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# Factors Related to the Differential Preference for Cardiopulmonary Resuscitation Between Patients With Terminal Cancer and That of Their Respective Family Caregivers

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## Abstract

There is little information regarding concordance between preferences for end-of-life care of terminally ill patients with cancer and those of their family caregivers. A cross-sectional exploration of cardiopulmonary resuscitation (CPR) preference in 361 dyads was conducted. Patients or family caregivers who were willing to approve CPR were compared with dyads who did not support CPR. The patient's quality of life was more associated with family caregiver's willingness than patient's willingness. A patient was more likely to prefer CPR than their caregiver in dyads of females and emotionally stable patients. A family caregiver showed stronger support for CPR if the patient had controlled pain or stable health and the family caregiver had not been counseled for CPR. Communications should be focused on these individuals to improve the planning of end-of-life care.

## Keywords

cardiopulmonary resuscitation, concordance, end-of-life care, preference, terminal care, willingness

## Introduction

Self-autonomy and the rights of an individual to make end-of-life (EOL) decisions are ethically supported.<sup>1</sup> However, if an individual is too incapacitated to express his or her will, the role of the primary caregiver as a surrogate decision maker becomes very important. Bioethical standards support surrogate decisions that are consistent with the wishes and best interests of the patient.<sup>2</sup> Thus, it is critical that patients and caregivers have early discussions about EOL care. However, many people believe that focusing on death-related issues may be harmful to the patient; this concern may delay discussions about EOL care.<sup>3,4</sup>

Life-sustaining treatment (LST) is often applied to delay death. Aggressive EOL care, including cardiopulmonary resuscitation (CPR), is increasingly viewed as a cost-ineffective and poor quality-of-care approach for a patient with advanced cancer.<sup>5</sup> This is an unpleasant path to death and can have detrimental effects on all those involved.<sup>6</sup>

Planning EOL care requires that the caregiver has sufficient understanding of the treatment preferences of the patient. However, disagreements about LST may cause the wishes of the patient to be neglected; this is especially true in Asian cultures.<sup>7</sup> There is also substantial social pressure from relatives who are not primary caregivers and the surrounding community to extend life as long as possible.<sup>8</sup> In addition, family members often have

the burden of making medical decisions for their loved ones; however, this burden can be reduced if the surrogate decision maker is aware of the preferences of the patient.<sup>9,10</sup>

Many studies suggest that the preferences of the caregiver may not reflect the wishes of the patient. Caregivers tend to be more aggressive about EOL interventions for patients than they would actually prefer or than the patients would want for themselves.<sup>8,11-18</sup> Published studies have focused on the mismatch itself and the more aggressiveness of the caregiver. Identifying factors that are associated with the differential preferences of patients and their respective caregivers may

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help reduce disagreements and improve EOL care. We hypothesized that patients with terminal cancer and their corresponding caregivers display differences in their preferences for EOL CPR. Further, we believed that these differences could be distinguished by specific characteristics in each group.

## Methods

### Design and Recruitment

The Study to Understand Risks, Priority, and Issues at End-of-Life (SURPRISE) is a multicenter, prospective, cohort study designed to identify important ethical issues and quality of care at the EOL in Korea. Patients with terminal cancer from 11 university hospitals and the National Cancer Center were enrolled from July 2005 to October 2006. Patients were eligible to participate if they were aged 18 years or older, diagnosed as terminally ill by their physicians at an outpatient or inpatient facility, capable of filling out questionnaires, and competent enough to understand the purpose of the study. Patients with cancer were defined as being terminally ill if they had progressive advanced disease and, in their physician's judgment, were likely to die within months (because of general prostration, refusal of further chemotherapy, or nonresponsiveness of the condition to conventional anticancer therapy). Patients were enrolled within days of being diagnosed with and informed of the terminal state of their cancers. Patients were not eligible to participate if they continued conventional anticancer treatment after enrollment, were of nonevaluable disease status, changed their treatment plan, or could not complete the questionnaire because they had become physically or mentally incapacitated. Patients were asked to identify the primary family caregiver, defined as the relative who provided them with the most assistance. The family caregivers were invited to participate in the study but were ineligible if they were not well enough to complete questionnaires, unable to communicate with an interviewer, or could not understand the intent of the study. All participants provided informed consent to participate in the study. Our institutional review boards approved the protocol. Details of the study design were previously published.<sup>19</sup>

We identified 702 consecutive patients with terminal cancer (Figure 1). Among those patients, 221 were excluded because 11 patients continued conventional anticancer treatments, 14 were nonevaluable at follow-up, 15 were lost to follow-up due to altered treatment plans, 43 became physically or mentally incapacitated, and 138 refused to participate. Among 481 eligible patients, 100 had ineligible caregivers, with 3 who were unable to read, 13 who were incompetent, 30 patients who did not have caregivers, and 54 who refused to participate. Data from 361 dyads (group of 2 people) were ultimately analyzed after excluding 20 dyads due to a lack of data on CPR preferences.

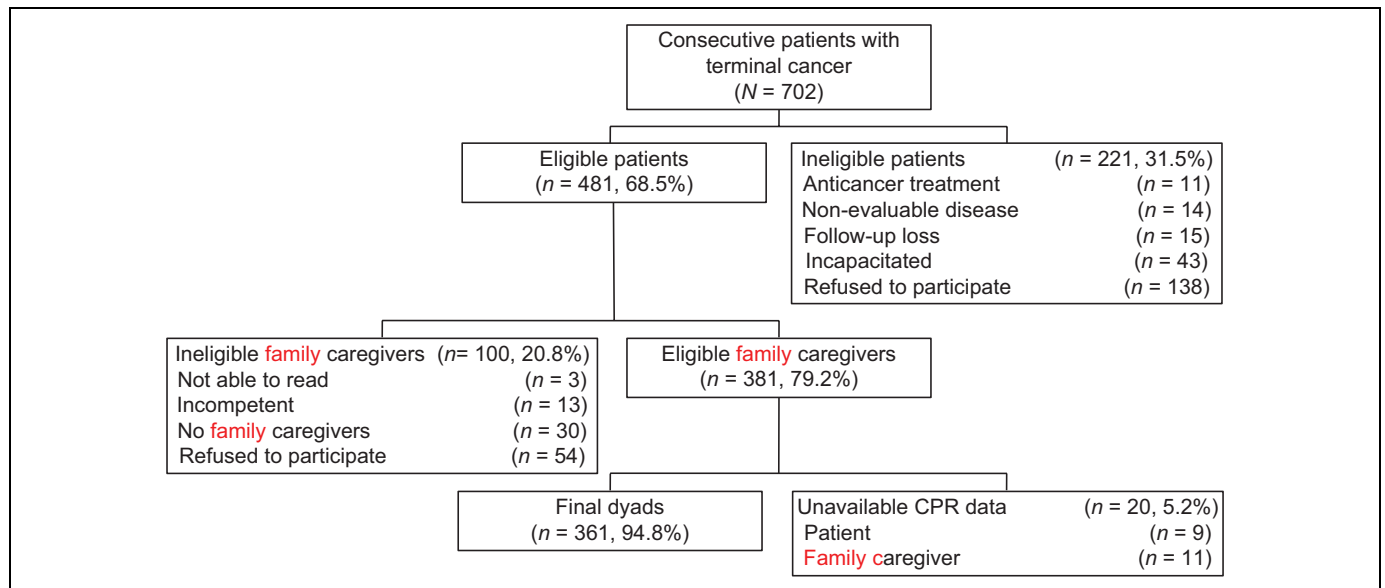
### Data Collection and Processing

Similar questionnaires were administered to patients and caregivers simultaneously. The questionnaire was constructed to

examine the willingness to approve CPR. As previously reported,<sup>20</sup> the response for CPR was coded as a dichotomous variable as *unwilling* ("No, I would not want") or *willing* ("Yes" or "I don't know") because the numbers of undetermined ones were too large (33.5% of patients and 35.5% of caregivers). We categorized dyads into 3 groups according to their willingness to approve CPR: unwilling dyads (n = 97), willing patient only (n = 52), and willing caregiver only (n = 74).<sup>21</sup> We eliminated the "willing dyads group (n = 138)" from further analyses after evaluating the degree of agreement because analyses including this group might cause prediction errors; in addition, our study was focused on discordance.<sup>11</sup>

Questions also addressed the following: clinical characteristics of the patient (cancer site, metastasis, performance status, and reasons for being terminal), demographic information (age, sex, education level, religion, marital status, employment details, person paying for treatment, monthly household income, and the relationship of the caregiver to the patient), awareness that the illness was terminal, previous discussion with physician about CPR, and family function. Awareness of terminal status was measured by the question, "Do you know your disease stage? (I don't know/Early stage/Advanced stage/Terminal stage/Other)." Performance was measured by the Eastern Cooperative Oncology Group Performance Status, which is an observer-rated scale of the physical ability ranging from 0 to 4. We divided patients into 2 groups, those with scores of 0 to 2 and those with scores of 3 to 4. Family function was assessed with the Family Adaptability, Partnership, Growth, Affection, and Resolve questionnaire,<sup>22</sup> which consists of 5 items; each item is rated from 0 to 2. A score range of 0 to 3 indicates severe family dysfunction, 4 to 6 indicates moderate dysfunction, and 7 to 10 indicates healthy family function.<sup>23</sup> Other variables were categorized as follows. Monthly income was categorized as "<2000 US dollars (USDs) or ≥2000 USD"; education level was categorized as "high school or lower" or "college or beyond"; marital status was classified as "married" or "unmarried," which included "single" and "divorced/separated/widowed"; religious preference was classified as "no religion" or "professing a religion," which included non-Catholic Christians, Buddhists, Catholics, and others; the person paying for treatment was categorized as "patient" or "others," which included the spouse, parents, offspring, relatives, and others; relationship with patient was categorized as "spouse" or "others"; and reason for being terminally ill was classified as "refractory to chemotherapy" or "others," which included general prostration, adverse effect of chemotherapy, refused further chemotherapy, and others.

To measure quality of life (QOL), we used the validated Korean version of the European Organization for Research and Treatment of Cancer QLQ-C30,<sup>24</sup> which is a cancer-specific measure of QOL composed of 5 multi-item functional scales that evaluate physical, role, emotional, cognitive, and social functions and 1 global health status/QOL scale. Three symptom scales measure fatigue, pain, and nausea/vomiting and 6 single items assess other symptoms (dyspnea, insomnia, appetite loss, constipation, and diarrhea) and financial difficulties. All scales were linearly transformed to a 0 to 100 score, in which 100



**Figure 1.** Flowchart of the recruitment of dyads.

represented the best global health status or functional status or the worst symptom status, as appropriate. A score of 33 served as the cutoff point for functional assessment, and 66 was the cutoff for evaluation of symptoms.<sup>25</sup>

### Statistical Analysis

Differences in the characteristics of patients and those of their caregivers were evaluated by chi-square ( $\chi^2$ ) test. The primary outcome was mismatched preference for CPR between the patient and the caregiver. To investigate the strength of agreement between the willingness of the patient and caregiver to approve CPR, we used the kappa coefficient ( $\kappa$ ), which evaluates the degree of agreement beyond what would be expected by coincidence. In all regression analyses, the unwilling dyads group served as the reference. We used the logistic regression model to assess associations between the QOL of the patient or the characteristics of the dyads and mismatched willingness to approve CPR. Each independent variable that was statistically significant at the  $P < .05$  level in the univariate relationship was evaluated in the final multivariate logistic regression model. Using a stepwise elimination procedure, we obtained a best-fit multivariate regression model. We considered  $P < .05$  in 2-sided tests to indicate statistical significance. All statistical tests were performed with SAS version 9.2 (SAS Institute, Inc, Cary, North Carolina).

## Results

### Sample Characteristics

Table 1 provides the characteristics of the dyads. The support for CPR was not significantly different between the groups ( $P = .099$ ), and the agreement was 65.1% ( $\kappa = .296$ ,  $P < .001$ ; not shown in table).

### Factors Related to the Differential Support for CPR in Univariate Analyses

After patients were grouped as willing or unwilling, dyads were further categorized into 3 groups, unwilling dyads ( $n = 97$ ), willing patient only ( $n = 52$ ), and willing caregiver only ( $n = 74$ ). The gender of the patient and precounseling of the caregiver were associated with the willingness of the patient to approve CPR. Knowledge of the diagnosis of terminal cancer and precounseling of both groups were related to the willingness of the caregiver to approve CPR (Table 2). In addition, the support of caregivers for CPR was associated with a greater number of multiple domains of QOL than that of patients who approved CPR (Table 3).

### Factors Related to the Differential Support for CPR in Multivariate Analyses

Table 4 lists the results of multivariate analyses of factors that were associated with differences in CPR preference by univariate analyses. Patients were more likely to prefer CPR than their caregivers in dyads that included female patients (adjusted odds ratio [aOR] 2.17,  $P = .037$ ) or emotionally stable patients (aOR 5.17,  $P = .005$ ). In contrast, dyads that included patients with controlled pain (aOR 2.26,  $P = .028$ ) or stable general health (aOR 2.65,  $P = .009$ ) and caregivers without previous counseling for CPR (aOR 11.34,  $P = .002$ ) were associated with willingness of the caregiver to allow CPR.

## Discussion

Dependence on family members to act as surrogate EOL decision makers appears inevitable. To achieve the best interests of the patient, a family surrogate should authentically represent the preferences of the patient.<sup>26</sup> Therefore, efforts to bridge

**Table 1.** Characteristics of Dyads (N = 361).

	Patient		Family caregiver		P
	No.	%	No.	%	
Age, years					
<60	185	51.3	284	79.3	<.001
≥60	176	48.8	74	20.7	
Sex					
Male	206	57.2	121	33.6	<.001
Female	154	42.8	239	66.4	
Marital status					
Married	281	78.5	290	80.8	.447
Not married	77	21.5	69	19.2	
Education completed					
High school	295	83.3	239	66.2	<.001
College or beyond	59	16.7	122	33.8	
Current job status					
Employed	29	8.6	125	36.2	<.001
Unemployed	310	91.5	220	63.8	
Practices a religion					
Yes	249	69.9	241	68.9	.591
No	107	30.1	113	31.9	
Monthly family income, USD					
<2000			207	59.1	N/A
≥2000			143	40.9	
Cancer site					
GI	143	39.6			N/A
Other	218	60.4			
Metastasis					
Yes	325	91.0			N/A
No	32	9.0			
ECOG PS					
0-2	196	55.5			N/A
3-4	157	44.5			
Reason for being terminal					
Refractory to CTX	205	56.8			N/A
General prostration	105	29.1			
Adverse effect of CTX	3	0.8			
Refused further CTX	47	13.0			
Other	1	0.3			
Aware of being terminal					
No	151	42.1	54	15.0	<.001
Yes	208	57.9	306	85.0	
Who pays for treatment					
Patient			99	27.8	N/A
Other			257	72.2	
Relation to patient					
Spouse			186	51.7	N/A
Child or daughter-in-law			130	36.1	
Other			44	12.2	
APGAR score					
0-6			188	55.1	N/A
≥7			153	44.9	
In-advance CPR discussion					
Yes	27	7.9	39	11.1	.142
No	317	92.2	312	88.9	
CPR willingness					
Reject	171	47.4	149	41.3	.099
Accept	190	52.6	212	58.7	

Abbreviations: USD, US dollar; ECOG, Eastern Cooperative Oncology Group; PS, performance status; CTX, chemotherapy; APGAR, Adaptability Partnership Growth Affection Resolve; CPR, cardiopulmonary resuscitation; GI, gastrointestinal; N/A, not applicable.

gaps between the preferences of the patient and those of surrogate (eg, identifying factors related to differences in EOL preferences) are warranted.

To our knowledge, this study is one of the first to perform bidirectional analyses to identify factors associated with willingness to approve CPR in an Asian community. The main findings were that (1) the agreement between patients and caregivers to approve CPR was only 65.1%, (2) the QOL of the patient had a greater influence on the willingness of the caregiver to approve CPR than that of the patient, (3) female or emotionally stable patients were more likely to prefer CPR than their caregivers, and (4) prior discussions about CPR with a physician had significant impact on the willingness of the caregiver to approve CPR.

In this study, the agreement in support of CPR was only 65.1%, which is comparable with data reported in previous studies. Additionally, the  $\kappa$  was only .296, which means the slight degree of agreement. In a review of surrogate accuracy, Shalowitz et al<sup>12</sup> found an average agreement of 68% across 16 studies. These findings show that the agreement between patients and caregivers is not perfect, suggesting that the willingness of the patient to receive CPR should be directly assessed. Differential preferences also highlight the need for improved communication between patients and families to maintain respect for the autonomy of patients with terminally ill cancer.

In addition, as expected, caregivers showed greater preference for CPR than their patients did (58.7% vs 52.6%), although this result was not significant. Family caregivers generally prefer LSTs more than their patients do.<sup>8,11,13</sup> However, for invasive treatments, such as CPR, surrogate preferences more accurately reflect the wishes of the patient.<sup>27</sup> A recent study found no significant differences in the CPR preferences of 2 groups in the context of terminal cancer.<sup>14</sup>

Interestingly, we found that female gender and an emotionally stable status were associated with the willingness of a patient to receive CPR. We hypothesized that these findings could be explained by our study design because enrollment was within days of being diagnosed with and informed of a terminally ill state. Strategies that patients use to cope with a terminal diagnosis are important determinants of mood and subjective well-being and may affect medical decisions.<sup>28</sup> Women are generally more vulnerable to cancer-related distress and appear to focus more on benefits than on adverse events.<sup>29,30</sup> Similarly, preferences for LSTs may be influenced by changes in depression symptoms,<sup>31</sup> and an unstable emotional state may lead patients to refuse CPR.

Family members generally have a poor understanding of CPR and its low success rate in patients with advanced illnesses.<sup>32</sup> Surrogates want clear communication regarding medical options for their loved ones,<sup>33</sup> and they view advance discussions as essential for coping with the distress of making decisions.<sup>6,10</sup> Prospective studies demonstrate the effects of EOL discussions on less aggressive medical care near death.<sup>4,34</sup> In a recent study, EOL discussions, rather than the actual decisions, were associated with higher quality of care according to the bereaved primary caregivers.<sup>35</sup> We found that caregivers who did not have prior CPR discussions were more likely to prefer CPR compared to those

**Table 2.** Characteristics Related to the Difference in CPR Preferences of Patients and Caregivers.<sup>a</sup>

%	Unwilling dyads (n = 97)	Only patient willing (n = 52)	P(Only patient willing vs unwilling dyads)	Only caregiver willing (n = 74)	P (only caregiver willing vs unwilling dyads)
<b>Patient factors</b>					
<60 years	48.5	48.1	.97	60.8	.11
Female	36.5	53.9	.04	47.3	.16
Higher education (≥college)	16.7	23.1	.34	19.4	.64
Professed a religion	67.4	67.3	.99	69.9	.73
Married	77.3	76.9	.96	76.7	.93
Employed	7.4	4.3	.47	12.7	.25
Aware of terminal diagnosis	71.1	61.5	.23	55.4	.03
Prior CPR discussion	14.1	6.0	.14	2.9	.02
<b>Caregiver factors</b>					
≥60 years	21.1	13.7	.28	18.9	.73
Female	72.9	67.3	.47	63.5	.19
Higher education (≥college)	30.9	34.6	.65	41.9	.14
Professed a religion	71.9	67.3	.56	70.8	.88
Married	84.2	88.5	.48	83.8	.94
Employed	41.1	38.0	.72	37.8	.67
Aware of terminal diagnosis	91.8	88.5	.51	78.1	.01
Prior CPR discussion	26.3	11.8	.04	2.8	<.01
Spouse	47.9	51.9	.64	55.4	.33
<b>Common factors</b>					
GI cancer	38.1	38.5	.97	48.7	.17
Refractory to chemotherapy	55.7	40.4	.08	60.8	.50
Poor performance (ECOG 3-4)	48.4	46.2	.79	35.2	.09
Higher income (≥2000 USD)	41.1	46.0	.57	34.7	.41
Patient pays for treatment	30.2	23.5	.39	28.4	.80
Family dysfunction (APGAR ≤ 6)	51.7	55.3	.68	62.0	.19

Abbreviations: CPR, cardiopulmonary resuscitation; GI, gastrointestinal; ECOG, Eastern Cooperative Oncology Group; USD, US dollar; APGAR, Adaptability Partnership Growth Affection Resolve;  $\chi^2$ , chi-square.

<sup>a</sup>P values were calculated using  $\chi^2$  test.

who did have discussions regardless of the wishes of the patients. Our finding supported the notion that physicians should provide preliminary information to a caregiver in a clear and sensitive manner that is easy to understand.

Another notable finding in the current study was that controlled pain and preserved health status of the patient were associated with the willingness of the caregiver to approve CPR, whereas these factors were not related to the willingness of the patient to approve CPR. Other studies indicate that the health of patient usually affects preferences for LST such that support for LST strengthens as health declines.<sup>36,37</sup> One case-control study reported a high rate of refusals for do-not-resuscitate orders in patients with severe pain.<sup>38</sup> In contrast, the health of patients in our study did not affect EOL decisions by the patients themselves but did indicate potential changes in decision making that increased support for CPR by caregivers. Delayed EOL decision making by caregivers after receiving the diagnosis of terminal cancer may explain our conflicting findings. However, further investigations should examine changes in the willingness of caregivers to approve CPR.

Many Korean caregivers value their role and feel great responsibilities to care for ill family members.<sup>39</sup> However, terminally ill patients with cancer often feel strongly that they impose tremendous burdens on their families. The negative feelings affect self-worth, cause serious psychological distress, and further compromise QOL.<sup>40</sup> These psychological

states of the dyad may contribute the marked influence of patient's QOL on the caregiver's willingness.

This study has limitations that should be acknowledged. First, our study was cross-sectional and limited to patients who had been diagnosed with a terminal state within days of enrolling on the study. Chronically ill patients change their minds about medical treatments over time, especially regarding invasive interventions.<sup>20,41</sup> In addition, differences in CPR preference may influence the QOL of the patient.<sup>42</sup> A comprehensive prospective study investigating the trajectory of these differences and the impact of the related factors is warranted. Second, our study had limited cultural representation. The EOL decisions are very sensitive issues that are considered taboo in many Asian cultures, including Korea. The health decisions for an individual are frequently made within a strong family unit in Korea; thus, interdependence among family members is a prime factor in decision making.<sup>39,43</sup> Third, the dichotomous categorization in this study was arbitrary. Although we followed the approach of a previous investigation,<sup>20</sup> the true meaning of the response "I don't know" remains unclear. Further insights into the interpretations of the dichotomous classification used in this study may be revealed by examining correlations with other scales (eg, Likert-type scale). Finally, other potential confounders were not considered. During the decision-making process, individuals may be affected by multiple factors, such as their own wishes, beliefs, emotional

**Table 3.** Association of Patient's Quality of Life With Willingness to Accept Cardiopulmonary Resuscitation.

Problematic <sup>a</sup> group	Odds ratios (95% confidence intervals)	
	Only patient willingness vs unwilling dyads	Only caregiver willingness vs unwilling dyads
Physical functioning	0.66 (0.33-1.32)	0.27 <sup>b</sup> (0.14-0.51)
Role functioning	0.60 (0.30-1.20)	0.40 <sup>b</sup> (0.22-0.75)
Emotional functioning	0.22 <sup>b</sup> (0.07-0.66)	0.49 (0.23-1.06)
Cognitive functioning	0.73 (0.32-1.68)	0.26 <sup>b</sup> (0.10-0.69)
Social functioning	0.42 <sup>c</sup> (0.21-0.85)	0.41 <sup>b</sup> (0.22-0.77)
Global health status/quality of life	0.50 <sup>c</sup> (0.25-0.99)	0.30 <sup>b</sup> (0.16-0.56)
Fatigue	0.66 (0.32-1.36)	0.44 <sup>c</sup> (0.23-0.82)
Nausea/vomiting	1.14 (0.56-2.34)	0.58 (0.29-1.16)
Pain	0.48 <sup>c</sup> (0.24-0.96)	0.32 <sup>b</sup> (0.17-0.61)
Dyspnea	0.72 (0.37-1.43)	0.33 <sup>b</sup> (0.17-0.63)
Insomnia	0.45 <sup>c</sup> (0.22-0.92)	0.37 <sup>b</sup> (0.20-0.70)
Appetite loss	0.82 (0.40-1.71)	0.51 <sup>c</sup> (0.27-0.97)
Constipation	0.78 (0.40-1.55)	0.48 <sup>c</sup> (0.26-0.89)
Diarrhea	1.48 (0.66-3.34)	1.50 (0.72-3.11)
Financial problem	0.96 (0.47-1.96)	0.73 (0.39-1.36)

Abbreviation: EORTC QLQ-C30, European Organization for Research and Treatment of Cancer quality of life C30.

<sup>a</sup>Cutoff scores were <33 points for functional domain and >66 points for symptomatic domain in EORTC QLQ-C30.

<sup>b</sup>P < .01.

<sup>c</sup>P < .05.

needs, quality of the patient-caregiver relationship, current burden of care, and past experiences with health care.<sup>31,44,45</sup>

Despite these limitations, this study was highly informative. Our results underscore a major difference between the EOL CPR preferences of Korean patients and those of their family caregivers. Further, we identified potential characteristics of patients and caregivers that were associated with a greater willingness to approve CPR. In practice, discussions and communications about EOL care should be focused on individuals with these characteristics. These discussions may help achieve a consensus decision regarding EOL care for terminally ill patients in accordance with the best interests of the patient.

### Declaration of Conflicting Interests

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

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**Table 4.** Factors Associated With Differential Willingness of the Patient and Caregiver to Approve CPR.<sup>a</sup>

	Adjusted odds ratios (95% confidence intervals)	
	Only patient willingness vs unwilling dyads	Only caregiver willingness vs unwilling dyads
Female patient	2.17 <sup>b</sup> (1.05-4.49)	
Emotionally stable patient	5.17 <sup>c</sup> (1.66-16.04)	
Patient with controlled pain		2.26 <sup>b</sup> (1.09-4.68)
Patient with stable general health		2.65 <sup>c</sup> (1.27-5.52)
No prior CPR discussion of caregiver		11.34 <sup>c</sup> (2.48-51.85)

Abbreviation: CPR, cardiopulmonary resuscitation.

<sup>a</sup>P values were extracted from stepwise multiple regression models including selected variables (P < .05) in univariate analysis.

<sup>b</sup>P < .05.

<sup>c</sup>P < .01.

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