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Lower Patient Ratings of Physician Communication Are Associated With Unmet Need for Symptom Management in Patients With Lung and Colorectal Cancer

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BACKGROUND AND QUESTION ASKED: In this study, we assessed the prevalence of patient-reported unmet needs for management of common cancer symptoms (pain, fatigue, depression, nausea/vomiting, cough, dyspnea, diarrhea) in a population-based sample of patients newly diagnosed with lung and colorectal cancer. How are unmet needs for symptom management in patients with lung and colorectal cancer associated with patient-rated physician communication quality?

SUMMARY ANSWER: Fifteen percent of patients newly diagnosed with lung and colorectal cancer reported unmet needs for symptom management. Patients who rated their physician's communication lower had adjusted rates of an unmet need for symptom management that were more than twice as high as patients who rated their physicians with a perfect communication score.

WHAT WE DID: Using the diverse nationally representative Cancer Care Outcomes Research and Surveillance cohort of patients with lung and colorectal cancer, we evaluated surveys completed approximately 5 months following diagnosis (N = 5,422) to describe the prevalence of unmet need for symptom management and to study the association of the quality of patient-rated physician communication with unmet need for symptom management using logistic regression with random effects to account for clustering within study sites.

WHAT WE FOUND: Overall, 15% (791 of 5,422) of patients reported at least one unmet need for symptom management. Patients who rated their physician's communication score below 80 (on a 0-100 scale) had adjusted rates of unmet need(s) for symptom management that were more than twice as high as patients who rated their physicians with a perfect communication score (23.1% *v* 10.0%, $P < .001$).

BIAS, CONFOUNDING FACTORS, DRAWBACKS: Patients reported unmet needs for symptom management, but were not asked to describe what these unmet needs were. These unmet needs may relate to lack of clinician attention to assessment and treatment of symptoms; however, they could also represent symptoms that proved refractory to available treatments, which would suggest the need for development of novel therapies for symptom management. Another limitation is that this is a cross-sectional study, and we cannot be certain of the direction of the association between ratings of communication and unmet need.

REAL-LIFE IMPLICATIONS: Although patients with lung and colorectal cancer reported a high prevalence of cancer-related symptoms, rates of unmet needs for symptom management were relatively low. Nevertheless, 15% of our population reported at least one unmet need for symptom management during a 4-week period, reminding us that there is room for improvement in the management of symptoms for patients with cancer.

The quality of physician communication as rated by patients was strongly associated with unmet need for symptom management. Patients who rated their physician's communication most highly had adjusted rates of unmet needs for symptom management that were less than half those with the lowest ratings. Although our findings do not allow us to demonstrate causality, these data

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suggest that communication skills, such as those captured in the modified CAHPS measure (empathy, listening, and attentiveness to patient needs) are associated with high quality symptom management. These findings are consistent with several previous reports that show that patients rate communication highly when physicians are responsive to their needs. One notable exception showed that highly rated patient-physician communication scores were associated with patients with advanced-stage cancer not understanding that their disease was incurable. This patient-reported quality metric and its divergent association with two important aspects of palliative care (symptom management and discussion of prognosis/goals of care) illustrate the need for a better understanding of the benefits and limitations of this measure for quality improvement efforts in oncology. JOP

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Abstract

Purpose

Little is known about factors associated with unmet needs for symptom management in patients with cancer.

Methods

Patients with a new diagnosis of lung and colorectal cancer from the diverse nationally representative Cancer Care Outcomes Research and Surveillance cohort completed a survey approximately 5 months after diagnosis (N = 5,422). We estimated the prevalence of unmet need for symptom management, defined as patients who report that they wanted help for at least one common symptom (pain, fatigue, depression, nausea/vomiting, cough, dyspnea, diarrhea) during the 4 weeks before the survey but did not receive it. We identified patient factors associated with unmet need by using logistic regression with random effects to account for clustering within study sites.

Results

Overall, 15% (791 of 5,422) of patients had at least one unmet need for symptom management. Adjusting for sociodemographic and clinical factors, African American race, being uninsured or poor, having early-stage lung cancer, and the presence of moderate to severe symptoms were associated with unmet need (all $P < .05$). Furthermore, patients who rated their physician's communication score < 80 (on a 0 to 100 scale) had adjusted rates of an unmet need for symptom management that were more than twice as high as patients who rated their physicians with a perfect communication score (23.1% *v* 10.0%; $P < .001$).

Conclusion

A significant minority of patients with newly diagnosed lung and colorectal cancer report unmet needs for symptom management. Interventions to improve symptom management should consider the importance of physician communication to the patient's experience of disease.

ASSOCIATED CONTENT

Appendix *DOI: 10.1200/JOP.2015.005538*

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INTRODUCTION

Symptoms are prevalent among patients with lung and colorectal cancer, and patients with early-stage cancer have similar rates of symptoms as those with late-stage cancer.[1,6-7] Recently, expert panels from the National Quality Forum and ASCO emphasized the importance of patient-reported outcomes, specifically around symptom management in routine cancer care.[2] An understanding of the prevalence and presence of symptoms is important to guiding and implementing care systems to manage symptoms in cancer populations.[3-5] Research has suggested that needs assessments may be more likely to identify patients who need intervention compared with quality-of-life assessments alone.[4,5] Although an understanding of the presence of symptoms is a necessary first step for improving patient care, strategies should also focus on identifying patients with unmet needs for symptom management rather than presence of symptoms alone. For example, when a patient reports severe pain in the past 4 weeks, this does not give any information with regard to the receipt (or success) of pain treatments during that time period. The extent to which patients with cancer and symptoms have their needs met in the United States is largely unknown, and such data are critical to inform efforts to improve symptom management in the diverse health care settings where patients with cancer receive care. In the present study, we assessed the prevalence and factors associated with unmet needs for the management of common cancer symptoms (pain, fatigue, depression, nausea/vomiting, cough, dyspnea, diarrhea) in a population-based sample of patients with a new diagnosis of lung and colorectal cancer.

METHODS

Study Population

We used data from the Cancer Care Outcomes Research and Surveillance Consortium (CanCORS), a demographically representative national cancer study and coordinated effort from 11 primary data collection sites that evaluated the care and experiences of approximately 10,000 adult patients with lung or colorectal cancer diagnosed between 2003 and 2005.[1,8] Cancer diagnosis and American Joint Committee on Cancer TNM staging system, 6th edition, stage were determined based on cancer registry data and medical records.[9] Other data for this study were obtained from the CanCORS baseline patient survey conducted approximately 3 to 6 months after diagnosis. Patients were considered to have late-stage disease if they had stage IV colorectal or stage IIIb or IV lung cancer. Detailed information about study design, procedures, and cohort has been published previously.[1,10,11] This study focused on the 5,422 patients who were alive and able to complete sections 8 and 9 of the CanCORS baseline survey, which addressed symptom prevalence and management. The human subjects committees at all participating institutions approved the study.

Survey Instrument

Interviewers asked patients about the presence and severity of symptoms, including pain, fatigue, depression, nausea/vomiting, cough, dyspnea, and diarrhea, during the 4 weeks before the survey by using validated tools; the survey instrument is available on the CanCORS Web site.[12] As previously reported, overall symptom prevalence was estimated by using the purposefully low threshold of any report of a symptom during the 4 weeks before the survey.[1] For each symptom that a patient reported, severity was assessed with validated scales, including the Brief Pain Inventory for pain; the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire for nausea/vomiting, cough, dyspnea, and diarrhea; the Short Form 36 vitality scale for fatigue; and the Center for Epidemiologic Studies Depression Scale 8 for depression. Details about criteria used to classify symptoms as moderate to severe have been previously reported.[1] Patients were asked: During the last 4 weeks, did you want help for your symptom? If the answer was yes, they were also asked: During the last 4 weeks, did you get the help you wanted from the doctor? Patients who responded no to the latter question were identified as having an unmet need for that symptom. Our conceptual model for this analysis was informed by prior research.[13-15] We selected independent patient sociodemographic, clinical, and care-related factors that are likely to influence symptom management for patients with cancer. Demographics (ie, age, sex, race, education), insurance status, wealth, marital status, comorbidity count (adapted from the self-administered Charlson comorbidity index and the comorbidity questions from the Prostate Cancer Outcomes Study), whether hospitalized in the year before diagnosis, enrollment in a clinical trial, length of relationship with primary care physician, and recent cancer treatment (receipt of chemotherapy, radiation, or surgery within the past 6 weeks) were also collected with the survey instrument.[11,16,17] Wealth was assessed by asking: If you lost all of your current sources of income and had to live off of your savings, how long

could you continue to live at your current address and standard of living? Preferred role in decisions about treatment was assessed by asking: Which statement best describes the role you would prefer to play when decisions about treatment for your cancer are made?[18] Preferences with regard to care at the end of life were assessed by asking patients whether they preferred treatment that extends life as much as possible even if it means having more pain and discomfort or whether they would want treatment that focuses on relieving pain and discomfort as much as possible, even if it means not living as long. These preferences were assessed to understand how patients rated importance of symptom management in relation to other goals.

Patient reports on physician communication were calculated from five items that were based on the Consumer Assessment of Healthcare Providers and Systems family of surveys on a scale of 0 to 100.[19] Responses were categorized as in a prior CanCORS analysis (0 to 79, 80 to 99, 100).[13] The five items queried patients about whether their physician listened carefully, explained things in a way that was understood, gave as much information as was desired about cancer treatments, encouraged cancer-related questions, and treated patients with courtesy and respect.[20] We hypothesized that this communication measure is an important factor in ensuring high-quality symptom management for patients with cancer.

Statistical Analysis

Bivariable analyses compared the prevalence of unmet need by symptom across cancer type and stage by using χ^2 tests (Appendix Table A1, online only). Logistic regression with a random intercept included for each of 11 primary data collection sites was used to study patient factors associated with having at least one unmet need for symptom management on the basis of a prespecified model and included sociodemographic information and clinical information, including comorbidities, length of relationship with primary care physician, treatments received, stage and type of cancer, and the presence of moderate to severe symptoms.[21] Symptoms that were only asked of specific cancer types (cough and dyspnea for lung cancer and diarrhea for colorectal cancer) were included in a variable called disease-specific symptom for purposes of the multivariable model. All variables had no or $<$ 1% missing data except for the wealth (16% missing) and baseline care preference variables (14% missing). We used multiple imputation to handle missing data for the independent variables in the multivariable model.[22] We individually tested interactions based on hypotheses about potential effect modification. (A list of tested interactions can be found in the Appendix.) One statistically significant interaction effect was observed for cancer type and stage and was included in the final model. From our final model we computed the predicted marginal probabilities for unmet needs for each level of the independent variables included in the model.[23] For ease of interpretation, we used a categorical variable to describe the interaction of cancer type and stage (early-stage lung, late-stage lung, early-stage colorectal, late-stage colorectal). CanCORS data set version 1.16 was used for these analyses. Data management and descriptive analyses were performed with SAS Version 9.3 software (SAS Institute, Cary, NC). Modeling through multiply imputed data accounting for clustering effects at the study site level was conducted in Stata 12 with xtlogit (StataCorp, College Station, TX).

Sensitivity Analyses

For the subsample of the cohort who had medical record data (4,295 of 5,422 [79%]), we also tested whether specific visit types (medical oncology, radiation oncology, surgery, primary care) or the total number of outpatient visits in the 28 days before the interview were associated with unmet need for symptom management.

Although we were interested in reporting and describing patient factors associated with unmet needs for symptom management in the entire cohort of patients with cancer to inform health care systems, because only patients with symptoms could have an unmet need for symptom control, we repeated the analyses after limiting the cohort to patients who reported at least one symptom (5,067 of 5,422 [93.5%]).

RESULTS

Almost all (5,067 of 5,422 [93.5%]) the patients in the cohort had a least one common symptom present (detailed data previously reported).[1] A majority (3,302 of 5,422 [61%]) wanted help for at least one of these reported symptoms (Appendix Table A2, online only). Among all patients, 15% (791 of 5,422) had at least one unmet need for symptom management in the 4 weeks before the interview, and 16% (791 of 5,067) who reported at least one symptom had at least one unmet need for symptom management. Unmet needs ranged from 1.4% for nausea/vomiting to 7.6% for fatigue. Fatigue, depression, cough, and dyspnea were among the most common symptoms to result in unmet need (Table 1). Among all patients

Table 1. Prevalence of Unmet Need (did not get help) for Symptom Management in Early- and Late-Stage Lung and Colorectal Cancer (N = 5,422)

	At Least One Unmet Need for Symptoms, No. (%)			
	Lung Cancer (n = 2,411)		Colorectal Cancer (n = 3,011)	
Type of Unmet Need	Early Stage (n = 1,295)	Late Stage (n = 1,116)	Early Stage (n = 2,426)	Late Stage (n = 585)
Any unmet need	258 (19.9)*	189 (16.9)†	270 (11.1)*	74 (12.7)†
Pain	49 (3.8)	31 (2.8)	74 (3.1)	14 (2.4)
Fatigue	114 (8.8)*	101 (9.1)	150 (6.2)*	45 (7.7)
Depression	65 (5.0)*	42 (3.8)	89 (3.7)*	23 (3.9)
Nausea/vomiting	22 (1.7)	17 (1.5)	33 (1.4)	5 (0.9)
Cough	72 (5.6)	47 (4.2)	N/A	N/A
Dyspnea	78 (6.0)‡	47 (4.2)‡	N/A	N/A
Diarrhea	N/A	N/A	36 (1.5)	14 (2.4)

Abbreviation: N/A, not applicable.
*$P < .01$, comparison between early-stage lung and early-stage colorectal cancer.
†$P < .01$, comparison between late-stage lung and late-stage colorectal cancer.
‡$P < .01$, comparison between early stage and late stage within cancer type.

with lung cancer, 19% had at least one unmet need, and among patients with colorectal cancer, 11% had at least one unmet need.

In multivariable analysis that adjusted for all other factors, African American patients were more likely to have unmet needs for symptom management than their white counterparts (17.5% *v* 13.9%; $P = .01$; Table 2). Being uninsured compared with having private insurance also was associated with a higher likelihood of reporting unmet needs (19.2% *v* 13.7%; $P = 0.02$). The presence of moderate to severe pain (18.6% *v* 13.4%; $P < .001$), fatigue (21.4% *v* 10.0%; $P < .001$), depression (19.3% *v* 13.0%, $P < .001$), and disease-specific symptoms such as diarrhea, cough, and dyspnea (17.9% *v* 13.0%; $P < .001$) were all associated with a higher odds of reporting unmet needs compared with patients without these moderate to severe symptoms. However, the presence of moderate to severe nausea/vomiting compared with the presence of mild or no nausea/vomiting was not significantly associated with unmet need, although relatively few patients reported unmet needs for nausea/vomiting.

Patients who rated their physicians most highly (100 on a scale of 1 to 100) in quality of communication were less likely to report unmet needs for symptom management (adjusted proportion with unmet needs, 10.0%) compared with patients who rated their physicians lower (16.2% for ratings 80 to 99 [$P < .001$] and 23.0% for ratings < 80 [$P < .001$]).

The interaction of stage and type of cancer was statistically significant such that patients with early-stage lung cancer were more likely to report unmet needs for symptom management compared with patients with early-stage colorectal cancer, late-stage lung cancer, or late-stage colorectal cancer (17.9% *v* 13.4% *v* 13.1% *v* 13.3%; $P = .03$ for interaction). As aforementioned, no other interactions tested were statistically significant. In sensitivity analyses restricted to patients for whom we had medical record data, neither visits with specialty physicians (medical oncology, radiation oncology, surgery, or primary care) nor total number of outpatient visits in the 28 days before the interview was associated with an unmet need for symptom management. Furthermore, results were similar in analyses that restricted the cohort to the 5,067 who reported having at least one symptom (Appendix Table A3, online only).

DISCUSSION

Symptoms are prevalent among patients with cancer as shown previously in studies that used data from CanCORS and other sources.[1,6,7] Untreated symptoms are likely to lead to poor quality of life and may lead to nonadherence to cancer treatment regimens. Many current measurement strategies focus on the assessment of symptom prevalence rather than on

Table 2. Predicted Marginal Probabilities for Unmet Needs for Common Symptoms in Patients With Lung and Colorectal Cancer (all patients included regardless of whether they reported symptoms; N = 5,422)

		Unmet Need for Any Symptom				
Patient Characteristic	No. (%)	Coefficient (SE)	*P*	*F* Test *P*	OR (95% CI)	Predicted Marginal Probability (%)
Sex				.769		
Male	2,888 (53.3)	Reference	—		Reference	14.3
Female	2,534 (46.7)	0.03 (0.09)	.769		1.03 (0.85 to 1.24)	14.6
Age, years				.589		
21-59	1,840 (33.9)	0.23 (0.19)	.234		1.25 (0.86 to 1.82)	15.5
60-69	1,584 (29.2)	0.10 (0.17)	.551		1.11 (0.79 to 1.56)	14.2
70-79	1,424 (26.3)	0.07 (0.17)	.699		1.07 (0.77 to 1.49)	13.8
≥ 80	574 (10.6)	Reference	—		Reference	13.1
Race				.0314		
White	3,780 (69.7)	Reference	—		Reference	13.9
Hispanic or Latino	371 (6.8)	0.25 (0.17)	.135		1.29 (0.92 to 1.79)	16.6
African American	726 (13.4)	0.32 (0.13)	.010		1.38 (1.08 to 1.77)	17.5
Other*	545 (10.1)	−0.07 (0.15)	.658		0.94 (0.70 to 1.26)	13.2
Education				.849		
Less than high school	919 (17.0)	−0.06 (0.15)	.692		0.94 (0.71 to 1.25)	13.9
High school/some college	3,153 (58.2)	0.01 (0.11)	.934		1.01 (0.81 to 1.25)	14.6
College or more	1,343 (24.8)	Reference	—		Reference	14.5
Insurance status at time of diagnosis				.143		
VA	634 (11.8)	0.22 (0.22)	.304		1.25 (0.82 to 1.92)	16.2
Private	1,910 (35.5)	Reference	—		Reference	13.7
Medicare + supplemental	1,996 (37.1)	−0.01 (0.13)	.952		0.99 (0.76 to 1.29)	13.6
Public	622 (11.6)	0.15 (0.15)	.334		1.16 (0.86 to 1.56)	15.3
None	214 (4.0)	0.47 (0.20)	.018		1.60 (1.08 to 2.37)	19.2
Wealth (how much money saved to live at current cost of living)				.239		
< 1 month	1,034 (22.7)	0.24 (0.12)	.047		1.27 (1.00 to 1.60)	15.6
1-2 months	568 (12.5)	0.18 (0.15)	.244		1.19 (0.89 to 1.61)	14.9
3-6 months	574 (12.6)	0.18 (0.14)	.221		1.19 (0.90 to 1.58)	14.9
7-12 months	359 (7.9)	0.31 (0.17)	.072		1.37 (0.97 to 1.92)	16.4
> 1 year	2,019 (44.3)	Reference	—		Reference	13.1
Marital status				.923		
Not married	2,259 (41.7)	−0.01 (0.09)	.923		0.99 (0.83 to 1.82)	14.4
Married	3,160 (58.3)	Reference	—		Reference	14.5
Surgery in past 6 weeks				.336		
Not received	5,204 (96.0)	Reference	—		Reference	14.6
Received	218 (4.0)	−0.21 (0.22)	.336		0.81 (0.53 to 1.25)	12.5
Radiation in past 6 weeks				.256		
Not received	4,808 (88.7)	Reference	—		Reference	14.7
Received	614 (11.3)	−0.15 (0.13)	.256		0.86 (0.67 to 1.11)	13.2
Chemotherapy in past 6 weeks				.719		
Not received	3,085 (56.9)	Reference	—		Reference	14.6
Received	2,337 (43.1)	−0.03 (0.09)	.719		0.97 (0.80 to 1.16)	14.3

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Table 2. Predicted Marginal Probabilities for Unmet Needs for Common Symptoms in Patients With Lung and Colorectal Cancer (all patients included regardless of whether they reported symptoms; N = 5,422) (continued)

		Unmet Need for Any Symptom				
Patient Characteristic	No. (%)	Coefficient (SE)	*P*	*F* Test *P*	OR (95% CI)	Predicted Marginal Probability (%)
Comorbidities				.885		
0-1	3,286 (60.7)	Reference	—		Reference	14.5
≥ 2	2,125 (39.3)	−0.01 (0.09)	.885		0.99 (0.82 to 1.18)	14.4
In the year before diagnosis, hospitalized for any other medical condition				.908		
No	4,312 (79.9)	Reference	—		Reference	14.5
Yes	1,086 (20.1)	−0.01 (0.10)	.908		0.99 (0.81 to 1.21)	14.4
Clinical trial				.230		
No	5,207 (96.0)	Reference	—		Reference	14.6
Yes	215 (4.0)	−0.28 (0.24)	.230		0.75 (0.48 to 1.20)	11.8
Preferred role in decisions about treatment				.560		
Patient controlled	1,941 (36.1)	Reference	—		Reference	13.8
Shared control	3,115 (57.9)	0.09 (0.09)	.296		1.10 (0.92 to 1.31)	14.8
Physician controlled	322 (6.0)	0.11 (0.18)	.559		1.11 (0.78 to 1.59)	15.0
Length of relationship with PCP				.262		
No PCP/DK, < 5 years	3,143 (58.1)	Reference	—		Reference	14.9
Long term, > 5 years	2,263 (41.9)	−0.10 (0.09)	.262		0.90 (0.75 to 1.08)	13.8
Prefer treatment that				.635		
Extends life as much as possible	2,282 (48.7)	Reference	—		Reference	14.7
Relieves pain or discomfort as much as possible	2,401 (51.3)	−0.05 (0.09)	.635		0.95 (0.79 to 1.16)	14.2
Moderate to severe symptoms				< .001		
Pain						
No	4,607 (85.0)	Reference	—		Reference	13.4
Yes	815 (15.0)	0.45 (0.11)	< .001		1.57 (1.28 to 1.93)	18.6
Fatigue				< .001		
No	3,695 (68.1)	Reference	—		Reference	10.0
Yes	1,727 (31.9)	0.98 (0.10)	< .001		2.66 (2.20 to 3.21)	21.4
Depression				< .001		
No	4,598 (84.8)	Reference	—		Reference	13.0
Yes	824 (15.2)	0.54 (0.10)	< .001		1.72 (1.40 to 2.10)	19.3
Nausea/vomiting				.170		
No	5,097 (94.0)	Reference	—		Reference	14.3
Yes	325 (6.0)	0.20 (0.15)	.170		1.23 (0.92 to 1.64)	16.6
Cough, dyspnea, diarrhea				< .001		
No	4,164 (76.8)	Reference	—		Reference	13.0
Yes	1,258 (23.2)	0.43 (0.12)	< .001		1.54 (1.23 to 1.94)	17.9
Physician communication (higher scores indicate better communication)				< .001		
0-79	975 (18.0)	1.12 (0.11)	< .001		3.06 (2.49 to 3.76)	23.1
80-99	1,447 (26.7)	0.62 (0.10)	< .001		1.85 (1.52 to 2.26)	16.2
100	2,994 (55.3)	Reference	—		Reference	10.0

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Table 2. Predicted Marginal Probabilities for Unmet Needs for Common Symptoms in Patients With Lung and Colorectal Cancer (all patients included regardless of whether they reported symptoms; N = 5,422) (continued)

		Unmet Need for Any Symptom				
Patient Characteristic	No. (%)	Coefficient (SE)	*P*	*F* Test *P*	OR (95% CI)	Predicted Marginal Probability (%)
Cancer stage				.918		
Early	3,721 (68.6)	Reference	—		—	—
Late	1,701 (31.4)	−0.02 (0.15)	.918		—	—
Cancer type						
Lung	2,411 (44.5)	0.40 (0.13)	.002		—	—
Colorectal	3,011 (55.5)	Reference	—		—	—
Cancer stage/cancer type interaction		−0.42 (0.19)	.027	.0275		
Early stage						
Lung	1,295 (23.9)	—	—		1.49 (1.16-1.92)	17.9
Colorectal	2,426 (44.7)		—		Reference	13.4
Late stage						
Lung	1,116 (20.6)	—	—		0.84 (0.55-1.27)	13.1
Colorectal	585 (10.8)	—	—		0.85 (0.63-1.15)	13.3

Abbreviations: DK, don't know; OR, odds ratio; PCP, primary care provider; SE, standard error; VA, Veterans Affairs.
*Other race category includes Asian (n = 249), American Indian/Alaskan Native (n = 45), Native Hawaiian (n = 8), Pacific Islander (n = 15), more than one race (n = 163), and other (n = 65).

unmet needs.[2,3,6] However, we found that although patients with lung and colorectal cancer in the current study reported a high prevalence of common symptoms, including moderate to severe symptoms, rates of unmet need for symptom management were relatively low. Nonetheless, 15% of the population and 16% of patients who reported any symptoms reported at least one unmet need for common symptom management during the 4-week period, a number that is not insignificant. A measure of patient-reported unmet need for symptom management may be more reflective of deficits in care and more actionable than symptom prevalence alone. Research has demonstrated that nurse and telephone-based interventions can lead to improved symptom control for patients with cancer.[24-26] Cost-effectiveness of such interventions could be optimized if they were tailored to the patients with unmet needs.

The quality of physician communication as rated by patients was strongly associated with unmet need for symptom management. Patients who rated their physician's communication most highly had adjusted rates of unmet needs for symptom management that were less than one half of those with the lowest ratings. Although the current findings do not allow for a demonstration of causality, the data suggest that communication skills, such as those captured in the modified Consumer Assessment of Healthcare Providers and Systems measure (empathy, listening, and attentiveness to patient needs) are associated with high-quality symptom management. These findings are consistent with previous reports that patients rate communication highly when physicians are responsive to their needs.[27-31] The notable exception by Weeks et al[13] showed that highly rated patient-physician communication scores are associated with patients who do not understand that their disease is incurable. This patient-reported quality metric and its divergent association with two important aspects of palliative care (symptom management and discussion of prognosis and goals of care) illustrate the need for a better understanding of the benefits and limitations of this measure for quality improvement efforts.

We also found that African-American patients were more likely than white patients to report not having their symptom management needs met, even after adjustment for financial barriers such as wealth and insurance status. This finding is consistent with a prior study that showed that ethnicity is associated with unmet needs for symptom management among patients with breast cancer.[15] The authors suggested that this was most likely due to inadequate physician-patient communication related to cultural barriers or lack of cultural sensitivity. In the current study, we were able to adjust for patient-rated physician communication quality, but a difference in unmet needs for

symptom management was evident, which suggests that reasons other than communication quality may contribute to this finding or that our measure of communication quality may not be sensitive to more-nuanced communication behaviors. A qualitative study by Song et al[32] reported that communication behaviors of health care practitioners directly affect the cancer care experience of African-American patients. Further research is needed to assess whether attention to providing high-quality culturally sensitive health care may help to overcome communication barriers and unmet symptom needs.

Uninsured patients were also more likely to report unmet needs for symptom management, which suggests that access to health care may be a concern even among patients with lung or colorectal cancer. Insurance barriers may manifest in terms of limited access to particular treatments, such as newer, less burdensome chemotherapeutic agents; supportive medications, such as advanced medicines and/or delivery systems (eg, pain medication patch, pump), antiemetics, and antidepressants; and other forms of supportive care, such as mental health counseling, caregiving support, transportation, and postsurgical occupational or physical therapy. Lack of health insurance may also be associated with health literacy and awareness of and access to other cancer-related support services.[33]

Patients with early-stage lung cancer reported more unmet needs than patients with early- and late-stage colorectal cancer or late-stage lung cancer. This unexpected finding may reflect a different approach to symptom management in early-stage disease compared with late-stage disease and merits further study. Of note, there was more unmet need for disease-specific lung symptoms (cough and dyspnea) than for disease-specific colorectal symptoms. This is likely associated with the difficulty in treating lung cancer–specific symptoms (dyspnea, cough) compared with colorectal cancer–specific symptoms (diarrhea).[34] Dyspnea also is known to be a symptom that has a large negative impact on quality of life.[35-37] Patients with moderate to severe symptoms were also more likely to report an unmet need for symptom management, consistent with prior research.[15]

Although we know the rates of unmet needs based on self-report, we do not have descriptive data on what these unmet needs are. Some reports of unmet needs may be related to lack of clinician attention to assessment and treatment of symptoms; however, others may represent symptoms that have proven refractory to available treatments, which would suggest the need for additional research and development for novel therapies for symptom management. Another limitation is that this is a cross-sectional, observational study. Whether lack of symptom management occurs consistently for similar patients over time or whether deficits are intermittent is unknown. Furthermore, a patient was considered to have unmet need if he or she reported an unmet need for at least one symptom. The burden of unmet need may vary from patient to patient, but supportive care provided in the oncology setting should address all symptoms, and all needs would ideally be met, hence the choice of this outcome.

Additional limitations are that we could not include patients who were unable to respond to the detailed symptom questions. Therefore, we may have underestimated unmet need in later-stage disease. Finally, limitations in power for this analysis led us to combine several race categories (Asian, American Indian or Alaskan Native, Native Hawaiian and Pacific Islander, more than one race, and other) into one category. This topic merits future study.

In a large, nationally representative cohort of patients with incident lung and colorectal cancer, we studied symptom management as an important step toward understanding patient factors associated with unmet symptom needs. This work adds important data about unmet needs for the treatment of these symptoms in patients with two of the most prevalent cancers in the United States. The findings represent an important foundation upon which to build current quality measurement strategies as well as a greater understanding of areas to which novel supportive care interventions should be targeted.[1,38-41] JOP

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

Lower Patient Ratings of Physician Communication Are Associated With Unmet Needs for Symptom Management in Patients With Lung and Colorectal Cancer

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Appendix

Interactions Tested

Based on hypotheses about potential effect modification, the following interactions were individually tested: moderate to severe pain and depression, moderate to severe fatigue and depression, moderate to severe disease-specific symptom and depression, race and wealth, receipt of radiation treatment and stage, receipt of radiation treatment and receipt of surgery, receipt of radiation and receipt of chemotherapy, decision role and education, decision role and age, decision role and wealth, cancer type and stage, and cancer type and insurance.

Table A1. Bivariable Analyses for Patient Characteristics by Unmet Need (N = 5,422)

	No Unmet Need		At Least One Unmet Need	
	No.	%	No.	%
Sex*				
Male	2,485	86.05	403	13.95
Female	2,146	84.69	388	15.31
Age*, years				
0-59	1,514	82.28	326	17.72
60-69	1,354	85.48	230	14.52
70-79	1,249	87.71	175	12.29
≥ 80	514	89.55	60	10.45
Race*				
White	3,264	86.35	516	13.65
Hispanic or Latino	299	80.59	72	19.41
African American	599	82.51	127	17.49
Other	469	86.06	76	13.94
Education*				
Less than high school	762	82.92	157	17.08
High school/some college	2,682	85.06	471	14.94
College degree or more	1,181	87.94	162	12.06
Insurance*				
VA	508	80.13	126	19.87
Private	1,646	86.18	264	13.82
Medicare + supplemental	1,771	88.73	225	11.27
Public	511	82.15	111	17.85
None	161	75.23	53	24.77
If lost all income, how long could you continue to live at your current address and standard of living?*				
< 1 month	820	79.30	214	20.70
1-2 months	465	81.87	103	18.13
3-6 months	486	84.67	88	15.33
7-12 months	307	85.52	52	14.48
> 1 year	1,818	90.04	201	9.96
Marital status*				
Married	2,744	86.84	416	13.16
Other	1,884	83.40	375	16.60
Surgery in past 6 weeks				

(continued on following page)

Table A1. Bivariable Analyses for Patient Characteristics by Unmet Need (N = 5,422) (continued)

	No Unmet Need		At Least One Unmet Need	
	No.	%	No.	%
Not received	4,443	85.38	761	14.62
Received	188	86.24	30	13.76
Radiation in past 6 weeks*				
Not received	4,131	85.92	677	14.08
Received	500	81.43	114	18.57
Chemotherapy in past 6 weeks				
Not received	2,656	86.09	429	13.91
Received	1,975	84.51	362	15.49
No. of comorbidities (self-reported, ≥ 2)*				
0-1	2,861	87.07	425	12.93
≥ 2	1,761	82.87	364	17.13
In the year just before diagnosis, hospitalized for any other medical condition?*				
Yes	900	82.87	186	17.13
No	3,710	86.04	602	13.96
Clinical trial				
Yes	190	88.37	25	11.63
No	4,441	85.29	766	14.71
Which statement best describes the role you would prefer to play when decisions about treatment of your cancer are made?				
Patient controlled	1,670	86.04	271	13.96
Shared control	2,655	85.23	460	14.77
Physician controlled	269	83.54	53	16.46
Length of relationship with PCP*				
No PCP/DK, < 5 years	2,636	83.87	507	16.13
Long term, > 5 years	1,981	87.54	282	12.46
Prefer treatment that				
Extends life as much as possible	1,937	84.88	345	15.12
Relieves pain or discomfort as much as possible	2,050	85.38	351	14.62
Moderate to severe symptoms				
Pain*				
Yes	574	70.43	241	29.57
No	4,058	88.09	549	11.91
Fatigue*				
Yes	1,247	72.21	480	27.79
No	3,383	91.58	311	8.42
Depression*				
Yes	550	66.75	274	33.25
No	3,910	89.05	481	10.95
Nausea/vomiting*				
Yes	231	71.08	94	28.92
No	4,397	86.32	697	13.68
Cough, dyspnea, diarrhea*				
Yes	947	75.28	311	24.72

(continued on following page)

Table A1. Bivariable Analyses for Patient Characteristics by Unmet Need (N = 5,422) (continued)

	No Unmet Need		At Least One Unmet Need	
	No.	%	No.	%
No	3,566	88.75	452	11.25
Physician communication score (higher scores indicate better communication)*				
0-79	704	72.21	271	27.79
80-99	1,203	83.14	244	16.86
100	2,719	90.81	275	9.19
Cancer type*				
Lung	1,964	81.46	447	18.54
Colorectal	2,667	88.58	344	11.42
Cancer stage				
Early	3,193	85.81	528	14.19
Late	1,438	84.54	263	15.46

Abbreviation: DK, don't know; PCP, primary care physician; VA, Veterans Affairs.
*Univariable logistic regression of any unmet need on patient characteristic (at least one characteristic level with $P < .05$).

Table A2. Prevalence of Patients Wanting Help for Symptoms in Early- and Late-Stage Lung and Colorectal Cancer (N = 5,422)

	Prevalence of Wanting Help for Symptoms, No. (%)			
	Lung Cancer (n = 2,411)		Colorectal Cancer (n = 3,011)	
Symptom	Early Stage (n = 1,295)	Late Stage (n = 1,116)	Early Stage (n = 2,426)	Late Stage (n = 585)
Any symptom	884 (68.3)*†	815 (73.0)*‡	1239 (51.1)*†	364 (62.2)*‡
Pain	464 (35.8)†	421 (37.7)‡	555 (22.9)*†	165 (28.2)*‡
Fatigue	404 (31.2)*†	426 (38.2)*	568 (23.4)*†	189 (32.3)*
Depression	278 (21.5)†	240 (21.5)	369 (15.2)†	113 (19.3)
Nausea/vomiting	231 (17.8)*	311 (27.9)*	442 (18.2)*	181 (30.9)*
Cough	351 (27.1)	352 (31.5)	N/A	N/A
Dyspnea	416 (32.1)	402 (36.0)	N/A	N/A
Diarrhea	N/A	N/A	499 (20.6)*	153 (26.2)*

NOTE. The majority of patients who reported wanting help for any symptom had moderate to severe symptoms (68%), but the rest of the patients who wanted help for their symptoms reported mild symptoms. Abbreviation: N/A, not applicable.
*$P < .01$, comparison between early stage and late stage within cancer type.
†$P < .01$, comparison between early-stage lung and early-stage colorectal cancer.
‡$P < .01$, comparison between late-stage lung and late-stage colorectal cancer.

Table A3. Predicted Marginal Probabilities for Unmet Needs for Common Symptoms in Patients With Lung and Colorectal Cancer (which retains only patients who reported symptoms, n = 5,067)

	Unmet Need for Any Symptom					
Patient Characteristic	No. (%)	Coefficient (SE)	*P*	*F* test *P*	OR (95% CI)	Predicted Marginal Probability (%)
Sex				.838		
Male	2,673 (52.8)	Reference			Reference	15.3
Female	2,374 (47.3)	0.02 (0.09)	.838		1.02 (0.85 to 1.23)	15.6
Age, years				.626		
21-59	1,760 (34.7)	0.23 (0.19)	.233		1.26 (0.86 to 1.82)	16.5
60-69	1,475 (29.1)	0.11 (0.18)	.507		1.12 (0.80 to 1.59)	15.2
70-79	1,302 (25.7)	0.08 (0.17)	.625		1.09 (0.78 to 1.52)	14.9
≥ 80	530 (10.5)	Reference			Reference	14.0
Race				.035		
White	3,525 (69.6)	Reference			Reference	14.8
Hispanic or Latino	347 (6.9)	0.25 (0.17)	.137		1.28 (0.92 to 1.79)	17.8
African American	688 (13.6)	0.32 (0.13)	.012		1.37 (1.07 to 1.76)	18.6
Other	507 (10.0)	−0.07 (0.15)	.646		0.93 (0.69 to 1.25)	14.1
Education				.854		
Less than high school	868 (17.2)	−0.06 (0.15)	.663		0.94 (0.71 to 1.25)	14.9
High school/some college	2,971 (58.7)	0.001 (0.11)	.990		1.00 (0.81 to 1.24)	15.6
College degree or more	1,222 (24.2)	Reference			Reference	15.6
Insurance status at time of diagnosis				.149		
VA	597 (11.9)	0.24 (0.21)	.268		1.27 (0.83 to 1.95)	17.5
Private	1,799 (35.8)	Reference			Reference	14.6
Medicare + supplemental	1,839 (36.6)	−0.01 (0.14)	.968		0.99 (0.76 to 1.30)	14.6
Public	579 (11.5)	0.16 (0.15)	.284		1.18 (0.87 to 1.59)	16.5
None	209 (4.2)	0.45 (0.20)	.023		1.57 (1.07 to 2.32)	20.2
Wealth (how much money saved to live at current cost of living)				.332		
< 1 month	997 (23.4)	0.22 (0.12)	.063		1.25 (0.99 to 1.57)	16.6
1-2 months	547 (12.8)	0.15 (0.15)	.303		1.17 (0.87 to 1.57)	15.8
3-6 months	546 (12.8)	0.15 (0.14)	.283		1.17 (0.88 to 1.55)	15.8
7-12 months	343 (8.0)	0.28 (0.17)	.107		1.32 (0.94 to 1.86)	17.3
> 1 year	1,832 (43.0)	Reference			Reference	14.1
Marital status				.865		
Not married	2,140 (42.3)	−0.02 (0.09)	.865		0.98 (0.83 to 1.17)	15.3
Married	2,925 (57.8)	Reference			Reference	15.6
Surgery in past 6 weeks				.290		
Not received	4,860 (95.9)	Reference			Reference	15.6
Received	207 (4.1)	−0.23 (0.21)	.290		0.79 (0.52 to 1.22)	13.1
Radiation in past 6 weeks				.249		
Not received	4,461 (88.0)	Reference			Reference	15.7
Received	606 (12.0)	−0.15 (0.13)	.249		0.86 (0.67 to 1.11)	14.1
Chemotherapy in past 6 weeks				.432		
Not received	2,790 (55.1)	Reference			Reference	15.9
Received	2,277 (44.9)	−0.07 (0.09)	.432		0.93 (0.77 to 1.12)	15.0

(continued on following page)

Table A3. Predicted Marginal Probabilities for Unmet Needs for Common Symptoms in Patients With Lung and Colorectal Cancer (which retains only patients who reported symptoms, n = 5,067) (continued)

		Unmet Need for Any Symptom				
Patient Characteristic	No. (%)	Coefficient (SE)	*P*	*F* test *P*	OR (95% CI)	Predicted Marginal Probability (%)
Comorbidities				.714		
0-1	3,013 (59.6)	Reference			Reference	15.7
≥ 2	2,044 (40.4)	−0.03 (0.09)	.714		0.97 (0.81 to 1.16)	15.3
In the year before diagnosis, hospitalized for any other medical condition				.879		
No	4,009 (79.5)	Reference			Reference	15.5
Yes	1,036 (20.5)	−0.02 (0.10)	.879		0.98 (0.81 to 1.21)	15.4
Clinical trial				.234		
No	4,859 (95.9)	Reference			Reference	15.6
Yes	208 (4.1)	−0.28 (0.23)	.224		0.75 (0.47 to 1.19)	12.6
Preferred role in decisions about treatment				.596		
Patient controlled	1,809 (36.0)	Reference			Reference	14.8
Shared control	2,920 (58.1)	0.09 (0.09)	.334		1.09 (0.91 to 1.30)	15.8
Physician controlled	299 (6.0)	0.11 (0.18)	.543		1.12 (0.75 to 1.59)	16.1
Length of relationship with PCP				.260		
No PCP/DK, < 5 years	2,954 (58.5)	Reference			Reference	16.0
Long term, > 5 years	2,097 (41.5)	−0.10 (0.09)	.260		0.90 (0.75 to 1.07)	14.8
Prefer treatment that				.667		
Extends life as much as possible	2,155 (49.2)	Reference			Reference	15.7
Relieves pain or discomfort as much as possible	2,229 (50.8)	−0.04 (0.10)	.668		0.96 (0.79 to 1.16)	15.3
Moderate to severe symptoms						
Pain				< .001		
No	4,252 (83.9)	Reference			Reference	14.4
Yes	815 (16.1)	0.43 (0.10)	< .001		1.54 (1.25 to 1.88)	20.0
Fatigue				< .001		
No	3,340 (65.9)	Reference			Reference	10.9
Yes	1,727 (34.1)	0.93 (0.09)	< .001		2.53 (2.10 to 3.05)	22.3
Depression				< .001		
No	4,243 (83.7)	Reference			Reference	13.9
Yes	824 (16.3)	0.53 (0.10)	< .001		1.69 (1.38 to 2.07)	20.5
Nausea/vomiting				.162		
No	4,742 (93.6)	Reference			Reference	15.3
Yes	325 (6.4)	0.21 (0.15)	.162		1.23 (0.92 to 1.64)	17.7
Cough, dyspnea, diarrhea				< .001		
No	3,809 (75.2)	Reference			Reference	13.9
Yes	1,258 (24.8)	0.43 (0.12)	< .001		1.54 (1.22 to 1.93)	19.1

(continued on following page)

Table A3. Predicted Marginal Probabilities for Unmet Needs for Common Symptoms in Patients With Lung and Colorectal Cancer (which retains only patients who reported symptoms, n = 5,067) (continued)

		Unmet Need for Any Symptom				
Patient Characteristic	No. (%)	Coefficient (SE)	*P*	*F* test *P*	OR (95% CI)	Predicted Marginal Probability (%)
Physician communication (higher scores indicate better communication)				< .001		
0-79	947 (18.7)	1.09 (0.11)	< .001		2.98 (2.42 to 3.66)	24.3
80-99	1,380 (27.3)	0.60 (0.10)	< .001		1.82 (1.49 to 2.23)	17.2
100 (reference)	2,735 (54.0)	Reference			Reference	10.8
Cancer stage				.821		
Early	3,423 (67.6)	Reference				
Late	1,644 (32.4)	−0.03 (0.15)	.821			
Cancer type				.009		
Lung	2,372 (46.8)	0.34 (0.13)	.009			
Colorectal	2,695 (53.2)	Reference				
Cancer stage/type interaction		−0.38 (0.19)	.044	.044		
Early stage						
Lung	1,272 (25.1)				1.40 (0.72 to 2.73)	18.7
Colorectal	2,151 (42.5)				Reference	14.7
Late stage						
Lung	1,100 (21.7)				0.93 (0.44 to 1.94)	13.8
Colorectal	544 (10.7)				0.97 (0.72 to 1.30)	14.3

Abbreviations: DK, don't know; OR, odds ratio; PCP, primary care physician; SE, standard error; VA, Veterans Affairs.