

Attitudes toward disclosure of medication side effects: a nationwide survey of Korean patients, caregivers, and oncologists

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Abstract

Background: We aimed to compare the views of cancer patients, family caregivers, and oncologists about the disclosure of side effects in respect to their probability of occurrence, severity, and treatment purpose. We also compared attitudes toward potential harm of side effect disclosure, patients' perceived ability to understand the risk of the side effects, and informed decision-making regarding side effects.

Methods: A national survey was performed with 750 patient–caregiver dyads (75.5% participation rate) recruited by 134 oncologists in 13 cancer centers (93% participation rate). Attitudes toward communication of side effects were assessed in terms of drug purpose, severity of potential complications, and probability of harm.

Results: Most patients (82.1–87.0%) and caregivers (75.9–81.5%) thought they should be informed of all possible drug side effects regardless of risk, severity, or drug purpose and wanted these risks to be communicated explicitly. Patients and their caregivers believed that detailed explanations of side effects did not harm patients, and further, they believed that patients could understand risks and make treatment decision based on that information. In contrast, oncologists held less positive attitudes toward providing detailed information about drug side effects, especially if they were not severe and if the drugs were designed for supportive care.

Conclusion: Cancer patients and family members had different perspectives and preferences regarding communication of drug side effects from their oncologists. The data from our study can serve as a guide for oncologists in presenting side effects information to their patients, as well as a basis for physician training.

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Introduction

Side effects can have a significant negative impact on a patient's quality of life [1], influence physicians' treatment decisions [2], and lead to a change in therapeutic regimen or discontinuation even when treatment is otherwise effective [3]. Cancer patients highly value information about side effects [4,5] and rely on clear communication to understand the trade-off between the benefits and harms of the therapy necessary to make informed decisions [6–9].

Some clinicians worry that forewarning patient about possible side effects may produce those effects through suggestion [10–12] or may dissuade the patients from adequate treatment [13]; others believe that patients have the

right to detailed information, and adequately, informed patients may cope better with them once they occur [9]. While general guidelines recommend that patients receive information about potential side effects when prescribed a new medication [14], there is little consensus about which among many side effects should be disclosed [15]. Moreover, much of what is known about patient and physician attitudes, preferences, and possible consequences regarding the communication of drug side effects come from primary care [16–19]. The degree to which these findings are generalizable to the oncology setting where severity of illness, length, and intensity of treatment, and the potential effects of side effects on adherence and continuance in treatment have not been widely investigated.

The importance of family is well established in supporting treatment adherence [20,21], engagement in medical decision-making [22–26], and satisfaction with care [21]. However, perspectives of family caregivers regarding communication of side effects have been rarely investigated.

We aimed to compare the views of cancer patients, family caregivers, and oncologists about the disclosure of side effects in respect to their probability of occurrence, severity, and treatment purpose. We also compared attitudes toward potential harm of side effect disclosure, patients' perceived ability to understand the risk of the side effects, and informed decision-making regarding side effects. We additionally compared preferences for the way of communicating drug side effect probability, the satisfaction with oncologist communication of side effects, and the potential use of additional sources of drug side effect information/

Methods

Study design and subjects

This study was performed as part of the Cancer Patient Experience Study, an annual nationwide survey of cancer patients' experience in South Korea. In 2012, the study was conducted with physician–patient–caregiver matched triads to explore medical care and treatment views of oncologists, cancer patients, and family caregivers. The study was approved by the Institutional Review Board of the National Cancer Center, Korea.

A purposefully selected sample of board-certified oncologists was recruited from each of 13 cancer centers. Each of the oncologists was asked to further recruit six consecutive patients who were accompanied to the visit by a family caregiver. Inclusion criteria for patients were (a) over 18 years of age, (b) diagnosed with cancer, (c) currently receiving cancer treatment or follow-up care, and (d) in sufficient physical and mental health to complete the study questionnaire. Inclusion criteria for caregivers were (a) an accompanying family member of a cancer patient and (b) over 18 years of age. Patient–caregiver dyads were enrolled when both the patient and family member agreed to participate.

Of 144 oncologists invited to participate in the study, 134 agreed (93% participation rate) and completed the study survey. Eligible patients and their accompanying family member were given a brief overview of the study, and if interested were referred to the research coordinator to provide a more detailed explanation and informed consent. Among 960 patients and caregivers recruited, 725 dyads agreed to participate and completed the survey (75.5% participation rate) in a separate area to avoid consultation or sharing of information.

Measures

To assess the attitudes toward side effect information disclosure in various situations which might affect the

disclosure preferences, we purposeful developed the questionnaire based on literature [17,27–29]. The whole questionnaire is included in Appendix 1. All items were presented to patients, caregivers, and oncologists.

Attitudes toward disclosure of side effects were assessed in terms of drug purpose (cancer treatment versus symptom relief), severity of potential complications (severe versus mild), and probability of harm (e.g., if risk of side effect $>1/100$ or $>1/100,000$) [17,28]. Respondents were also asked to rate (on a 4-point Likert scale; strongly disagree to strongly agree) statements about the potential harms of explaining potential drug side effect (four items, e.g., detailed explanation about potential drug side effect increases the unnecessary anxiety) [28], their perceived ability to understand the risk of side effects (two items, e.g., patients tend to overestimate the potential side effect) [27–29], and their perception of informed decision-making regarding drug side effects (three items, e.g., patients have the ability to determine the best options after comparing the benefits and potential side effect of the treatment) [27,28].

Respondents were also asked about the preferred way of communicating drug side effect probability (e.g., exact number, relative frequency, or only possibility), their satisfaction with their doctor's communication of side effects (e.g., sufficient information about drug side effect), and how it might be improved (e.g., education material, pharmacist, or nurse involvement) [3,14,15].

Statistical analysis

Descriptive statistics were used to summarize the responses to the study questions. Mean scores of each group were compared either with paired *t*-test (for matched patient–caregiver dyads) or Student's *t*-test (for patient–oncologist or caregiver–oncologist comparison). Concordance of attitudes between groups was examined with Kappa coefficient. For the comparisons of responses within group to different questions, paired *t*-tests for matched data were used. All statistical analyses were conducted using STATA version 12.0 (STATA corp. TX), and *p*-value <0.05 was considered statistically significant.

Results

Subject characteristics

Table 1 shows the sociodemographic and health status characteristics of the study participants. Patients averaged 60.2 years of age and were slightly more likely to be female (54.6%) than male. The majority (84.9%) were married, and slightly fewer than half of the respondents (47.6%) had less than a high school education. Colorectal, stomach, breast, and lung cancer were the most common cancer diagnoses, and the majority of the patients were in an initial treatment phase (44.7%) or on regular follow-up after

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Table 1. Characteristics of patient–caregiver dyads (*N* = 725) and their oncologist (*N* = 134)

	Patients (<i>N</i> = 725)		Caregivers (<i>N</i> = 725)		Oncologists (<i>N</i> = 134)	
Age	60.2	12.5	51.3	13.4	43.5	7.8
Gender						
Male	329	45.4	310	42.8	107	79.9
Female	396	54.6	415	57.2	27	20.1
Educational status						
<9 years	345	47.6	200	27.6		
9–12 years	236	32.6	256	35.3		
>12 years	139	19.2	266	36.7		
Missing	5	0.7	3	0.4		
Monthly income (KRW)						
<2 million	423	58.3	292	40.3		
>2 million	293	40.4	420	57.9		
Missing	9	1.2	13	1.8		
Cancer type, primary						
Stomach	118	16.3				
Lung	98	13.5				
Liver	52	7.2				
Colon	130	17.9				
Breast	103	14.2				
Cervix	50	6.9				
Others	174	24				
SEER stage (current)						
In situ or local	261	36.0				
Regional	230	31.7				
Distant	223	30.8				
Unknown/missing	14	1.9				
Treatment situation						
Under initial treatment	324	44.7				
On regular follow-up after treatment	237	32.7				
On regular follow-up after cure	39	5.4				
Under treatment for metastasis or recurrence	107	14.8				
Do not know	14	0.4				
Others (e.g., treatment for second primary cancer)	3	0.1				
Relationship to patients						
Spouse			437	60.3		
Others			288	39.7		
Adult child			207	28.6		
Parents			39	5.4		
Others			42	5.8		
Specialty						
Medical oncologist					59	44
Surgical oncologist					68	50.8
Radiotherapy oncologist					7	5.2
Years after board certification						
Mean, SD					12.3	7.5

KRW: Korean Won (1USD = 1050 KRW, as of 2012).

SEER, Surveillance, Epidemiology, and End Results Program; SD, standard deviation.

treatment (32.7%). Disease stage was evenly distributed among local (36.0%), regional (31.7%), and distant/metastatic (30.8%). The majority of the family

caregivers were spouses (60.3%). Oncologists were predominantly male (79.9%), and half were surgical oncologist (50.8%).

Attitudes toward disclosure of side effects

Most patients thought that any risk of side effects, even if slight and regardless of severity or drug purpose should be communicated to them (>80% across all categories). There was no difference in attitudes toward receiving information across treatment situations or disease stages (data not shown). Most caregivers generally agreed, but their endorsement of these items was slightly weaker than that of patients (all $p < 0.05$). The majority of the oncologists responded that patients should be informed of potentially severe side effects even if the risk is slight (70.2% for anticancer drugs and 60.5% for symptom-relieving drugs), but only a minority thought patients should be informed if the side effects were mild (23.9% and 20.2%, respectively). There was no difference in attitudes toward providing information across physicians' age or gender (data not shown). For every combination of drug purpose and severity of side effects, oncologists were less likely to endorse the need to disclose detailed side effect information than patients or caregivers (all $p < 0.01$, except non-significant difference between caregiver and oncologists for anticancer drugs, severe side effects) (Figure 1). The level of concordance in the attitudes was low (kappa coefficient < 0.25) for patient–caregiver dyads and very low (< 0.10) between patient–oncologist or caregiver–oncologist dyads (Appendix Table 1).

All respondents thought more information should be disclosed about potentially severe rather than mild side effects and for anticancer rather than symptom-relieving drugs (all p -value < 0.05). One exception was a nonsignificant difference between disclosure preferences for cancer treatment and symptom-relieving drugs associated with severe side effects ($p = 0.57$) (data not shown).

Patients were slightly less concerned than family caregivers that side effect disclosure could cause harm (2.12 vs. 2.28, $p < 0.001$), and both were less concerned about this than their oncologists (2.12 vs. 2.59 and 2.28 vs. 2.59, both p 's < 0.001). Patients thought that they would be able to understand risks associated with side effects better than their caregiver (2.51 vs. 2.40, $p < 0.001$), or oncologist (2.51 vs. 2.24, $p < 0.001$) thought they could. Patients also more strongly endorsed the need for informed decision-making regarding drug side effects than caregivers (3.21 vs. 3.11, $p < 0.001$) or oncologists (3.21 vs. 3.00, $p < 0.023$) (Table 2).

Preferences for the way of communicating drug side effect probability

Preferences for the way risk communication was articulated differed across participant groups. Patients and caregivers

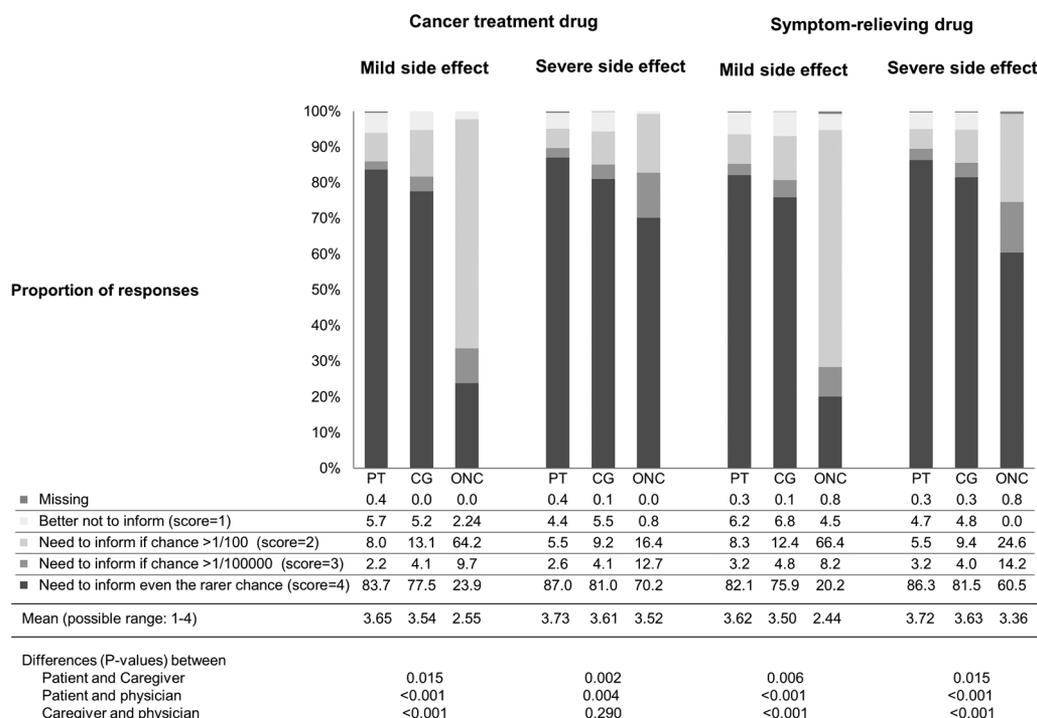


Figure 1. Attitudes toward disclosure of drug side effects: by treatment purpose and severity of side effect

Table 2. Attitudes toward informing potential drug side effects and patients' ability to understand them

Items	Patients (N = 725)		Caregivers (N = 725)		Physicians (N = 134)		Difference (p-value)		
	Mean	SD	Mean	SD	Mean	SD	Patient– caregiver	Patient– physician	Caregiver– physician
Potential harms of explaining potential drug side effect									
Cronbach's alpha	0.84		0.84		0.81				
Detailed explanation about potential drug side effect									
Increases the unnecessary anxiety	2.09	0.85	2.22	0.77	2.57	0.59	0.001	<0.001	<0.001
Can make the patient more sensitive to side effect	2.34	0.85	2.54	0.78	2.83	0.54	<0.001	<0.001	<0.001
Can dissuade the patients from necessary treatment	2.04	0.82	2.21	0.82	2.56	0.57	<0.001	<0.001	<0.001
Can impede the patients' adherence to the medication	2.02	0.82	2.14	0.77	2.41	0.55	<0.001	<0.001	<0.001
Scale score	2.12	0.68	2.28	0.64	2.59	0.45	<0.001	<0.001	<0.001
Patients' ability to understand risk of side effect									
Correlation	0.44		0.44		0.29				
It is difficult for patients to understand the risk of drug side effect in their particular situation	2.54	0.82	2.63	0.69	2.75	0.49	<0.001	0.005	0.071
Patients tend to overestimate the potential side effect	2.43	0.83	2.56	0.73	2.78	0.54	0.002	<0.001	0.001
Scale score	2.49	0.70	2.60	0.60	2.76	0.41	<0.001	<0.001	0.024
Patients' informed decision regarding drug side effect									
Cronbach's alpha	0.67		0.68		0.47				
Patients have the right to be informed of the detailed information about possible side effect	3.42	0.60	3.32	0.61	3.18	0.44	0.130	<0.001	0.012
Patients have the ability to determine the best options after comparing the benefits and potential side effect of the treatment	3.13	0.72	3.04	0.68	2.87	0.61	<0.001	<0.001	0.005
The patients' decision should be respected even though they refuse the treatment from the fear of potential side effect	3.09	0.80	2.96	0.77	2.94	0.56	<0.001	0.043	0.765
Scale score	3.21	0.55	3.11	0.54	3.00	0.38	<0.001	<0.001	0.023

p-value: Paired t-test (between patients and caregivers); t-test (between patients and physicians, and between caregivers and physicians).

SD, standard deviation.

*Reverse coded.

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were more likely to prefer exact numbers, while oncologists preferred to give relative frequencies or to merely mention that there was a possibility of harm (Table 3).

Satisfaction with oncologist communication of side effects

Most patients and caregivers felt that their own oncologist had informed them sufficiently of possible side effects (73.9% and 72.6%); however, only a minority of oncologists (38.8%) thought their disclosure of side effects was sufficient. About 12% of all the respondents (patients, caregivers, and oncologists) responded that they did not know if the side effects information was sufficient.

Additional sources of drug side effect information

The majority of the oncologists endorsed the use of booklets or videos (73.1%), an oncology specialist nurse (85.1%), or the pharmacist (35%) as a good way to provide supplemental information about drug side effects. Patients and caregivers were far less likely to think these resources were valuable. Some patients did not endorse any of the methods and mentioned that the physician is the only reliable source of information. Other methods suggested by patients or caregivers included explanation from other physicians (e.g., resident physicians), patient groups, and advice from survivors. Some oncologists

noted the need to ensure sufficient time and reimbursement for proper explanation (Table 4).

Discussion

The current study is noteworthy in being the first nationwide study to investigate attitudes toward the disclosure of cancer drug side effects by those most directly affected by this communication. The study extends previous work exploring the varied perspectives of cancer patients and family members and their clinicians by exploring differences in their communication perspectives and preferences [26,30].

Discrepancy in the attitudes toward the disclosure of side effects

Most patients and caregivers thought they should be informed of all possible drug side effects regardless of risk, severity, or drug purpose and wanted these risks to be communicated explicitly. Patients and their caregivers believe that detailed explanation of side effects do not harm patients, and patients can understand risks and reserve the right to make treatment decision based on that information. In contrast, oncologists had less positive attitude toward providing detailed information, especially if they were not severe and drugs were designated for supportive care.

This result is consistent with previous findings at primary care setting, which reported physicians' reluctance

Table 3. Preference for the way of communicating drug side effect probability

Potential options	Patients (N = 725)		Caregivers (N = 725)		Physicians (N = 134)		Difference (p-value)		
	N	%	N	%	N	%	Patient–caregiver	Patient–physician	Caregiver–physician
Exact numbers of possibility (score = 3), for example, one out of 1000 people can experience side effect X	298	41.2	331	45.8	26	19.4			
Relative frequency (score = 2), for example, people frequently/rarely experience side effect X	163	22.5	148	20.5	50	37.3			
Merely mentioned possibility (score = 1), for example, people might experience a side effect X	262	36.2	244	33.7	58	43.3			
Mean score, SD (possible range: 1–3)	2.05	0.88	2.12	0.88	1.76	0.76	0.084	<0.001	<0.001

Mean scores of each group were compared either with paired t-test (for matched patient–caregiver dyads) or Student's t-test (for patient–oncologist or caregiver–oncologist comparison).

SD, standard deviation.

Table 4. Methods endorsed to supplement physician's explanation of the potential drug side effects

	Patients (N = 725)		Caregivers (N = 725)		Physicians (N = 134)	
	N	%	N	%	N	%
Educational material about potential side effects (booklet, DVD, etc)	303	41.8	348	48.0	98	73.1
Explanation by pharmacist	192	26.5	183	25.2	47	35.1
Explanation by oncology specialist nurse	372	51.3	381	52.6	114	85.1
None from above (please explain _____)	79	10.9	48	6.6	5	3.7

Multiple choices were allowed.

Other methods suggested by patients or caregivers included explanation from other physician (e.g., resident physician), patient group, advice from other survivors, and so on. Other methods suggested by physicians were mainly about ensuring sufficient time and reimbursement for proper explanation.

to disclose possible drug side effects fully [16,19] believing that information would be more harmful rather than beneficial causing unnecessary anxiety and a 'nocebo' effect ('the adverse effects of talking about adverse effects') [31] and the disclosure would encourage treatment discontinuation or nonadherence [15,16]. Physicians reported that patients have difficulty to understand the concept of risk [27], have poor recall of disclosed information [18,27], and tend to overreact to potential side effects [27]. Indeed, some previous studies showed that patients' memory for medical information is often poor and inaccurate, especially when the patient is old or anxious [32,33].

While physicians worried about detrimental impact of side effect disclosure and information overload, most patients wanted more information thinking that they could make informed decision without harmful effect. There is also some evidence that information about potential side effects does not lead to more reported side effects or poor adherence [34,35], and patients understood and remembered most of the information given to them [1,36]. While we could not determine whether patients overestimate their ability or oncologists underestimate the patients' ability in our study, we found the discrepant attitudes toward the patients' ability of understanding the side effect information, which might be related to discrepancy of expectation between the patients and physician in the clinical encounter.

In our study, patients and caregivers preferred 'exact numbers' when they communicate about possibility of drug side effect compared with physicians. This is interesting because lay people usually lack adequate numeric skills [37]. Further investigation would be necessary to identify optimal ways of communicating drug risk information [38].

The optimal level of side effect disclosure is not clear and can vary across patients. Further complicating is the very low level of concordance in the attitudes between patient–oncologist and caregiver–oncologist dyads. Further empirical studies are needed to determine how much information could lead to beneficial outcomes and fulfillment of individual needs. However, given that patients are extremely passive and rarely initiate discussion about the possible side effects [39], oncologists should be encouraged to take responsibility to initiate side effect discussion. As patients have diverse information preferences [27] and oncologists are poor at predicting their needs [30], oncologists should not make assumptions regarding what information an individual patient may want or need [7,27]. Checking that the patient has understood the information through asking them to repeat the information and encouraging them to ask questions about side effects is also considered good practice [14].

Satisfaction with oncologist communication of side effects

One interesting finding of the study is that almost three quarters of patients and caregivers reported that their doctor

sufficiently informed them about side effects, yet only 39% of oncologists reported that the information they had provided to their patient was sufficient. This finding appears at odds with other studies, which have found that side effect information is generally regarded by patients as neither sufficient nor uniform [1,3,9,40]. The apparent contradiction may relate to the questions that reference one's own doctor rather than doctors in general [41], as it is common for patients to be more satisfied when describing their personal care than when describing care in general. Although this is not logically possible (everyone's care cannot be above average), it is a common bias in the evaluation of ego-relevant aspects of individual experience. The need to justify oneself is particularly strong when the issue in question is as important an issue as choosing one's doctor.

Attitudes toward additional sources of drug side effect information

Given that consultation time is limited [3,42], the role of supplementary information sources outside the clinic visit is significant [14,15,19]. In our study, oncologists were generally positive about the role of a specialized nurse and the use of educational materials as reported in previous studies [3,16]. However, only one-third of oncologists endorsed pharmacists as a useful information source, perhaps because pharmacists lack access to the patient medical information [19] and their role in cancer treatment is not well established in the Korean health care system. Patients and caregivers were less likely to value these additional information sources than their oncologists; indeed, many patients and caregivers did not choose any information source as helpful and added notes like 'the physician should explain the side effects' as their opinion to the question. Previous studies have shown that patients regard physicians as their most preferred and reliable source of information about side effects [15,43], as they want personalized and trustworthy information, not just a list of side effects [19]. Indeed, explanations of possible side effects in a more personalized style produced higher satisfaction and improved recall in an experimental study [44].

Limitations

There are several limitations in this study. First, our study is based on a survey of general attitudes and perceptions and cannot capture the dynamic, complex, and personal nature of doctor–patient interaction. We suggest that further studies combining video analysis, medical record review, and follow-up interviews for the objective assessment data are warranted to provide more detailed insight into this topic [39]. Second, this study is primarily quantitative and could neither cover the content and dynamics of the actual oncology consultation nor explain the reasons for the stated attitudes and preferences. Lastly, some of the differences between patients and caregivers were

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relatively small, and it is difficult to determine whether they were clinically meaningful or not, and therefore, the results should be interpreted with caution.

Conclusion

Despite the limitations, we believe that data from our study can serve as a guide for oncologists in presenting side effects information to their patients. Furthermore, we believe our findings may serve as a basis for physician training on discussion of side effects with the patients.

Appendix I: Questions used in the study

During the cancer treatment, many drugs are used for the treatment of cancer or symptom control. As there is no drug without any side effect, some patients may experience a range of side effects, from mild discomfort to life-threatening ones.

Attitudes toward disclosure of side effects

Among the following situations, when do you think the physician should inform the patients before he or she prescribe the drug? Please indicate in the box.

<For cancer treatment drugs>

<p>For mild side effects causing some discomfort (i.e., numbness in hands or feet by chemotherapy)</p> <p><input type="checkbox"/> Better not to inform</p> <p><input type="checkbox"/> Need to inform if chance >1/100</p> <p><input type="checkbox"/> Need to inform if chance >1/100,000</p> <p><input type="checkbox"/> Need to inform even rarer chance</p>	<p>For severe side effects which may be life-threatening (i.e., immunosuppression by chemotherapy)</p> <p><input type="checkbox"/> Better not to inform</p> <p><input type="checkbox"/> Need to inform if chance >1/100</p> <p><input type="checkbox"/> Need to inform if chance >1/100,000</p> <p><input type="checkbox"/> Need to inform even rarer chance</p>
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<For symptom-relieving drugs>

<p>For mild side effects causing some discomfort (i.e., constipation by pain-relieving drugs)</p> <p><input type="checkbox"/> Better not to inform</p> <p><input type="checkbox"/> Need to inform if chance >1/100</p> <p><input type="checkbox"/> Need to inform if chance >1/100,000</p> <p><input type="checkbox"/> Need to inform even rarer chance</p>	<p>For severe side effects which may be life-threatening (i.e., thromboembolism by appetite enhancing drugs)</p> <p><input type="checkbox"/> Better not to inform</p> <p><input type="checkbox"/> Need to inform if chance >1/100</p> <p><input type="checkbox"/> Need to inform if chance >1/100,000</p> <p><input type="checkbox"/> Need to inform even rarer chance</p>
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Q. Please indicate on which you think is generally appropriate in each of the following statements regarding side effect communication between physicians and patients.

	Strongly disagree	Disagree	Agree	Strongly agree
Detailed explanation about potential drug side effects				
Increases unnecessary anxiety	1	2	3	4
Can make the patient more sensitive to side effects	1	2	3	4
Can dissuade the patients from necessary treatment	1	2	3	4

Continues

Continued

	Strongly disagree	Disagree	Agree	Strongly agree
Can impede the patients' adherence to the medication	1	2	3	4
It is difficult for patients to understand the risk of drug side effects in their particular situation	1	2	3	4
Patients tend to overestimate potential side effects	1	2	3	4
Patients have the right to be informed of the detailed information about possible side effects	1	2	3	4
Patients have the ability to determine the best options after comparing the benefits and potential side effects of the treatment	1	2	3	4
The patients' decision should be respected even though they refuse the treatment from fear of potential side effects	1	2	3	4

Preferences for the way of communicating drug side effect probability

Q. Which of the following do you think is the appropriate way to inform the risk of side effect?

- One out of 1000 people can experience side effect
- People frequently/rarely experience side effect X
- People might experience a side effect X

Satisfaction with oncologist communication of side effects

Q. Is the physician (i.e. your doctor/your patient's doctor/you) giving sufficient information regarding the possible side effects during the cancer treatment given to the patient (i.e. you/the patient/your patients)?

- Sufficient
- Not sufficient
- Do not know

Additional sources of drug side effect information

Q. Which of the following do you think would be helpful for improving the side effect communication between the patients and doctor, given that there is time pressure in consultation time? (Please indicate in all items that apply).

- ① Patient education materials (booklets, DVDs)
- ② Explanation by pharmacist
- ③ Explanation by oncology nurse practitioner
- ④ None of above (Others: _____)

Table A1: Concordances in the attitudes toward disclosure of drug side effects: by treatment purpose and severity of side effect

	Weighted kappa		
	Patient–caregiver	Patient–physician	Caregiver–physician
Anticancer drugs, mild side effects	0.1291*	−0.0025	−0.0144
Anticancer drugs, severe side effects	0.1745*	−0.0207	−0.0310
Symptom-relieving drugs, mild side-effect	0.2188*	−0.0009	−0.0027
Symptom-relieving drugs, severe side effects	0.2182*	−0.0273	−0.0047

*p-values < 0.001.

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Conflict of interest

The authors declare no conflict of interest.

Disclosure of medication side effects

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