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The Role of Families in Decisions about Cancer Treatments

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Abstract

Background—Shared decision-making is an important component of patient-centered care and is associated with improved outcomes. Little is known about the extent and predictors of patient involvement of their family in decisions about cancer treatments.

Methods—The Cancer Care Outcomes Research and Surveillance (CanCORS) study is a large multi-regional prospective cohort study of cancer care and outcomes of lung and colorectal cancer patients. Participants reported the roles of their families in decisions about treatment. We used multinomial logistic regression to assess patient factors associated with family roles in decisions.

Results—Among 5284 patients, 80 (1.5%) reported family controlled decisions, with highest adjusted rates (12.8%) among non-English-speaking Asians. Among the 5204 remaining patients, 49.4% reported equally sharing decisions with family, 22.1% reported some family input, and 28.5% reported little family input. In adjusted analyses, married, female, older, and insured patients more often reported equally-shared decisions with family (all $P < 0.001$). Adjusted family involvement varied by race/ethnicity and language, with Chinese-speaking Asian (59.8%) and Spanish-speaking Hispanic (54.8%) patients equally sharing decisions with family more often than whites (47.6%). Veterans Affairs patients were least likely to report sharing decisions with family, even after adjustment for marital status and social support ($P < .001$).

Conclusions—Most newly diagnosed lung or colorectal cancer patients involve family members in treatment decisions. Non-English speaking Asians and Hispanics rely significantly on family. Further studies are needed to determine the impact of family involvement in treatment

decisions on outcomes; until then, physicians should consider eliciting patients' preferences for family involvement.

Keywords

cohort study; colorectal neoplasms; lung neoplasms; decision-making; shared; professional-family relations

Introduction

Shared decision-making is an important component of patient-centered care and is associated with improved health outcomes.¹⁻³ The recent Institute of Medicine report, "Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis" highlighted the central role of engaged patients and the need for a health care system that supports all patients in making informed medical decisions consistent with their needs, values, and preferences.^{3, 4}

Family members play an important role in providing care for most cancer patients,⁵ and often are present when decisions about cancer care are being made.⁶⁻⁸ Evidence suggests that family involvement in decision-making is associated with greater patient satisfaction and treatment adherence in general medical care.^{9, 10} However, few data are available about the involvement of family members in decisions about cancer care. Some evidence from studies examining end-of-life decision making suggests that certain ethnic groups, such as Asians and Hispanics, may prefer family-centered decision making more than whites.^{11, 12} Additionally, research suggests that for some cultures, such as Navajos, certain Asian groups, and Hispanics, some individuals believe that terminally-ill patients should not be informed of their diagnosis.¹² For such patients, the role of families in decision-making becomes central to their care. Evidence is lacking about the extent to which demographic factors are associated with involvement of patients in decisions.

In this study, we surveyed a large, population-based cohort of patients with recently diagnosed lung or colorectal cancer about the roles of their families in decisions about cancer care. Because other evidence suggests substantial participation of family members in care and some types of decisions,^{5, 12} we hypothesized that patients who were racial/ethnic minorities or non-English speakers, would report more family involvement in their treatment decisions than other patients. In addition, we also explored whether other characteristics of patients or their cancers were associated with participation of family members in decisions.

METHODS

Design

Data were collected as part of a large national study of care and outcomes for patients with lung or colorectal cancer conducted by the Cancer Care Outcomes Research and Surveillance (CanCORS) Consortium.¹³ The CanCORS study enrolled approximately 10,000 patients diagnosed with lung or colorectal cancer during 2003 to 2005 who were living in Northern California, Los Angeles County, North Carolina, Iowa or Alabama or who received their care in one of five large health maintenance organizations or at one of 15

Veterans Affairs Medical Centers. The study was approved by the Institutional Review Boards at all participating institutions.

Patients

Patients aged ≥ 21 years who were diagnosed with lung or colorectal cancer were identified by cancer registries within weeks of their diagnoses through rapid case ascertainment. Patients, or their surrogates (if they had died or were too sick to participate), were interviewed approximately 3–6 months after diagnosis; a brief version of the survey was also available for patients who were too sick to participate in the full version. We restricted this analysis to the 5462 patients who were alive and completed the full version of the interview themselves, rather than a surrogate, and we focused on the 5404 patients who reported they discussed surgery, radiation, and/or chemotherapy with a clinician. We excluded 120 patients who did not report the roles of their families in decision-making, leaving 5284 patients for analysis.

Data Collection

Interviewers used computer-assisted telephone interviewing to navigate complex skip patterns. Surveys were translated into Spanish and Chinese and administered by bilingual interviewers for patients who preferred these languages.^{14, 15} The American Association for Public Opinion Research survey response rate¹⁶ was 51.0%, and the cooperation rate was 59.9%. Information about cancer site, histology, and stage at diagnosis was obtained from registry data and medical records (available for 79% of patients in the cohort).

Dependent Variable

Each patient was asked, “Which statement best describes the role your family played when decisions about treatment for your [cancer] were made?” (Interviewers referred to the cancer as the “lung problem” or “colorectal problem” for patients who did not acknowledge a cancer diagnosis.) Response options were: “You made the decisions with little or no input from your family” (little family input), “you made the decisions after considering your family’s opinion” (some family input), “you and your family made the decisions together” (equally-shared decisions with family), “your family made the decisions after considering your opinion,” and “your family made the decisions with little or no input from you” (Table 1). The fourth and fifth responses reflected family-controlled decisions, which we believed was a different construct than sharing of decisions with family and worth understanding better. This question was adapted from Degner’s Cancer Preference Scale, the gold standard for assessing patient preferences in medical decision-making.¹⁷

Independent Variables

Patients reported their age, sex, marital status, race/ethnicity, education, income, comorbid conditions, treatment modalities (surgery, chemotherapy, radiation) discussed, health status, insurance status, and their preferred role in decisions. We documented the language of the survey, considering those who chose Spanish or Chinese to be less comfortable with English. We used an 8-item version of the Center for Epidemiological Studies-Depression Scale (CES-D), with a threshold of ≥ 6 symptoms to identify current depression.¹⁸ We

collected information on instrumental and affective social support using the Medical Outcomes Study social support scale questionnaire.¹⁹ We used a 4-item scale to assess fatalistic thinking.²⁰ We obtained cancer stage from registry data and medical record data. Variables were categorized as in Table 2.

Statistical analysis

Item non-response was infrequent, less than 4.5% for all variables except income (8.7%). We used multiple imputation^{21, 22} to impute missing data items other than the family role variable (for which no data were missing by cohort definition, as described above).

A single model predicting the four levels of family role in decision-making (little family input, some family input, equally-shared decisions, and family-controlled decision), such as a multinomial logit model, makes the assumption that each alternative response is distinct and an equal substitute. Because we believed family-controlled decisions were a different construct than sharing of decisions with family, we instead fit two models. We first examined factors associated with family-controlled decisions. We then fit a second model predicting sharing of decisions with family after excluding patients with family-controlled decisions. This sequential approach assumes that choices at each stage are independent. In sensitivity analyses we fit a multinomial logistic regression model to the 4 categories and found similar results.

We used logistic regression in the first stage and multinomial logistic regression to identify patient factors independently associated with family roles in decisions. In both cases we included all independent variables described above. We calculated rates of each category of family role for categories of each covariate, adjusted for all other covariates, by direct standardization under the regression model.²³

In sensitivity analyses, we repeated adjusted analyses after individually removing variables for which we were concerned that collinearity could create problems with interpreting results. The VA site had predominantly male patients, most patients in the health maintenance organizations and VA were insured at the time of diagnosis, and most Asian and Hispanic patients lived in California. We ran five models, individually excluding (1) women to understand the VA association, (2) VA patients to understand the female variable in other sites, (3) VA patients and patients from the 5 health maintenance organizations to understand the insurance variable, (4) uninsured patients to assess the study site variables and (5) all sites except the California sites to understand the ethnicity variable.

All tests of statistical significance were two-sided. We conducted analyses using SAS statistical software, version 9.2 (SAS Institute, Inc., Cary, North Carolina).

Results

Of the 5284 patients, 53% were male, over 50% were 70 years of age or younger, approximately 70% were white, 63% were married and 96% of participants completed the survey in English (Table 2).

Factors associated with family-controlled decisions

Among 5284 patients, 80 (1.5%) reported family controlled decisions. In adjusted analyses, Chinese-speaking Asian patients were significantly more likely to report family controlled decisions than white patients (12.8% vs. 1.3%, adjusted OR=7.41, 95%CI=4.93–11.40) (Table 2). English-speaking Asian patients were also more likely than white patients to report family-controlled decisions, although the association was more modest (OR=1.93, 95%CI=1.17–3.16). Other factors associated with family-controlled decisions included age >81 years vs. age 21–56 (OR=1.82, 95%CI=1.25–2.65), stage IV vs. stage I/II/III disease (OR=1.45, 95%CI=1.11–1.88), having 1 or 2 comorbid conditions versus none, depression (OR=1.91, 95%CI=1.46–2.51), and patient-reported preference for physician-driven decisions vs. preference for patient-driven decisions. Study site was also associated with family-driven decisions, with highest rates for patients in Northern California and lowest rates for patients from North Carolina. Patients with income greater than \$40,000 vs. <20,000 and those with good, fair, or poor health status (vs. excellent/very good) were less likely to report family controlled decisions (Table 2).

Factors associated with family involvement in decisions

Among the 5204 patients who did not report family-controlled decisions, 28.5% of patients reported little or no role of family in decisions, 22.1% reported some involvement, and 49.4% reported equally sharing decisions with family.

In adjusted analyses, most factors we studied were associated with family roles in decisions, although some differences were modest (Table 3). Married patients were more likely than unmarried patients to report equally sharing decisions with their family (56.8% vs. 35.3%, overall $p < 0.001$). Male patients were more likely to report no family involvement than female patients (32.9% vs. 28.9%, overall $P < 0.001$).

Family involvement in decision-making varied by race/ethnicity, with 63.5% of Asian Chinese-speaking patients and 56.8% of Hispanic Spanish-speaking patients, and 56.1% of English-speaking Asian patients reporting equally sharing decisions with family, versus 48.3% of whites and 48.3% of English-speaking Hispanics. The proportion of black patients reporting equally sharing decisions with family (51.1%) was only modestly higher than the proportion of whites.

Older patients were more likely than younger patients to report equally sharing decisions with family. Patients with the least and the most education were more likely than patients with some college education to report equally sharing decisions with family. Differences in family involvement by income were modest, with generally similar rates of reporting equally sharing decisions with family, but fewer in the highest income category reporting no family involvement. Uninsured patients were more likely to report no family involvement than insured patients.

Family involvement differed only minimally by cancer type and stage, comorbidity, and health status, and was not associated with depression. Similarly, differences were relatively modest by type of therapy discussed.

Patients' preferred role in decision making was also associated with degree of family involvement; patients who preferred sharing decisions with physicians were most likely to report equally sharing decisions with family compared with those who preferred patient-driven decisions (58.1% vs. 34.5%). Patients with the highest levels of fatalism and social support were more likely to involve family members in decisions than those with the lowest levels. Study site was also associated with significant differences in family involvement, with patients from Veterans Affairs hospitals least likely to report a lot of family involvement.

As above, we were concerned that collinearity might influence some parameter estimates and interpretation of results. Accordingly, we conducted sensitivity analyses where we repeated adjusted analyses after individually removing variables. Results were generally similar to the main model, with two exceptions when females were omitted from the model; insurance status was not significantly associated with family role in decision and the proportion of VA patients reporting equally sharing decisions with family was higher than in the full model (40.2% vs. 36.6%), although this rate was still the lowest across the study sites, data not shown.

Discussion

In this large population-based cohort of patients with recently diagnosed lung or colorectal cancer, we found that very few patients (1.5%) had family controlled decisions about their cancer treatment, although rates were higher for certain racial/ethnic groups, particularly non-English speaking Asians. Among patients who did not report family-controlled decisions, approximately half (49.4%) of patients reported that their family members participated equally in their treatment decisions, and only 28.5% of patients reported little or no input from their families. Thus, families played an important role in decisions for many patients. This is consistent with the finding that 46% of patients are accompanied to routine medical visits by caregivers/family members,²⁴ a number that may be higher for medical oncology visits.²⁵ Studies suggest that family involvement in oncology care has an important role and may even improve outcomes, with evidence suggesting that married patients are less likely than unmarried patients to die of their cancer, regardless of other demographic factors.²⁶ In addition, findings from one study suggest that family involvement in oncology visits is associated with better satisfaction with care and understanding of cancer-related information.²⁷

In our study, several factors were associated with sharing treatment decision making with family. Women, married patients, and older patients were more likely than others to report equally shared decision making with their families; these characteristics have also been found to be associated with greater patient involvement in decisions relative to their physicians.²⁸⁻³⁰ Patients who preferred shared decision-making with physicians and who reported higher levels of social support were also more likely to report equally shared decisions with family. This suggests that patients who choose to share decision-making with providers and family members may not have strong preferences regarding with whom the decision is made, but simply value the input of others in decision-making. Patient navigators are increasingly being used in cancer care settings; they could potentially assist with

decisions for patients who do not have family members who can engage in this role. On the other hand, patients' preferences regarding those with whom decisions are shared may vary depending on the decision, as has been noted in other studies.³¹ A limitation of this study is that patients were asked only one question about preferences regarding decision-making with family and did not ask patients to specify which family members they preferred to include in their decision-making.

Language and ethnicity were strongly associated with family involvement. Non-English speakers reported significantly higher amounts of family involvement than whites, and more often reported family-controlled decisions. This could be attributed to cultural differences regarding the role of family in decisions or to a greater dependency on family members to assist with translation. Among patients not reporting family-controlled decisions, non-English-speaking Hispanics and Asians reported sharing decisions with family more frequently than English-speaking Hispanics and Asians, respectively, although English-speaking Hispanics reported a similar degree of family involvement as whites. Blacks reported slightly more family involvement than whites, although less than Asians and Spanish-speaking Hispanics.

The findings of family involvement and language in Hispanics may reflect acculturation of English-speaking Hispanics, consistent with other reports.³² For example, one study assessing acculturation among Hispanic women and receipt of mastectomy found that less-acculturated Hispanic women more often reported that family was very important in decision making than more-acculturated Hispanic women.³²

Study site was also associated with family involvement, with patients from the VA reporting the least amount of family involvement, even after adjustment for marital status and social support. Other evidence suggests that VA populations have fewer social supports than non-VA populations,³³ and more challenges with social functioning.³⁴ Patients with the most and least education reported more family involvement than those with intermediate levels of education; this is consistent with other evidence that patients with less than high-school education more commonly present to visits with a companion.²⁴ Cancer stage, type and number of comorbid conditions, health status and depression had minimal or no association with family involvement in decisions after adjustment for other factors.

The strengths of this study include its large, population-based cohort of patients from various regions in the United States, with detailed information obtained about the role of families in treatment decisions. However, the following limitations should be considered. First, patients were surveyed at one time point, close to initial diagnosis, and it is possible that family involvement may change over time. In addition, we asked about involvement in decision making overall, not for each specific decision, and patients may not accurately recall their family's involvement in all decisions. Also, although we observed differences in family involvement based on race, ethnicity and language, most patients completed the survey in English, and although 30% of the cohort was non-white, Hispanic and Asian patients primarily resided in California; thus the generalizability to populations living in other areas remains uncertain. The CanCORS cohort, however, has been demonstrated to be representative of patients with lung and colorectal cancer in the U.S.³⁵ Cancer type was not

associated with family involvement, additional studies are needed to determine if these findings are applicable to patients with cancers other than lung and colorectal cancer. Finally, we did not adjust p values for multiple comparisons, and thus our analyses should be considered exploratory.

In conclusion, family members play an important role in decisions about care for many patients. Certain groups, such as non-English speaking Hispanics or Asians rely significantly on family, and for these groups, it is important that physicians respect and make efforts to integrate family members in decisions. Further studies are needed to determine if involvement of family members in oncology decision-making correlate with patient outcomes. In the meantime, it may be helpful for physicians' to elicit patients' preferences for involvement of their family in treatment decisions. For patients who desire family involvement, engaging families may help to achieve the Institute of Medicine's key goal of a delivery system with truly engaged patients.³

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Table 1

Role of families in decisions

Original survey responses and recategorization		
	N	Percent
Little family input (Patient made decisions with little or no input from family)	1506	28.5
Some family input (Patient made decisions after considering family's opinion)	1166	22.1
Equally-shared family decisions (Patient and family made decisions together)	2532	47.9
Family-controlled decisions *		
Family made decisions after considering patient's opinion	38	0.7
Family made decisions with little input from patient	42	0.8

* Because we believed that family-controlled decisions involved a distinct construct than sharing decisions with family, we fit two models. We first examined factors associated with family-controlled decisions; we then fit a second model predicting shared decisions with family after excluding patients with family-controlled decisions.

Table 2

Factors associated with family-controlled decisions, adjusted

Variable	N(%)	% Reported Family-Controlled Decisions	Adjusted OR	95%CI
Total	5284(100%)	1.5		
Sex				
<i>Male</i>	2821(53)	1.2	1.00	
<i>Female</i>	2463(47)	1.8	1.17	(0.93–1.47)
Marital status				
<i>Married</i>	3306(63)	1.3	1.00	
<i>Unmarried</i>	1974(37)	1.9	1.20	(0.95–1.52)
Race				
<i>White</i>	3682(70)	1.3	1.00	
<i>Black</i>	715(14)	2.2	0.85	(0.59–1.22)
<i>Hispanic, English language</i>	241(5)	2.3	0.91	(0.52–1.58)
<i>Hispanic, Spanish language</i>	121(2)	2.5	1.81	(0.99–3.31)
<i>Asian, English language</i>	78(3)	2.3	1.92	(1.17–3.17)
<i>Asian, Chinese language</i>	78(1)	12.8	7.41	(4.93–11.4)
<i>Other</i>	273(5)	1.5	1.26	(0.78–2.01)
Age at diagnosis (years)				
<i>21–56</i>	1254(24)	1.5	1.00	
<i>56–70</i>	2236(42)	1.0	0.66	(0.49–0.89)
<i>71–80</i>	1345(25)	1.9	1.24	(0.91–1.69)
<i>81+</i>	449(9)	2.9	1.82	(1.25–2.65)
Education				
<i><High school diploma</i>	882(17)	1.9	1.00	
<i>High school diploma</i>	1590(30)	1.8	1.18	(0.88–1.57)
<i>Some college</i>	1481(28)	1.2	0.73	(0.53–1.01)
<i>College graduate</i>	837(16)	1.2	0.70	(0.47–1.04)
<i>Graduate degree</i>	470(9)	1.1	0.84	(0.51–1.39)
Income				
<i><\$20,000</i>	1400(29)	2.0	1.00	
<i>\$20,000–39,999</i>	1405(29)	1.4	0.85	(0.66–1.09)
<i>\$40,000–59,999</i>	814(17)	0.9	0.64	(0.45–0.91)
<i>\$60,000+</i>	1209(25)	0.8	0.64	(0.44–0.93)
Cancer type				
<i>Colorectal</i>	2352(45)	1.4	1.00	
<i>Lung</i>	2932(55)	1.6	1.26	(0.98–1.89)
Stage				
<i>I–III</i>	3981(75)	1.8	1.00	
<i>IV</i>	1052(20)	1.5	1.45	(1.11–1.88)

Variable	N(%)	% Reported Family-Controlled Decisions	Adjusted OR	95%CI
Unknown	251(5)	0.8	0.62	(0.32–1.19)
# of comorbid conditions				
0	2655(50)	1.2	1.00	
1	1673(32)	1.9	1.50	(1.19–1.89)
2	641(12)	1.9	1.55	(1.12–2.14)
3+	315(6)	1.3	0.98	(0.61–1.59)
Radiation offered or discussed				
<i>No</i>	1746(33)	1.6	1.00	
<i>Yes</i>	3538(67)	1.5	1.21	(0.95–1.53)
Chemotherapy offered or discussed				
<i>No</i>	3423(65)	1.4	1.00	
<i>Yes</i>	1861(35)	1.8	0.87	(0.69–1.11)
Surgery offered or discussed				
<i>No</i>	4213(80)	1.6	1.00	
<i>Yes</i>	1071(20)	1.2	1.45	(1.05–2.00)
Depression				
<i>No</i>	4242(84)	1.3	1.00	
<i>Yes</i>	807(16)	2.4	1.91	(1.46–2.51)
Patient preferred role in decisions				
<i>Preferred doctor driven role</i>	299(6)	4.7	3.06	(2.23–4.21)
<i>Preferred shared role</i>	3063(58)	1.4	1.23	(0.97–1.56)
<i>Preferred patient driven role</i>	1902(36)	1.2	1.00	
Self-reported health status				
<i>Excellent/very good</i>	2260(43)	1.6	1.00	
<i>Good</i>	1801(34)	1.4	0.73	(0.57–0.93)
<i>Fair/poor</i>	1202(23)	1.7	0.73	(0.55–0.97)
Fatalism *				
Tertile 1 (least)	2562(49)	1.8	1.06	(0.82–1.37)
Tertile 2	1296(25)	1.5	0.89	(0.67–1.18)
Tertile 3 (most)	1426(27)	1.1	1.00	
Social Support				
<i>Tertile 1 (lowest)</i>	1805(34)	1.8	1.00	
<i>Tertile 2</i>	1693(32)	1.7	1.21	(0.95–1.54)
<i>Tertile 3 (highest)</i>	1786(34)	1.0	0.86	(0.65–1.14)
Uninsured				
<i>Yes</i>	5157(98)	1.6		
<i>No</i>	127(2)	0	n/a **	n/a **
Study site				
5 health maintenance organizations	819(16)	1.2	1.00	

Variable	N(%)	% Reported Family-Controlled Decisions	Adjusted OR	95%CI
8 counties in Northern California	1102(21)	2.7	1.62	(1.14–2.30)
State of Alabama	605(11)	1.7	1.28	(0.84–1.94)
Los Angeles County	1113(21)	1.1	0.73	(0.49–1.09)
State of Iowa	486(9)	1.7	1.31	(0.83–2.06)
23 counties in North Carolina	606(12)	0.7	0.49	(0.29–0.84)
15 VA Hospitals	553(10)	1.1	0.79	(0.48–1.29)

* 16 patients completed a brief version of the survey instrument which did not include the question about education and it was not imputed; these patients are excluded from the model.

VA=Veterans Affairs

** Insurance status was omitted from the model because there were no uninsured patients who reported family-controlled decisions.

Table 3

Adjusted probability of family involvement in decisions by patient characteristics *

Variable	% Little or no family input	% Some family input	% Equally shared decisions with family	P value *
Overall	28.5	22.1	49.4	
Sex				<0.001
<i>Male</i>	32.6	22.5	44.9	
<i>Female</i>	28.5	25.7	45.8	
Marital status				<0.001
<i>Married</i>	20.2	23.0	56.8	
<i>Unmarried</i>	42.6	22.1	35.3	
Race				<0.001
<i>White</i>	29.3	23.1	47.6	
<i>Black</i>	30.3	18.5	51.2	
<i>Hispanic, English language</i>	30.7	21.3	48.0	
<i>Hispanic, Spanish language</i>	19.3	24.2	56.5	
<i>Asian, English language</i>	21.8	23.4	54.8	
<i>Asian, Chinese language</i>	20.0	20.2	59.8	
<i>Other</i>	29.6	23.9	56.5	
Age at diagnosis (years)				<0.001
<i>21–55</i>	29.6	23.6	46.8	
<i>56–70</i>	29.7	23.2	47.1	
<i>71–80</i>	28.3	20.7	51.0	
<i>81+</i>	25.3	19.6	55.1	
Education				<0.001
<i><High school diploma</i>	40.0	18.2	50.9	
<i>High school diploma</i>	29.2	19.3	51.5	
<i>Some college</i>	26.7	25.1	48.2	
<i>College graduate</i>	31.3	24.7	44.0	
<i>Graduate degree</i>	27.3	27.2	45.5	
Income				<0.001
<i><\$20,000</i>	30.4	20.7	48.9	
<i>\$20,000–39,999</i>	29.6	21.9	48.5	
<i>\$40,000–59,999</i>	29.0	23.2	47.8	
<i>\$60,000+</i>	25.7	24.4	49.9	
Insurance				0.002
<i>Insured</i>	30.8	24.6	44.6	
<i>Uninsured</i>	36.5	19.0	44.5	
Cancer type				<0.001
<i>Colorectal</i>	27.8	23.7	48.5	

Variable	% Little or no family input	% Some family input	% Equally shared decisions with family	P value *
<i>Lung</i>	29.8	21.4	48.8	
Stage				0.11
<i>I-III</i>	29.1	22.7	48.2	
<i>IV</i>	28.3	21.4	50.3	
Unknown	28.8	22.4	48.8	
Number of comorbid conditions				<0.001
0	28.5	22.0	49.5	
1	30.5	22.3	47.2	
2	27.1	22.3	50.6	
3+	26.9	27.2	45.9	
Self-reported health status				0.002
Excellent	29.8	22.1	48.1	
Good	27.4	23.2	49.4	
Poor	29.5	22.0	48.5	
Depression				0.49
<i>No</i>	28.9	22.2	48.9	
<i>Yes</i>	29.0	23.4	46.6	
Radiation offered or discussed				<0.001
<i>No</i>	30.1	21.9	48.0	
<i>Yes</i>	26.5	23.6	49.9	
Chemotherapy offered or discussed				<0.001
<i>No</i>	31.1	20.4	48.5	
<i>Yes</i>	27.7	23.5	48.8	
Surgery offered or discussed				0.001
<i>No</i>	31.3	21.3	47.4	
<i>Yes</i>	28.3	22.7	49.0	
Patient preferred role				<0.001
<i>Preferred doctor driven</i>	40.3	18.1	41.6	
<i>Preferred shared decisions</i>	25.5	16.4	58.1	
<i>Preferred patient driven</i>	32.7	32.8	34.5	
Fatalism				<0.001
Tertile 3 (least)	30.9	24.4	44.7	
Tertile 2	30.1	22.2	47.7	
Tertile 1 (most)	26.4	20.9	52.7	
Social support				<0.001
<i>Tertile 1 (lowest)</i>	37.6	23.7	38.7	
<i>Tertile 2</i>	29.5	25.9	44.6	
<i>Tertile 3 (highest)</i>	24.8	24.5	50.7	
Study site				<0.001

Variable	% Little or no family input	% Some family input	% Equally shared decisions with family	P value*
<i>5 health maintenance organizations</i>	31.3	24.9	43.8	
<i>8 counties in Northern California</i>	33.6	22.9	43.5	
<i>State of Alabama</i>	22.8	24.4	52.8	
<i>Los Angeles County</i>	34.0	23.8	42.2	
<i>State of Iowa</i>	25.5	22.5	52.0	
<i>23 counties in North Carolina</i>	28.8	26.5	44.7	
<i>15 VA Hospitals</i>	34.5	28.9	36.6	

* Adjusting for all variables in the table using multinomial logistic regression. P value reflects the overall association of each independent variable with patients' roles in decisions. 16 patients completed a brief version of the survey instrument which did not include the question about education and it was not imputed; these patients are excluded from the model.

VA=Veterans Affairs

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