs. 26.0%), "nutrition and/or diet therapy" (17.6% vs. 24.0%), and "mental health" (16.7% vs. 21.0%). A reason for these differences may be that the US study asked whether respondents "had looked" online for such information, while the current Japanese study only asked about more recent searches. Another probable reason is the emphasis on health care self-management in the United States, which results in greater availability of health information.

Even though the Internet has become more popular among health information seekers in Japan over the past decade, online health information-seeking behavior is still less common in Japan than in the United States, according to the most recent studies (44.3% of adults in the current study vs. 61.0% of adults in United States) [13]. Again, this may refer to the generality of the US studies, which asked about overall search behavior. Furthermore, studies in both countries confirm the popular sentiment that “the Internet does not replace health professionals” [13].

As to the effect of health information, “relieved or comforted” was the most chosen answer (45.7%) in the current study. However, this percentage was lower than that observed among Internet users in the US 2008 study (56%) [13] and was not as common as other responses, including “health-care decision” (20% vs. 58%), “asking a primary care doctor a new question” (9% vs. 54%), and “changed the way I coped with illness or pain” (12% vs. 39%). There are several possible reasons for this. For example, Japanese patients may not be able to discuss their health openly with doctors, decide treatment, or make their own decisions even when they desire to do so [20]. They may simply have fewer options because of universal health insurance policies and medical paternalism, or relevant, understandable information may not be available in the Japanese language [33].

Implications for health sciences librarians

Roughly half the number of all respondents (48.9%) declared a willingness to read academic or professional medical journal articles if they were written in Japanese and provided free of charge. However, the fact remains that latest medical research is usually published in English [6]. Japanese medical journal articles are not generally accessible to the public because of the lack of a free citation database and the limited holdings at medical libraries [6]. Furthermore, such articles are not frequently available online or in digitized form; for example, only 29.0% of Japanese titles in the field of science, technology, and medicine (STM) are available online [34], compared with 96.1% of STM titles published by major publishers in the world [35]. Therefore, distribution (particularly online) remains difficult even for interested parties. Respondents may not have even seen these kinds of articles. The results of this study indicate some directions for future research: specifically, what kinds of articles are useful and appropriate for patients and families; how is the discrepancy between the difficulty of articles and their health literacy resolved; how feasible is it to provide the latest, accurate Japanese medical research online, free of charge; and how can consumers research and obtain relevant health information. Health sciences librarians should make an effort to advocate the need for latest medical information among consumers as well and should conduct research to bring appropriate health information to consumers.

CONCLUSION

The evidence indicates that Japanese health care consumers are now seeking health information in a proactive manner. This phenomenon is probably caused by the enhanced accessibility to health information through the Internet. The effects of this new trend are still vague; however, it seems that consumers feel reassured by the information they have accessed already and are interested in learning about clinical research in their native language.

Because of the rapidly aging population, the importance of health care information will continue to grow in Japan. More research is needed to determine the usefulness of various health information sources; possibility of providing academic or professional medical journal articles to citizens; and ways to eliminate obstacles to consumers' understanding of medical information, such as through health literacy, scholarly communication, and information behavior research.

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AUTHORS' AFFILIATIONS

Yukiko Sakai, MSIS, AHIP, JHIP (corresponding author), yukiko@lib.keio.ac.jp, Head, Public Services, Shinanomachi Media Center, Kitasato Memorial Medical Library; Keio University, 35 Shinanomachi, Shinjuku-ku, Tokyo 160-8582, Japan; **Chihiro Kunimoto, MLS**, chihiro-kunimoto@muc.biglobe.ne.jp, Assistant Professor; Graduate School of Letters; **Keiko Kurata, MLS**, kurata@z3.keio.ac.jp, Professor, School of Library and Information Science; Keio University, 2-15-45 Mita, Minatoku, Tokyo 108-8345, Japan

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