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Determinants of Awareness of Clinical Practice Guidelines among Healthcare Users in Japan

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Abstract

Clinical practice guidelines (CPGs) are used by both healthcare users and providers, so their recognition is important. The present study's purpose was to clarify the features of healthcare users who are aware of the CPGs. A cross-sectional survey was conducted targeting Internet survey panels ($n = 6000$). The study participants (age range, 20s to 60s) had no medical qualifications and had received medical care in the last 3 months. Multivariate logistic regression analysis was performed to clarify the factors related to the awareness of CPGs. When "I have seen the CPGs" was used as the objective variable, the odds ratios (ORs) were high for "e-health literacy/score 31–40" (OR = 8.72, 95% confidence interval [CI]: 6.51-11.68), "Sources of health information/healthcare workers and professionals" (OR = 2.61, 95% CI: 2.17-3.14), "Age/20s" (OR = 2.38, 95% CI: 1.74–3.23), and "I have been diagnosed and treated for a major illness" (OR = 2.01, 95% CI: 1.52–2.65). These results could be applied to aid the dissemination and utilization of CPGs among healthcare users.

Keywords

clinical practice guidelines, evidence-based medicine, guidelines dissemination, internet survey, patient

Introduction

Since the 2000s, the Japanese medical community has actively created evidence-based clinical practice guidelines (CPGs) (1,2). Currently, more than 200 CPGs on a wide variety of diseases and themes, including revised editions, are published annually in Japan (3). The CPGs in Japan are developed mainly by academic societies and research groups (4,5). The developed CPGs are published as books and on websites for use in medical care (6,7).

The Medical Information Network Distribution Service (MINDS) project, which was started in 2002 to promote the development, dissemination, and utilization of CPGs in Japan,(8) was implemented by the Japan Council for Quality Health Care as a project commissioned by the Ministry of Health, Labour and Welfare (9) and is currently investigating the participation of healthcare users in the development and utilization of CPGs. The CPGs are expected to be used by both healthcare users and providers, so their recognition is important (10,11). In Japan, CPGs have been created for numerous diseases, but promoting their dissemination and utilization has remained an issue for the future (12–14). Moreover, in recent years, worldwide attention has been focused on the utilization of CPGs for patients (15–17).

Given this background, a cross-sectional survey was conducted targeting Internet survey panels (preselected groups of individuals who have agreed to provide market research) that utilize medical care. The purpose of the present study was to clarify the features of healthcare users who are aware of the CPGs. We believe that clarifying these features could provide basic information for promoting the dissemination and utilization of CPGs among healthcare users.

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Method

Study Design. Participants were recruited into this cross-sectional study through one of the largest online survey companies in Japan, with over 2 million panel members. The study participants included those aged 20 years or older who had received medical care within the past 3 months ($n = 6000$). During this period, the participants were outpatients, hospitalized, or using home care. None of the participants held a medical license. The survey collected 600 responses from participants of each sex (male and female) from each 10-year age group (20s, 30s, 40s, 50s, and 60s). The sample size was set at 6000 individuals to allow for detailed analyses by sex and age. In the survey, participants were asked about their sex, age, and years of schooling. They were also asked whether they "were currently outpatients," "had been hospitalized in the past year," "had been diagnosed or treated for a major illness (cancer, heart disease, stroke, or chronic kidney disease)," whether "a family member (parent, sibling, spouse, or child) had been hospitalized in the past year," and whether "a family member had been diagnosed or treated for a major illness (cancer, heart disease, stroke, or chronic kidney disease)," as well as "their sources of health information (mass media, the Internet, or healthcare workers and professionals)." Health literacy in terms of Internet use (e-health literacy) was measured using the Japanese version of the eHealth Literacy Scale (eHEALS) (18). The eHEALS is an eight-item measure of e-health literacy that was developed to measure consumers' combined knowledge, comfort, and perceived skills at finding, evaluating, and applying electronic health information to health problems (19) (see Appendix A). The online survey was conducted in March 2019. The survey period was 2 weeks. When conducting the questionnaire survey, a full description was posted on the survey website. Among the Internet survey panels, only those who gave their consent cooperated in the survey. Those who responded to the survey were given incentives (points that could be used for shopping on the Internet) by the survey company. The protocol of the present study was approved by the institutional review boards at Tokyo Women's Medical University (5362) and Shizuoka Graduate University of Public Health (SGUPH_2021_006).

Table 1. Participants' Background Information.

	n	%
Sex		
Male	3000	50.0
Female	3000	50.0
Age (years)		
20s	1200	20.0
30s	1200	20.0
40s	1200	20.0
50s	1200	20.0
60s	1200	20.0
Years of schooling		
9	107	1.8
12	1666	27.8
14	1299	21.7
> 16	2876	47.9
Unknown	52	0.9
I regularly visit the hospital		
Yes	3729	62.2
No	2271	37.9
I have been hospitalized in the past year		
Yes	603	10.1
No	5397	90.0
I have been diagnosed and treated for a major illness[a]		
Yes	586	9.8
No	5414	90.2
My family member has been hospitalized in the past year[b]		
Yes	1068	17.8
No	4932	82.2
My family member has been diagnosed and treated for a major illness[a,b]		
Yes	1020	17.0
No	4980	83.0
Sources of health information/mass media		
Yes	3224	53.7
No	2776	46.3
Sources of health information/the Internet		
Yes	5315	88.6
No	685	11.4
Sources of health information/healthcare workers and professionals		
Yes	2100	35.0
No	3900	65.0
e-health literacy (score)		
0–20	1804	30.1
21–30	3692	61.5
31–40	504	8.4

[a]The major illnesses were cancer, heart disease, stroke, and chronic kidney disease.
[b]The family members were parents, siblings, spouses, and children.

Data Analysis. At the beginning of the study, background information was collected from all participants. The aggregated factors were sex, age, years of schooling, "I regularly visit the hospital," "I have been hospitalized in the past year," "I have been diagnosed and treated for a major illness", "My family member has been hospitalized in the past year," "My family member has been diagnosed and treated for a major illness," sources of health information/mass media, sources of health information/the Internet, sources of health information/healthcare workers and professionals, and e-health literacy. Next, the participants' background information was cross-tabulated with awareness of the CPGs, which consisted of two levels. "I know/don't know the CPGs" ($n = 1588$, $n = 4412$) and "I have seen/never seen the CPGs" ($n = 595$, $n = 5405$). Statistical significance was assessed using the chi-squared test. All tests were two-sided, and P values < 0.05 were considered statistically significant.

Finally, multiple logistic regression analysis was conducted to examine the relationships between variables. The dependent variables were awareness of CPGs: "I know/don't know the CPGs" or "I have seen/never seen the

CPGs." In the present study, two statistical models were created for these outcomes. Eleven independent variables were used for which significant differences were observed in cross tabulation (sex, age, years of schooling, "I regularly visit the hospital," "I have been hospitalized in the past year," "I have been diagnosed and treated for a major illness," "My family member has been hospitalized in the past year," "My family member has been diagnosed and treated for a major illness," sources of health information/mass media, sources of health information/healthcare workers and professionals, and e-health literacy). All tests were two-sided and P values < 0.05 were considered statistically significant. All statistical analyses were performed using SAS version 9.4 (SAS Institute Inc., Cary, NC, USA).

Results

Table 1 shows the participants' background information. Sex and age were constant because they were allocated to avoid imbalances. With regard to years of schooling, the proportion of those with >16 years (47.9%) was the highest. The use of medical care was as follows: "I regularly visit the hospital" (62.2%), "I have been hospitalized in the past year" (10.1%), "I have been diagnosed and treated for a major illness" (9.8%), "My family member has been hospitalized in the past year" (17.8%), and "My family member has been diagnosed and treated for a major illness" (17.0%). The main source from where participants obtained health information was the Internet (88.6%), followed by the mass media (53.7%) and healthcare workers and professionals (35.0%). Regarding e-health literacy, 8.4% of the participants had the highest score (31–40).

Table 2 shows the participants' background information and awareness of CPGs. Among the participants who knew the CPGs, significant differences in sex (male: 28.6%, female: 24.3%), age (20s: 33.3%, 60s: 24.4%), and years of schooling (over 16 years: 29.9%, 9 years: 17.8%) were found. Significant differences in the percentages of those responding "I have been diagnosed and treated for a major illness" (Yes: 35.8%, No: 25.5%, difference: 10.3%), "My family member has been hospitalized in the past year" (Yes: 34.6%, No: 24.7%, difference: 9.9%), and "My family member has been diagnosed and treated for a major illness" (Yes: 34.7%, No: 24.8%, difference: 9.9%) were also observed. Significant differences in "Sources of health information/mass media" (Yes: 28.2%, No: 24.5%), "Sources of health information/healthcare workers and professionals" (Yes: 36.5%, No: 21.1%), and "e-health literacy" (score 31-40: 53.4%, score 0-20: 16.0%) were also found.

Likewise, among the participants who had seen the CPGs, significant differences in sex (male: 11.2%, female: 8.6%), age (20s: 14.0%, 60s: 7.4%), and years of schooling (> 16 years: 12.3%, 9 years: 7.5%) were observed. Significant differences in the percentages of those responding "I have been hospitalized in the past year" (Yes: 16.6%, No: 9.2%, difference: 7.4%) and "I have been diagnosed and treated for a major illness" (Yes: 16.6%, No: 9.2%, difference: 7.4%) were also seen. Significant differences were also observed in "Sources of health information/mass media" (Yes: 10.8%, No: 8.9%), "Sources of health information/healthcare workers and professionals" (Yes: 16.8%, No: 6.2%), and "e-health literacy" (score 31–40: 33.3%, score 0–20: 5.4%). Statistically significant differences were observed for all factors except "Sources of health information/the Internet".

Table 3 shows the results of the multiple logistic regression analysis of factors that affected awareness of CPGs. When "I know the CPGs" was used as the objective variable, the odds ratios (ORs) were high for "e-health literacy/score 31–40" (OR = 5.78, 95% confidence interval [CI] 4.62–7.24) and "e-health literacy/score 21–30" (OR = 2.07, 95% CI 1.78–2.40). When "I have seen the CPGs" was used as the objective variable, the ORs were high for "e-health literacy/score 31–40" (OR = 8.72, 95% CI 6.51–11.68), "Sources of health information/Healthcare workers and professionals" (OR = 2.61, 95% CI: 2.17–3.14), "Age/20s" (OR = 2.38, 95% CI: 1.74–3.23), and "I have been diagnosed and treated for a major illness" (OR = 2.01, 95% CI: 1.52–2.65).

Discussion

The present study, which targeted Internet survey panels, aimed to clarify the awareness of CPGs among healthcare users and related factors. The results indicated that the factors related to the recognition of CPGs were "e-health literacy," "Sources of health information/healthcare workers and professionals," "Age," and "Use of medical care due to major illness of oneself." Sex and years of schooling were not significantly related.

The results of the present study indicated that people with high e-health literacy had high awareness of CPGs. In many cases, CPGs developed in Japan are published on the Internet through the websites of academic societies and are available to healthcare users (20). We believe that the publication of CPGs on the Internet leads to the use of CPGs by those with high e-health literacy. On the other hand, some academic societies publish CPGs that they have created on members-only websites (20). Academic societies in Japan are private academic bodies, not in the public domain. As CPGs are used by both healthcare providers and users, it is thought that making them available to the public would improve the effectiveness of their use (21,22).

The factor second most strongly associated with recognition of CPGs was "Sources of health information/healthcare workers and professionals." CPGs support shared decision-making between healthcare users and providers. In other words, CPGs serve as a communication tool between healthcare users and providers (23,24). One form of the utilization of CPGs involves the healthcare provider presenting them to healthcare users so that they can choose a suitable medical treatment plan together (25,26). This result may lead to the improved recognition of CPGs among healthcare users. The results also indicated that healthcare users who know

Table 2. Background Information and Awareness of Clinical Practice Guidelines (CPGs).

	I know the CPGs (*n* = 1588)		I don't know the CPGs (*n* = 4412)				I have seen the CPGs (*n* = 595)		I have never seen the CPGs (*n* = 5405)			
	n	%	*n*	%	Total	*P*	*n*	%	*n*	%	Total	*P*
Sex												
Male	858	28.6	2142	71.4	3000	.0002	336	11.2	2664	88.8	3000	.0009
Female	730	24.3	2270	75.7	3000		259	8.6	2741	91.4	3000	
Age (years)												
20s	399	33.3	801	66.8	1200	< 0.0001	168	14.0	1032	86.0	1200	< 0.0001
30s	307	25.6	893	74.4	1200		130	10.8	1070	89.2	1200	
40s	290	24.2	910	75.8	1200		102	8.5	1098	91.5	1200	
50s	299	24.9	901	75.1	1200		106	8.8	1094	91.2	1200	
60s	293	24.4	907	75.6	1200		89	7.4	1111	92.6	1200	
Years of schooling												
9	19	17.8	88	82.2	107	< 0.0001	8	7.5	99	92.5	107	< 0.0001
12	333	20.0	1333	80.0	1666		90	5.4	1576	94.6	1666	
14	362	27.9	937	72.1	1299		138	10.6	1161	89.4	1299	
> 16	860	29.9	2016	70.1	2876		354	12.3	2522	87.7	2876	
Unknown	14	26.9	38	73.1	52		5	9.6	47	90.4	52	
I regularly visit the hospital												
Yes	1031	27.7	2698	72.4	3729	.0079	395	10.6	3334	89.4	3729	.0248
No	557	24.5	1714	75.5	2271		200	8.8	2071	91.2	2271	
I have been hospitalized in the past year												
Yes	207	34.3	396	65.7	603	< 0.0001	100	16.6	503	83.4	603	< 0.0001
No	1381	25.6	4016	74.4	5397		495	9.2	4902	90.8	5397	
I have been diagnosed and treated for a major illness[a]												
Yes	210	35.8	376	64.2	586	< 0.0001	97	16.6	489	83.5	586	< 0.0001
No	1378	25.5	4036	74.6	5414		498	9.2	4916	90.8	5414	
My family member has been hospitalized in the past year[b]												
Yes	369	34.6	699	65.5	1068	< 0.0001	164	15.4	904	84.6	1068	< 0.0001
No	1219	24.7	3713	75.3	4932		431	8.7	4501	91.3	4932	
My family member has been diagnosed and treated for a major illness[a,b]												
Yes	354	34.7	666	65.3	1020	< 0.0001	153	15.0	867	85.0	1020	< 0.0001
No	1234	24.8	3746	75.2	4980		442	8.9	4538	91.1	4980	
Sources of health information/mass media												
Yes	909	28.2	2315	71.8	3224	.0011	348	10.8	2876	89.2	3224	.0143
No	679	24.5	2097	75.5	2776		247	8.9	2529	91.1	2776	
Sources of health information/the Internet												
Yes	1401	26.4	3914	73.6	5315	.5997	522	9.8	4793	90.2	5315	.4910
No	187	27.3	498	72.7	685		73	10.7	612	89.3	685	
Sources of health information/healthcare workers and professionals												
Yes	767	36.5	1333	63.5	2100	< 0.0001	353	16.8	1747	83.2	2100	< 0.0001
No	821	21.1	3079	79.0	3900		242	6.2	3658	93.8	3900	
e-health literacy (score)												
0–20	289	16.0	1515	84.0	1804	< 0.0001	97	5.4	1707	94.6	1804	< 0.0001
21–30	1030	27.9	2662	72.1	3692		330	8.9	3362	91.1	3692	
31–40	269	53.4	235	46.6	504		168	33.3	336	66.7	504	

[a]The major illnesses were cancer, heart disease, stroke, and chronic kidney disease.
[b]The family members were parents, siblings, spouses, and children.

the CPGs are actively communicating with healthcare workers and specialists. As the present study analyzed cross-sectional data, no causal relationships could be determined; this remains an issue to be resolved in future studies.

It would be natural to presume that healthy people are not as interested in medical care. On the other hand, it can also be presumed that when individuals or their family members become seriously ill and require medical care, it would lead

Table 3. Multiple Logistic Regression Analysis of Factors That Affect Awareness of Clinical Practice Guidelines (CPGs).

	I know the CPGs				I have seen the CPGs			
		95% confidence interval				95% confidence interval		
	Odds ratio	Lower	Upper	*P*	Odds ratio	Lower	Upper	*P*
Sex								
Male	1.16	1.02	1.32	.0218	1.16	0.96	1.41	.1298
Female	1.00				1.00			
Age (years)								
20s	1.78	1.45	2.17	< 0.0001	2.38	1.74	3.23	< 0.0001
30s	1.18	0.96	1.45	.1053	1.83	1.33	2.51	.0002
40s	1.05	0.86	1.28	.6507	1.31	0.95	1.82	.0988
50s	1.07	0.88	1.31	.4940	1.31	0.95	1.79	.0972
60s	1.00				1.00			
Years of schooling								
9	1.00				1.00			
12	1.07	0.63	1.82	.8103	0.63	0.29	1.40	.2589
14	1.62	0.95	2.75	.0778	1.25	0.57	2.74	.5695
> 16	1.58	0.94	2.67	.0871	1.25	0.58	2.69	.5677
I regularly visit the hospital								
Yes	1.08	0.95	1.24	.2420	1.09	0.89	1.34	.3893
No	1.00				1.00			
I have been hospitalized in the past year								
Yes	1.36	1.12	1.66	.0018	1.67	1.28	2.17	.0001
No	1.00				1.00			
I have been diagnosed and treated for a major illness[a]								
Yes	1.54	1.26	1.88	< 0.0001	2.01	1.52	2.65	< 0.0001
No	1.00				1.00			
My family member has been hospitalized in the past year[b]								
Yes	1.41	1.20	1.65	< 0.0001	1.62	1.29	2.02	< 0.0001
No	1.00				1.00			
My family member has been diagnosed and treated for a major illness[a,b]								
Yes	1.36	1.15	1.60	.0003	1.40	1.11	1.76	.0046
No	1.00				1.00			
Sources of health information/mass media								
Yes	1.22	1.08	1.38	.0018	1.24	1.03	1.50	.0207
No	1.00				1.00			
Sources of health information/healthcare workers and professionals								
Yes	1.93	1.70	2.18	< 0.0001	2.61	2.17	3.14	< 0.0001
No	1.00				1.00			
e-health literacy (score)								
0–20	1.00				1.00			
21–30	2.07	1.78	2.40	< 0.0001	1.78	1.39	2.26	< 0.0001
31–40	5.78	4.62	7.24	< 0.0001	8.72	6.51	11.68	< 0.0001

[a]The major illnesses were cancer, heart disease, stroke, and chronic kidney disease.
[b]The family members were parents, siblings, spouses, and children.

to requests for medical information, and in turn, to higher recognition of CPGs. One of the purposes of the MINDS project is to promote the dissemination and utilization of CPGs in Japan (8). The MINDS project started about 20 years ago, but as shown in the present survey, recognition was generally low, with only about 1 in 10 healthcare users having seen the CPGs, and only about 1 in 4 being familiar with them. These findings suggest the importance of providing the CPGs to healthcare users when they or their family members require medical care. For example,

it may be effective to develop public relations materials (eg, posters, pamphlets) on CPGs for use in hospitals, clinics, and pharmacies.

In the present study, no sex difference in the recognition of CPGs was found, but in terms of age, recognition was higher among younger people. The reason for this is thought to be the influence of school education or the ability to collect information, but the details were not clear. No statistically significant differences were observed with regard to the Internet as a source of health information. The reason for this is thought to be that the participants had a high affinity for the Internet because they were derived from Internet survey panels. When surveys are conducted on the general population, associations may be found between awareness of CPGs and Internet use.

Limitations

The survey in the present study was conducted using Internet survey panels. The research company is a major company with survey panels of about 2 million people. The participants of the present survey were those who had received medical care within the past 3 months, and there we no difficulties recruiting the participants owing to the large survey population. In the present study, because of the large sample size ($n = 6000$), statistically significant differences were observed for most factors. No sample size estimation was performed in the present study. Therefore, when interpreting the results, the size of the OR, which is an effect index, is more important than the statistical significance. As the participants in the present study were derived from Internet survey panels, we believe that the results show the characteristics of those who are familiar with the Internet. Those who are proficient in using the Internet are considered to be good at searching for and acquiring information available online. The participants of this survey were from volunteer opt-in panels registered on the Internet using an open recruitment method. Therefore, they were not random samples from the general population in Japan. Our results do not reflect the characteristics of those who do not use the Internet or those who use the Internet and are not registered with survey panels, so the possibility of selection bias should be considered. In other words, the results of the present study face the same general challenges posed by other Internet surveys (27,28). On the other hand, according to a communication usage trend survey conducted by the Ministry of Internal Affairs and Communications of Japan in 2018, over 95% of people aged 13–49 years, over 90% of those in their 50s, and nearly 80% of those in their 60s, use the Internet on a daily basis (29). The majority of the Japanese population uses the Internet. In addition, in the present study, the number of collections was limited by sex and age to avoid imbalances. Moreover, the survey was conducted using Internet survey panels with an emphasis on gathering participants who met the condition of receiving medical care within the past 3 months. The age range of the participants in the present study was 20–60 years. Those aged ≥ 70 years were excluded because although many were healthcare users, only a small proportion was using the Internet regularly (30). To clarify the situation among those aged ≥ 70 years, it will be necessary to conduct a survey using another method. The questionnaire used in the present study was created for this survey and was not validated. Because the survey items were adopted on a preliminary basis, further examination of the items will be necessary for the future.

Conclusion

The present study clarified the factors related to the recognition of CPGs among healthcare users. We believe that these findings can be applied to aid the dissemination and utilization of CPGs among healthcare users.

Key findings

1. E-health literacy was most strongly related to the recognition of clinical practice guidelines (CPGs) among healthcare users.
2. Subsequently, "Sources of health information/healthcare workers and professionals" and "Age/20s" were related to the recognition of CPGs among healthcare users.
3. Sex and years of schooling were not significantly related to the recognition of CPGs among healthcare users.

Data Availability

The data used in this study are available upon reasonable request and with permission from the Japan Council for Quality Health Care.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval

This study was approved by the institutional review boards at Tokyo Women's Medical University (5362) and Shizuoka Graduate University of Public health (SGUPH_2021_006).

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Statement of Human and Animal Rights

All procedures in this study were conducted in accordance with the Tokyo Women's Medical University (5362) and Shizuoka Graduate University of Public health (SGUPH_2021_006) approved protocols.

Statement of Informed Consent

Written informed consent was obtained from the patients for their anonymized information to be published in this article.

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Supplemental material

Supplemental material for this article is available online.

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