

## Rapport between Cancer Patients and Their Physicians is Critical for Patient Satisfaction with Treatment Decisions

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**Background:** Cancer patients' satisfaction with their treatment decisions has been demonstrated to be associated with improved health outcomes, but few studies of this issue have been conducted in Japan.

**Objective:** To explore key factors in enhancing patient satisfaction, we assessed the association between their satisfaction and their relationships with their physicians.

**Methods:** We conducted cross-sectional questionnaire surveys among patients who had received cancer treatment. One source was outpatients from a cancer center hospital, and the other was through the website of Japan's most popular newspaper. The questionnaire included demographic questions and general self-rated life status issues, such as peace of mind, quality of life, daily activities, family relationships, rapport with attending physician, assessment of the physician's explanations, and feelings of happiness during the previous week.

**Results:** Of 576 respondents, 383 subjects said they were satisfied and 193 dissatisfied. It was confirmed that the online survey was comparable to the paper-based survey in examining patient satisfaction. The dissatisfied group included more females and fewer subjects who were forced to retire from jobs than the satisfied group. The patients in the satisfied group had a more favorable subjective opinion of their recent life. The patients in the dissatisfied group received more chemotherapy and had more side effects than those in the satisfied group. Assessment of the physician's role showed significant differences between the two groups; the patients in the satisfied group felt more than those in the dissatisfied group that their physicians' explanations of treatment were sufficient and were satisfied with their rapport with their physicians. Multiple logistic regression analysis revealed that rapport with physicians was a significant factor (odds ratio=3.79, 95% CI=2.25–6.39).

**Conclusions:** Rapport between physicians and patients is one of the most important factors in patient satisfaction with treatment decisions. (J Nippon Med Sch 2016; 83: 235–247)

**Key words:** rapport, cancer, treatment satisfaction, internet survey, Japan

### Introduction

As "paternalism" in medical practice has become less prominent, patients have become more involved in the decision-making process<sup>1,2</sup>. However, several researchers have observed passive attitudes toward decision-making among cancer patients; in fact, a recent research review has shown that passive attitudes remain dominant in patients<sup>3</sup>. Although many researchers accept the importance of shared attitudes in decision-making, these observa-

tions might be caused by differences in patient ethnicity, age<sup>4,5</sup>, and background experience<sup>6</sup>. According to a recent study, patients prefer to be controlled by the physician in decision-making; they trust their physician<sup>7</sup>.

When treatment decisions are made for cancer patients, some studies have found that patient-clinician communication increases patient satisfaction<sup>8–10</sup>. This increased satisfaction is also associated with patients' feelings about being informed and being involved in making treatment

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decisions<sup>11</sup>. As a result, patient-clinician communication about treatment decisions is being changed from a traditional “paternalistic” model to one in which patients are persuaded to be active participants<sup>12,13</sup>. Evidence suggests that when patients are involved in such a way, both their satisfaction and their health outcomes improve<sup>14,15</sup>.

Until recently, physician-centered medicine in Japan was more common, especially in cancer treatment<sup>16</sup>. Many Japanese physicians even tried to withhold “bad news” about their illnesses from patients<sup>17</sup>. Several studies have found that cancer patients were dissatisfied with such treatment and wanted to participate in the decision-making process<sup>18,19</sup>. Such social trends led to the Cancer Control Act being approved in 2006. The purpose of this law was to reduce the physical and mental discomfort of cancer patients and their families by helping cancer patients to be informed about their diagnosis, including disease stage, and to participate in making treatment decisions<sup>22</sup>.

Because we believe that greater satisfaction with treatment can improve the psychological outcomes for cancer patients, we proposed the hypothesis that cancer patients’ satisfaction with treatment is associated with their relationships with their healthcare providers, such as the close relationship brought about by patient-centered communications with physicians. To investigate this hypothesis, we conducted a cross-sectional survey among cancer patients and cancer survivors.

## Methods

### Study Design

To explore key factors increasing the satisfaction with treatment in cancer survivors, we conducted a cross-sectional questionnaire survey of patients who had been treated for cancer. Before the survey, the Institutional Review Board of Hakuoh University approved the study’s protocol.

### Study Participants

We used two sources of patients to participate in the survey. One source was established with the cooperation of a group of volunteers introduced by the Gunma Oota City Council of Social Welfare. Questionnaires were distributed in March 2012 to outpatients at Gunma Prefectural Cancer Center, one of 407 hub hospitals for improving cancer treatment designated by the government throughout Japan. One of volunteers of this group, who was a cancer survivor and was instructed in advance by researchers about the purpose of the study, was used to conduct a paper-based questionnaire survey described in

following “Measurement part.” To prevent information bias, we used only one volunteer and limited the role of the volunteer mainly to distributing the questionnaire to patients, encouraging them to complete it, and collecting it. This volunteer participated in several patient meetings held at Gunma Prefectural Cancer Center and assumed these roles there. The study’s purpose and procedure were explained in the first sheet of the questionnaire. This first sheet explained that the questionnaire policy was that the questions were to be answered only if patients could understand and agree with the policy. In this way, we received informed consent from all participants answering the questionnaire.

The second source of participants was the Internet. This part of the survey was intended to investigate the opinions of cancer survivors who had previously been treated but were not visiting hospitals at the present time. Unlike participants who were presently inpatients and outpatients of hospitals, participants who were questioned via the Internet were expected to be cancer survivors who were in remission. By distributing the questionnaire through the Internet, we could effectively explore the opinion of such cancer survivors. To achieve this, we sought cooperation from the *Yomiuri Shimbun*<sup>23</sup>, a major Japanese newspaper with a daily circulation of about 10 million. We planned to call for study participants through the website of the *Yomiuri Shimbun*. The home page of the Internet site *Yomiuri Online* shows eight tags based on the reading interests of visitors at the survey point, the spring of 2012: news, money and economy, sports, educations, medical care, entertainment, women, and seniors. When the tags for medical and care are clicked on, the web browser goes to the homepage of the website *yomiDr.*, which presents health information given by medical professionals. On a page of *yomiDr.*, a questionnaire of 28 questions, with a link to a questionnaire site, was provided. No tag or advertisement on the *Yomiuri Online* website linked to the questionnaire site. The questionnaire was accessible to all users, did not require a subscription, and did not restrict access to other pages. We asked visitors to the *Yomiuri Shimbun* website to participate in the questionnaire and provided information about the survey to three major societies for cancer patients. The study’s purpose and procedure were explained in a page before the questionnaire site. When participants indicated that they understood and agreed with the purpose and procedure, they were able to proceed to the next questionnaire page. In this way, we received informed consent from all participants answering

the questionnaire via the *yomiDr.* website. The survey was available in February and March 2012 (45 days), and we obtained necessary data from 576 participants.

#### Measurements by Questionnaire

The questionnaire survey conducted by paper-based and the Internet-based formats provided demographic information, including age, sex, marital status, family, job status, and general self-rated life status, such as peace of mind, quality of life, daily activities, family relationship, and feeling of happiness during the previous week. Participants were asked about their cancer status as follows: year of diagnosis (decision branch: over 10 years, 5 years or more and less than 10 years, 3 years or more and less than 5 years, and within less than 3 years), site of cancer (lung, stomach, colon, liver or gall bladder, breast, uterus, hematological or lymphoma, kidney, prostate, esophagus or throat, and other), and cancer stage at diagnosis (early stage, advanced stage, and unclear). Additionally, treatment status was asked about, as follows: treatment type (surgical, irradiation, chemotherapy, and other), present treatment status (ongoing, finished, routine follow-up [no treatment], and other), and experience with side effects of treatment (yes or no). Regarding treatment outcomes, we asked how participants felt subjectively about their daily life (asymptomatic, almost completely ambulatory, symptomatic, unable to do any work activities, symptomatic, greater than 50% of time in bed, and bedridden) and their economic situation after receiving treatment (crucial, serious, almost unchanged, and no change). Participants were asked about their satisfaction with their chosen treatment, and they were divided into two categories: "satisfied" and "dissatisfied," which included "not satisfied," "almost satisfied but thinking about an alternative treatment," and "having an opinion other than satisfied." Additionally, participants indicated their subjective satisfaction with treatment on a scale of 1 to 10.

Several ways of obtaining information related to treatment choices and the physician's role were explored: who chose the treatment (initiated by physician, collaborative, patient independently, and other), did you (participant) find treatment information by yourself (yes or no), what was a reliable source of treatment information (physician ["my doctor"], a physician providing a second opinion, family, Internet, paramedic, friend with same disease, other healthcare providers than physicians (e.g., acupuncture and massage), friends and colleagues, newspapers, TV and radio, general books or specialized books, government offices (such as healthcare centers and ward offices), what kind of information did you seek

(recovery rate, prognosis and survival time, comparison with other treatments, side effects, advantages and disadvantages, general risks, cost, and other), how was your physician's explanation (enough, or not enough), how was the relationship with your physician (sufficiently satisfied, satisfied, dissatisfied, and very dissatisfied), and what was your level of satisfaction with communication with your physicians (on a scale of 1 to 10). For more detailed information about the questionnaire, a Japanese version of the questionnaire is provided as an appendix (**Appendix 1**).

#### Data Analysis

The data were analyzed using the STATA (ver. 11.0) software program (Stata Corporation: College Station, TX, 2009.). A two-tailed *p*-value of  $<0.05$  was considered to indicate statistical significance. When multiple comparisons were conducted for questions with multiple answers, Bonferroni's adjustment was used. First, to identify the comparability of the two survey sources (patient volunteer group and the Internet), we assessed the status of both patients undergoing treatment and those who had previously received treatment (**Table 1**). Then, we compared the scores of satisfaction and daily life effects and economic effects after receiving cancer treatments between those who were satisfied with their treatment and those who were not (**Table 2**).

It has been reported that when people become impaired due to accidents or illness, their satisfaction levels drop soon after the impairment, although their life satisfaction ultimately recovers to about the same level as "normal" people<sup>24,25</sup>. In our research, because it was unclear when the patients in question lost their function and what stage in the recovery process they were in, we excluded those cases to avoid any bias in the results, because such cases may occur immediately after their impairment. In this study, at the least, participants who had a poor prognosis, according to the points that described limitations in their daily life activities, jobs, and economy, would be expected to have a negative opinion about the treatment they received.

Moreover, according to the first assessment, there were significant differences between the hospital patient group and the Internet group in terms of daily activities and daily life effects related to the cancer treatment, as well as age distribution and job status (**Table 1**). Thus, the following analysis targeted only participants who did not have the above restrictions; that is, limitations in their life activities and economic situation. To exclude participants with these restrictions, patients who answered "as-

Table 1 Comparison of cancer survivors between patient volunteer group and Internet group

Total participants		Patient volunteer group (n=145)	Internet group (n=431)	P <sup>a</sup>
<b>Demographics</b>				
Age:	Median (25–75%)	67 (60–72)	59 (49–68)	<0.001
Sex:	Male	78 (54)	188 (44)	0.034 <sup>a</sup>
	Female	67 (46)	243 (56)	
Marital Status:	Married	128 (89)	342 (79)	0.012 <sup>a</sup>
	Single	7 (5)	59 (14)	
	Divorced/Widowed	8 (6)	30 (7)	
Family:	Yes	124 (86)	368 (85)	0.968
	No	21 (15)	63 (15)	
Job status:	Yes	35 (25)	202 (47)	<0.001 <sup>a</sup>
	Retired/stopped working for health reasons	66 (47)	101 (23)	
	Mandatory retirement	18 (13)	36 (8)	
	No	21 (15)	92 (21)	
<b>Cancer treatment and related</b>				
Satisfied with treatment	Yes	95 (66%)	288 (67%)	0.774
Satisfaction score (1–10)	Average (SD)	8.1 (1.6)	8.0 (1.7)	0.995
	Median (25–75%)	8 (7–9)	8 (7–9)	
	Peace of mind	8 (6–9)	8 (6–8)	
About your life during the past week (1–10, score average)	Quality of life	8 (6–9)	8 (7–9)	0.168
	Daily activities	7 (5–8)	8 (6–9)	0.005 <sup>a</sup>
	Family relationship	8 (7–10)	8 (7–10)	0.824
Daily life effects:	Feeling of happiness	8 (6–10)	8 (7–9)	0.264
	Asymptomatic	65 (46)	301 (70)	<0.001 <sup>a</sup>
	Almost completely ambulatory	47 (33)	88 (20)	
	Symptomatic, unable to work	22 (15)	33 (8)	
Symptomatic, >50% in bed	7 (5)	8 (2)		
Treatment type:	Bedridden	1 (1)	1 (0)	<0.001 <sup>a</sup>
	Surgical	101 (69)	358 (83)	
	Irradiation	42 (29)	138 (32)	
	Chemo	77 (52)	203 (47)	
	Other	9 (6)	108 (25)	
Follow-up treatment:	Other	9 (6)	108 (25)	<0.001 <sup>a</sup>
	Ongoing	76 (52)	155 (36)	
	Finished	17 (12)	75 (17)	
	Routine follow-up (no treatment)	50 (34)	189 (44)	
Treatment side effects:	Other	2 (1)	12 (3)	0.501
	Yes	68 (49)	225 (52)	

<sup>a</sup> Statistically significant by  $\chi^2$  test for categorical data and Wilcoxon rank sum test for continuous data. The significance level was <0.05, and Bonferroni's adjustment was used for multiple comparisons. Despite evaluation of several characteristics, such as fewer survivors with ongoing follow-up treatment at the survey point among the online respondents, there was no difference in the rate of satisfaction with treatment between the groups.

ymptomatic" or "almost completely ambulatory" as their treatment effect on daily life, and other than "crucial" as the treatment effect on their subjective economic status were defined as "eligible participants." Then, eligible participants in the satisfied and dissatisfied groups were compared according to demographics and self-rated recent life status. Second, we analyzed cancer status and treatment status in those two groups (Table 3).

Furthermore, to investigate the key factors influencing cancer patients' satisfaction with their treatments, we assessed several ways of gaining information related to treatment choices and the physician's roles (Table 4).

Finally, a logistic regression analysis was conducted. In this regression model, gender, age, and survey source were adjusted because they were thought to be basically confounding. We also excluded some participants from

Table 2 Effect of treatment among total participants according to satisfaction with chosen treatment for their cancer

Total participants		Opinion of chosen treatment		
		Satisfaction (n=383)	Dissatisfaction (n=193)	P <sup>a</sup>
Satisfaction score for treatment (1–10):	Average (SD)	8.8 (1.1)	6.6 (1.7)	<0.001 <sup>a</sup>
	Median (25–75%)	9 (8–10)	7 (5–8)	
Daily life effect:	Asymptomatic	268 (70)	98 (51)	<0.001 <sup>a</sup>
	Almost completely ambulatory	77 (20)	58 (30)	
	Symptomatic, unable to work	32 (8)	23 (12)	
	Symptomatic, >50% in bed	5 (1)	10 (5)	
	Bedridden	0 (0)	2 (1)	
Subjective economic effect:	Crucial	44 (12)	40 (21)	<0.001 <sup>a</sup>
	Serious	87 (23)	61 (32)	
	Almost unchanged	157 (41)	64 (34)	
	Not different	91 (24)	26 (14)	

<sup>a</sup> Statistically significant by  $\chi^2$  test. The significant level was set at <0.05.

There were associations among daily life activity, economic effects, and treatment satisfaction.

Table 3 Eligible participants' demographics and present life status according to satisfaction with chosen treatment for their cancer

Eligible participants		Opinion of chosen treatment		
		Satisfied group (n=314)	Dissatisfied group (n=129)	P <sup>a</sup>
Age:	Median (25–75%)	62 (52–71)	60 (51–69)	0.137
Sex:	Male	168 (54)	44 (34)	<0.001 <sup>a</sup>
	Female	146 (47)	85 (66)	
Marital Status:	Married	268 (85)	104 (80)	0.307
	Single	34 (11)	16 (12)	
	Divorced/Widowed	12 (4)	9 (7)	
Family:	Yes	272 (87)	105 (81)	0.160
	No	42 (13)	24 (19)	
Job status:	Yes	134 (43)	58 (46)	0.040 <sup>a</sup>
	Retired/ stopped working for health reasons	15 (5)	10 (8)	
	Mandatory retirement	78 (25)	17 (13)	
	No	85 (27)	42 (33)	
Survey source:	Patient volunteer group	71 (23)	36 (28)	0.237
	Internet group	243 (77)	93 (72)	
Satisfaction score for treatment (1–10):	Average (SD)	8.8 (1.1)	6.7 (1.7)	<0.001 <sup>a</sup>
	Median (25–75%)	9 (8–10)	7 (6–8)	
About your life during the past week (1–10, score average)	Peace of mind	8 (7–9)	7 (6–8)	<0.00 <sup>a</sup>
	Quality of life	8 (7–9)	8 (6–8)	<0.00 <sup>a</sup>
	Daily activity	8 (7–9)	7 (6–8)	0.001 <sup>a</sup>
	Family relationship	9 (8–10)	8 (7–10)	0.003 <sup>a</sup>
	Happiness feeling	8 (7–9)	8 (6–8)	0.001 <sup>a</sup>

<sup>a</sup> Statistically significant by  $\chi^2$  test for categorical data and Wilcoxon rank sum test for continuous data. The significance level was <0.05, and Bonferroni's adjustment was used for multiple comparisons. The satisfied group included more males, more people with jobs, and higher scores regarding their recent life status.

the subjects analyzed because the economic effect of cancer treatment was thought to be confounding, and all such effects could not be eliminated from the eligible

participants. Thus, the subjective economic effect of treatment was added into the model as a confounding factor. The daily life effects of cancer treatment also had to be

Table 4 Diagnosed cancer status and treatment received among eligible participants according to satisfaction with chosen treatment for their cancer

Eligible participants		Opinion of chosen treatment			
		Satisfied group (n=314)	Dissatisfied group (n=129)	P <sup>a</sup>	
Cancer status					
Diagnosis year:	Over 10 years	47 (15)	28 (22)	0.057	
	5–10 years	94 (30)	39 (30)		
	3–5 years	80 (26)	19 (15)		
	Within 3 years	92 (29)	42 (33)		
Cancer site:	Lung	28 (9)	4 (3)	0.222	
	Stomach	36 (11)	10 (8)		
	Colon	36 (11)	19 (15)		
	Liver or gall bladder	8 (3)	4 (3)		
	Breast	79 (25)	46 (36)		
	Uterus	12 (4)	5 (4)		
	Hematological or lymphoma	20 (6)	7 (5)		
	Kidney	5 (2)	0 (0)		
	Prostate	21 (7)	12 (9)		
	Esophagus or throat	29 (9)	5 (4)		
	Other	40 (13)	17 (13)		
	Cancer stage:	Early stage	184 (59)		64 (50)
		Advanced stage	100 (32)		48 (38)
		Unclear	29 (9)		16 (13)
Treatment status:					
Treatment type:	Surgical	258 (82)	110 (85)	0.428	
	Irradiation	96 (31)	41 (32)	0.802	
	Chemo	126 (40)	67 (52)	0.023	
	Other	55 (18)	33 (26)	0.053	
Follow-up treatment:	Ongoing	102 (38)	51 (40)	0.276	
	Finished	57 (18)	26 (20)		
	Routine follow-up (no treatment)	151 (48)	49 (38)		
	Other	3 (1)	2 (2)		
Treatment side effects:	Yes	124 (40)	72 (56)	0.003 <sup>a</sup>	

<sup>a</sup> Statistically significant by  $\chi^2$  test for categorical data and Wilcoxon rank sum test for continuous data. The significance level was  $<0.05$ , and Bonferroni's adjustment was used for multiple comparisons. Between the two groups, although differences in side effects experienced were observed, no difference was seen regarding diagnosis year, cancer site or stage, treatment type, or follow-up status.

eliminated. To make the adjustment carefully, daily life effect was divided into two parts and used in the regression model based on respondents' recent psychophysical status, peace of mind, quality of life, daily life activity, family relationship, feeling of happiness, previous life events, and the side effects of treatment.

### Results

When compared with the patients from the hospital, online respondents from the Internet survey were younger, more likely to be single, and more likely to be employed (Table 1). More online respondents had received surgical

treatment and/or other types of treatment than the hospital-based respondents. There were fewer survivors who had ongoing follow-up treatment at the time of the survey among the online respondents (36%) than the hospital-based respondents (52%). Online respondents were less affected by their past cancer treatments as related to their daily lives. However, there was no difference in the rate of satisfaction with treatment between the groups: 66% of those from the hospital and 67% of online responders said they were satisfied with their chosen treatments.

When divided based on the binary category of satisfac-

tion with treatment, 383 answered satisfied and 193 as dissatisfied, which included “not satisfied” ( $n=11$ ), “thinking about an alternative treatment” ( $n=165$ ), and “having an opinion other than satisfied” ( $n=17$ ). The average subjective scores for satisfaction were 8.8 (SD 1.1) for the dissatisfied group and 6.6 (SD 1.7) for the satisfied group, and the correlation between these binary categories and the continuous variable was 0.611 (95% CI =0.557–0.660). Dissatisfied participants included more subjects who were limited in daily life activities as a result of their cancer treatment, such as being bedridden and symptomatic ( $n=35$ , 18%), and a higher percentage whose subjective economic status was “crucial” as a result of their treatment ( $n=40$ , 21%) than did satisfied participants (symptomatic daily life,  $n=37$  [9%]) (Table 2). Thus, the following analysis was conducted among participants, excluding those with deteriorating effects of treatment.

Among the eligible participants, the median score of satisfaction with the responders’ chosen treatment among the dissatisfied group was still significantly lower than that of the satisfied group (Table 3). Their subjective views of their recent life, such as peace of mind, quality of life, daily activities, family relationships, and feelings of happiness, were also significantly lower than those of the satisfied group.

Although several different patterns were observed among the two groups in terms of the declared site of their cancer, there was no significant difference in the distributions of year of diagnosis or cancer stage at diagnosis (Table 4). The dissatisfied group received more chemotherapy and had more side effects than did the satisfied group. In terms of present treatment status, the two groups showed no significant difference.

Regarding treatment choices, the satisfied group seemed to consider their treatment as a more collaborative decision than did the dissatisfied group, although there was not a statistically significant difference between the groups (Table 5). In seeking treatment information, the satisfied group had less of a tendency to compare their treatment with other treatments than the dissatisfied group; however, other points related to treatment information did not show significant differences between the groups. However, assessments of the physician’s role showed a significant difference between the two groups; respondents in the satisfied group considered that their physicians’ explanation of treatment was sufficient and were more satisfied with the rapport with their physicians than were the dissatisfied respondents. The satisfac-

tion score for communication with their physicians was higher for the satisfied group than for the dissatisfied group.

We confirmed the association between satisfaction with the chosen treatment and the roles of the physician by conducting multiple logistic regression analyses (Table 6). In the independent model, the assessment of the physician’s explanation of treatment, and rapport with their physicians showed significant odds ratios (2.08, and 4.11, respectively), but collaboration on choosing a treatment did not (0.87, 95% CI=0.56–1.36). When these three representative factors were compared, only rapport with their physicians remained significant (OR=3.79, 95% CI=2.25–6.39).

Finally, we tested separately the association between satisfaction with the chosen treatment and the roles of the physician according to two survey sources: the patient volunteer group and the Internet group. Similar patterns of odds ratio (OR) were obtained in each group (the data were not shown in Table 6). Among the patient volunteer group, the association with rapport with their physicians was observed as significant OR 4.96 (95% CI=1.51–16.3) in the all-together model. For the Internet group, the OR was 3.65 (95% CI=1.97–6.74) in the same model.

## Discussion

Although the participants who responded to our questionnaire online tended to be younger, female, single, and employed versus the participants who answered via paper-based questionnaires, there was no statistically significant difference in satisfaction with treatment between the groups. In addition, we confirmed the similar association between patients’ satisfaction and the rapport with their physician in each survey source: Internet and paper-based questionnaires. Satisfaction with treatment is an important indicator in this study because the objective was to predict factors that will enhance satisfaction. The questionnaires answered online could be useful for the analysis together with the paper questionnaires as far as cancer survivor satisfaction with treatment was concerned. This underlines the idea that distributing questionnaires online can be an effective method to collect information from large numbers of cancer patients who received treatment in the past. In fact, more survivors who were undergoing routine checkups and had finished their treatments were able to join the study than in the hospital paper-based survey. The variety of treatment situations among the cancer survivors could enhance the us-

Table 5 Method of treatment choice and assessment of physician’s role among eligible participants according to satisfaction with chosen treatment for their cancer

Eligible participants		Opinion of chosen treatment		
		Satisfied group (n=314)	Dissatisfied group (n=129)	P <sup>a</sup>
Treatment choice:	Initiated by physician	165 (53)	71 (55)	0.633
	Collaboration	137 (44)	47 (36)	0.163
	Patient independently	9 (3)	6 (5)	0.345
	Other	3 (1)	5 (4)	0.036
Treatment information found by myself:	Yes	213 (68)	84 (65)	0.521
Source of treatment information: (Top five)	Physician (my doctor)	260 (83)	105 (81)	0.724
	Internet	180 (57)	67 (52)	0.300
	Books or specialized books	123 (39)	45 (35)	0.398
	Friend with same disease	62 (20)	23 (18)	0.642
	Physician who provided second opinion	61 (19)	22 (17)	0.561
Information sought on treatment: (Top five)	Recovery rate	194 (62)	76 (59)	0.574
	Prognosis and survival time	158 (50)	69 (53)	0.544
	Comparison with other treatments	112 (36)	62 (48)	0.015
	Side effects	122 (39)	53 (41)	0.662
	General risks	124 (39)	47 (36)	0.548
Assessment of physicians’ explanations: Reason for inadequate physician explanations:	Sufficient	273 (87)	95 (74)	0.001 <sup>a</sup>
	Shortness of time	23 (7)	14 (11)	0.223
	Too difficult to understand	8 (3)	5 (4)	0.536
	Not answering what I wanted to know	9 (3)	13 (10)	0.002 <sup>a</sup>
	Cold and business-like attitude	3 (1)	5 (4)	0.050
	Difficult mood to consult	14 (4)	11 (9)	0.092
	Other	14 (4)	9 (7)	0.278
Rapport with my physician:	Satisfied	184 (59)	29 (22)	<0.001 <sup>a</sup>
	Adequate	118 (38)	83 (64)	
	Dissatisfied	12 (4)	10 (8)	
	Very dissatisfied	0 (0)	7 (5)	
Satisfaction score for communication with my physician: (1–10)	Median (25–75%)	8 (7–10)	7 (6–8)	<0.001 <sup>a</sup>

<sup>a</sup> Statistically significant by  $\chi^2$  test for categorical data and Wilcoxon rank sum test for continuous data. The significance level was <0.05, and Bonferroni’s adjustment was used for multiple comparisons. An association with satisfaction with treatment was indicated with regard to the relationship with the physician, rather than in the decision-making process.

Table 6 Association between satisfaction with chosen treatment and role of the physician: effect of collaboration in choosing a treatment, physician’s explanation, and relationship with the physician on satisfaction with chosen treatment (adjusted odds ratio and 95% CI)<sup>a</sup>

		Independent model		All together model
Collaboration in choosing treatment	0.87 (0.56–1.36)	-	-	1.01 (0.63–1.61)
Physician’s explanation about treatment	-	2.08 (1.20–3.58)	-	1.30 (0.73–2.34)
Rapport with my physician	-	-	4.11 (2.50–6.80)	3.79 (2.25–6.39)

<sup>a</sup> Adjusted by gender, age, survey source, peace of mind, quality of life, daily life activities, family relationship, feelings of happiness, subjective economic effects of treatment, and side-effects of treatment. As indicated, in both models, rapport with physicians was the most strongly related to patients’ satisfaction with treatment.

ability of the findings of this study. Additionally, the website through which the questionnaire was distributed is run by a major newspaper company and considered a reliable source of health-related information; its reputa-

tion likely caused many people to contribute to the survey. Although Internet-based surveys are often considered undesirable, especially among the Japanese scientific community, our findings suggest that they offer potential



benefits for studies on patient satisfaction and related areas.

Our cross-sectional study showed that participants' satisfaction with their chosen treatment was similar among patients without significant limitations in their daily life activities, job, and economic situation. There was no significant difference with respect to treatment choice. However, these two groups showed significant differences in assessment of their relationships with their physicians regarding their treatment. The satisfied respondents evaluated the communication with their physicians and satisfaction with the physicians' explanations about treatment more highly than did those in the dissatisfied group. Above all, the rapport with their physicians, including nonverbal communication, was a significant satisfaction factor for the cancer patients, rather than other factors, such as choice of treatment schedule. The rapport with their physicians showed the highest odds ratio for satisfaction with the chosen treatment.

Participants who were dissatisfied with the chosen treatment scored low on their psychological status. Among the eligible participants in this study, those satisfied and dissatisfied with treatment were physically comparable. However, the self-rated daily life status of the dissatisfied group—such as peace of mind, quality of life, daily activities, family relationship, and feeling of happiness—was significantly lower than that of the satisfied group. Thus, satisfaction with their selected treatment could affect their psychological well-being after cancer treatment.

The results of our study suggest that building rapport between physician and patient was the most important factor in increasing patient satisfaction with the chosen treatment and improving well-being after treatment. Indeed, establishment of rapport was more important than participation in the decision-making for treatment, or receiving enough information about the treatment. Past studies in Western countries that have investigated the relationship between the patients' role in the decision-making process and their degree of satisfaction have reported contradictory results: some suggested that patient involvement increased satisfaction<sup>26,27</sup>, while others concluded that physician-driven decision making resulted in higher satisfaction for patients with terminal cancer<sup>28,29</sup>. Some studies indicated that the key factor for patient satisfaction with their treatment decision might be the relationship between their *preferred* involvement in the decision-making process and the *actual* level of involvement, regardless of who actually makes the decision<sup>30,31</sup>.

These results support our finding that the relationship with the physician is the key to improving patient satisfaction, rather than who makes decisions.

In mental illness treatment, it is widely recognized that building rapport between health providers and patients begins with listening to the patients<sup>32-34</sup>. This approach has been applied with cancer patients in Western countries<sup>35,36</sup>. However, physician-centered medicine is frequently practiced in the area of cancer treatment in Japan despite the enactment of the Cancer Control Act in 2006, the specific purpose of which was to reduce cancer patients' and their families' physical and mental agony, which was typically caused by physicians not informing them of their actual diagnosis. One published study discusses a practice in which physicians ask about the patients' needs before providing healthcare service<sup>12</sup>. In this study, physicians aimed to assess individual patient preferences, including whether they put more importance on quality of life or length of life, and who they wanted to make decisions on treatment, with the aim of improving satisfaction among the cancer patients with their treatment. We believe that such surveys, asking about patients' needs prior to treatment are useful for establishing rapport with cancer patients, so that their satisfaction with the chosen treatment has increased in Japan.

There were several limitations to this study. One was a possible selection bias because the data were obtained through an online survey and voluntary participation. We possibly missed some individuals who could not join these surveys, such as those with more severe health situations, or those who had no access to the Internet or the patient volunteer group for any reason. Thus, the characteristics of participants could have differed from those of the general population. Thus, it is important to be cautious in interpreting the association between patient satisfaction and satisfaction factors. Finally, this study was cross-sectional in nature. The possible factors involved in satisfaction with treatment among cancer patients should be monitored longitudinally in a cohort study. We expect a further, related study in the future.

In conclusion, our study showed that rapport between physicians and patients was a more important factor to increase cancer patient satisfaction than issues such as who made treatment decisions or how much treatment information was provided.

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Appendix 1 A questionnaire about cancer treatment

Classification	Characteristics
1. Age:	
2. Sex:	1. Male 2. Female
3. Job status:	1. Have a regular job 2. Don't have a job 3. Left or taking leave due to illness 4. Retired on reaching retirement age
4. Marital status:	1. Married 2. Single 3. Separated or divorced
5. Living status:	1. Living with somebody 2. Living alone
6. How many years ago were you diagnosed with cancer?	1. More than 10 years 2. Five to 10 years 3. Three to five years 4. Less than 3 years
7. Are you currently receiving treatment?	1. Yes, I am 2. I have finished it 3. I have finished the treatment but have regular checkups 4. Other
8. Concerning your daily life:	1. I can lead my life same as before 2. I can do light work or clerical work but cannot do hard exercise 3. I can look after myself but cannot work 4. I spend more than half of the day sitting on a chair or in bed and can only do limited things 5. I cannot take care of myself and spend most of the day on a chair or in bed
9. Concerning your life this past week, please score each of the following on a scale of 0 to 10 with 10 being the highest.	• Peace of mind: • Quality of life: • Daily activeness: • Relationship with your family: • Sense of happiness:
10. What is your cancer type?	1. Lung cancer 2. Gastric (stomach) cancer 3. Colon cancer 4. Liver cancer/ gallbladder cancer 5. Breast cancer 6. Uterine cancer 7. Leukemia or other blood-related cancer 8. Kidney cancer 9. Prostate cancer 10. Esophageal cancer/pharyngeal cancer 11. Other

## Rapport and Satisfaction in Cancer Treatment

Classification	Characteristics
11. At which stage was your cancer first diagnosed?	<ol style="list-style-type: none"> <li>1. Early stage</li> <li>2. Advanced</li> <li>3. Don't know</li> </ol>
12. Which medical treatment did you receive? (multiple answers)	<ol style="list-style-type: none"> <li>1. Surgery</li> <li>2. Radiation treatment</li> <li>3. Chemotherapy</li> <li>4. Other</li> <li>5. Don't know</li> </ol>
13. How did you choose your treatment?	<ol style="list-style-type: none"> <li>1. Left it to my doctor</li> <li>2. Told my doctor my wishes and decided together after discussion</li> <li>3. Chose it in accordance with my own wishes</li> <li>4. Other (please specify)</li> </ol>
14. Did you actively collect information on the course of your treatment by yourself?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
15. Where did you mainly get information from? Please choose the top three.	<ol style="list-style-type: none"> <li>1. (Your) doctor</li> <li>2. A doctor who gave you a second opinion</li> <li>3. Family members</li> <li>4. Internet</li> <li>5. Medical staff other than doctors</li> <li>6. People with the same disease</li> <li>7. Acupuncturists, massotherapists and other related professionals</li> <li>8. Friends or colleagues at work</li> <li>9. Newspapers</li> <li>10. TV and radio</li> <li>11. Books and medical literature</li> <li>12. Administrative agencies (health centers and ward offices)</li> <li>13. Other (please specify)</li> </ol>
16. What did you want to know most when choosing the course of your treatment? Please choose the top three.	<ol style="list-style-type: none"> <li>1. Recovery rate</li> <li>2. Prognosis and survival rate</li> <li>3. Comparison with other treatment options</li> <li>4. Side effects</li> <li>5. Probability of the best outcome of the treatment</li> <li>6. Probability of the worse outcome of the treatment</li> <li>7. Risks and dangers the treatment might cause</li> <li>8. Medical expenses</li> <li>9. Other (please specify)</li> </ol>
17. Which did you put priority on when choosing your treatment?	<ol style="list-style-type: none"> <li>1. Recovery rate</li> <li>2. Probability of side effects</li> <li>3. Prognosis and survival rate</li> <li>4. Medical expenses</li> <li>5. Compatibility with work</li> <li>6. Whether or not to lead life same as before</li> <li>7. Other (please specify)</li> </ol>
18. Are you satisfied with your choice of your treatment?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. Yes, but sometimes think there might be better alternatives</li> <li>4. Other (please specify)</li> </ol>
19. Please rate your satisfaction level on a scale of 0 to 10 with 10 being the most satisfied:	
20. Were you satisfied with the information your doctors gave you when choosing your treatment?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>

Classification	Characteristics
21. Those who chose 2 in the previous question, please choose the reason for your dissatisfaction. (multiple answers)	<ol style="list-style-type: none"> <li>1. The time was too short</li> <li>2. Too difficult to understand</li> <li>3. The doctor didn't ask me what I want to know</li> <li>4. The doctor's attitude was cold or uncaring</li> <li>5. Had an atmosphere that made me refrain from consulting with doctor</li> <li>6. Other (please specify)</li> </ol>
22. Who do (did) you talk to most about your disease?	<ol style="list-style-type: none"> <li>1. Spouse</li> <li>2. Other family members</li> <li>3. Friends</li> <li>4. Relatives</li> <li>5. Other (please specify)</li> <li>6. Nobody</li> </ol>
23. Do you feel the treatment you received affected you financially?	<ol style="list-style-type: none"> <li>1. Yes, I do. It put me in financial difficulties</li> <li>2. Yes, a little difficult</li> <li>3. Not so much</li> <li>4. No, I don't feel it at all</li> </ol>
24. How much were you satisfied with the relationship with your doctor?	<ol style="list-style-type: none"> <li>1. Satisfied</li> <li>2. Almost satisfied</li> <li>3. Not satisfied</li> <li>4. Strongly dissatisfied</li> </ol>
25. Please score communication levels between you and your doctor on a scale of 0 to 10 with 10 being the highest.	
26. Do you still have unpleasant side effects of your treatment?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
27. How would you like to choose the course of your treatment or checkups from now on?	<ol style="list-style-type: none"> <li>1. Leave it to my doctor</li> <li>2. Decide it together with my doctor by listening to his/her advice</li> <li>3. Decide it according to my wishes</li> <li>4. Other (please specify)</li> </ol>
28. Please write anything you felt about your decision on your treatment.	

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