Factors Associated with Family Reports of Pain, Dyspnea, and Depression in the Last Year of Life

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Abstract

Background: Pain, dyspnea, and depression are highly troubling near the end of life.

Objective: To characterize factors associated with clinically significant pain and the presence of dyspnea and depression during the last year of life in a nationally representative sample.

Design: Retrospective cohort study.

Setting: Health and Retirement Study, a national sample of community-dwelling US residents aged 51 and older.

Participants: Family respondents of 8254 decedents who died between 1998 and 2012.

Measurements: Clinically significant pain often during the last year of life; dyspnea and depression for at least one month during the last year of life.

Results: Life support was associated with dyspnea (odds ratio [OR] 1.71, 95% confidence interval [CI] 1.42–2.06) and depression (OR 1.20, CI 1.04–1.39), treatment for cancer with pain (OR 1.65, CI 1.41–1.92), and oxygen for a lung condition with dyspnea (OR 14.78, CI 11.28–19.38). More diagnoses were associated with dyspnea (OR 1.24, CI 1.17–1.30) and depression (OR 1.14, CI 1.08–1.21). More activities of daily living (ADL) dependencies were associated with clinically significant pain (OR 1.06, CI 1.03–1.09), dyspnea (OR 1.06, CI 1.02–1.10), and depression (OR 1.10, CI 1.07–1.12), and more instrumental activities of daily living (IADL) dependencies with depression (OR 1.12, CI 1.08–1.18). Worse self-rated health was associated with pain (OR 0.83, CI 0.77–0.88), dyspnea (OR 0.89, CI 0.84–0.95), and depression (OR 0.83, CI 0.78–0.89). Arthritis was associated with clinically significant pain (OR 2.24, CI 1.91–2.63).

Conclusions: Factors associated with common, burdensome symptoms in a national sample suggest clinical and population strategies for targeting symptom assessment and management.

Introduction

PAIN, DYSPNEA, AND DEPRESSION are among the most troubling symptoms that patients nearing the end-of-life experience.^{1,2} Accordingly, expert panels and consensus statements highlight the importance of identifying and managing these symptoms effectively. The evidence supports a variety of effective interventions to alleviate these symptoms,³ and research has highlighted actionable gaps in current practice and the need to improve pain, dyspnea, and depression in cancer and other conditions in late life.^{3–9}

Symptoms are an expression of distress of the whole person; they reflect physical, personal, psychological, social, and existential dimensions.^{10–12} Providers must consider these dimensions to manage symptoms effectively. Indeed, many symptoms are unapparent unless they are elicited.¹³ Given the evidence base for effective symptom management, knowledge of what factors are associated with symptoms can inform potential strategies or triggers to assess and treat symptoms.

Drawing on the concept of symptoms as an expression of whole person distress, we examined factors associated with

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pain, dyspnea, and depression in a nationally representative panel of patients who died between 1998 and 2012. We used family reports of the patient's experience to provide a novel population perspective on these symptoms. Family reports are a valuable source of information, both because patient frailty near the end of life limits the feasibility of direct patient reports and also because the family experience is recognized as a critical outcome for end-of-life assessment.^{14,15}

Given that pain, dyspnea, and depression have been worsening markedly over the past 15 years among Americans nearing the end of life,^{16,17} the associations we highlight could inform population health improvement strategies.

Methods

Setting and study participants

We used the Health and Retirement Study (HRS), a nationally representative longitudinal survey of community-dwelling adults aged 51 or older in the contiguous United States.^{18,19} HRS participants are interviewed every two years until their deaths. After each death, HRS interviews a proxy informant, typically a family member, who was most familiar with the situation of the participant. We included participants who died while enrolled in HRS and whose proxy informant provided a postmortem interview within two years of death.

Symptom outcomes

We analyzed proxy reports of clinically significant pain and the presence of dyspnea and depression. Two questions identified clinically significant pain. Proxies were first asked if the decedents were often troubled with pain in the last year of life, and those who answered yes were asked how bad the pain was most of the time using the Verbal Rating Scale as follows: mild, moderate, or severe.^{19,20} We considered moderate or severe pain as clinically significant, a strategy used in prior work with HRS.²¹

Proxies identified dyspnea and depression by indicating if there were a period of at least one month in the last year of life, during which the decedent had the respective symptom.

Table 1 provides the exact wording for all symptom questions.

Symptom covariates

We used a whole person model with clinical, psychological, and social domains to understand the experience of

symptoms. We captured relevant constructs in each of these domains in addition to demographics.

Demographic covariates included age, gender, race/ethnicity, and region of death (Northeast, Midwest, South, West, or foreign). Clinical covariates included number of diagnoses (0–6 scale, including cancer, chronic lung disease, heart disease, stroke, dementia, and diabetes); number of ADL dependencies (0–6 scale, including help with dressing, walking, bathing, eating, transferring, and toileting); number of IADL dependencies (0–5 scale, including help with meals, groceries, phone calls, medication, and managing money); self-rated health score in the interview wave before death; diagnosis of arthritis (included in moderate or severe pain model only); number of nights spent in a hospital in the last two years of life; lived in a nursing home at time of death; and medical treatments, including the use of life support equipment (such as a respirator) and dialysis during a hospital stay, treatment for cancer, and oxygen for a lung condition. We included the healthcare event covariates to characterize opportunities for population health improvement.

The psychological covariate was depression for at least one month in the last year of life (this covariate also served as the outcome variable for depression). The social covariates included highest level of education, household wealth, and household income. Other covariates included proxy's relationship to decedent (spouse, son or daughter, or other); months between decedent's death and proxy's interview, which we included to evaluate the timing of proxy reports; month and year of death; and year that the decedent entered the HRS sample.

Statistical analysis

All analyses accounted for complex survey design using sampling weights, providing estimates representative of the entire US population. We performed weighted, two-sided t-tests and multivariate logistic regressions to investigate the association between each outcome and each covariate.

We imputed missing values using multiple imputations by chained equations with 15 imputed datasets using Stata "ice" command²²; analyses in imputed data were carried out with "mi estimate" commands. We constructed a multiple imputation model that included all outcome variables and symptom covariates described above. Eight variables were imputed using forms different from those included in regression analyses as follows: (1) pain was captured with one categorical variable that recorded no pain or mild, moderate, or severe pain, and the moderate or severe pain outcome was created from this categorical variable after imputation;

TABLE 1. HEALTH AND RETIREMENT STUDY SURVEY QUESTIONS USED TO CONSTRUCT SYMPTOM OUTCOMES

Outcome	HRS variable	Question to proxy
Presence of pain	C104	Was [he/she] often troubled with pain? We want a general idea of [his/her] pain level during the last year or so of life.
Degree of pain	C105	How bad was the pain most of the time; mild, moderate, or severe?
Dyspnea	C198	Was there a period of at least one month during the last year of [his/her] life when [he/she] had the following problem: difficulty breathing?
Depression	C202	Was there a period of at least one month during the last year of [his/her] life when [he/she] had depression?

(2) age, (3) household wealth, (4) income, and (5) hospital nights in the last two years of life were captured with continuous variables, and their respective categorical variables were created from these continuous variables after imputation; (6) the six ADL questions, (7) five IADL questions, and (8) six diagnosis questions were included separately in the imputation model and combined into scales after imputation.

We conducted analyses with Stata 12.1 IC (StataCorp, College Station, TX), and the RAND IRB approved the study.

Role of the funding source

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Results

Nine thousand four hundred thirty-one HRS participants died between 1998 and 2012, for which 9330 proxy interviews were completed. Of those, our cohort included 8254 participants whose proxy interviews were completed within two years of death. The response rates for the seven survey waves from 2000 to 2012 were 86%, 85%, 91%, 88%, 92%, 85%, and 85%, respectively. Table 2 presents the characteristics of the weighted cohort as a whole and by presence or absence of clinically significant pain, dyspnea, and depression. Their mean age at death was 79.0 years. Fifty-three percent were women; 18% were non-white. They averaged 2.1 diagnoses (of the six specified) and 3.8 ADL dependencies, and 30% lived in a nursing home at the time of death. Over half of the population experienced each symptom outcome as follows: clinically significant pain, dyspnea, or depression. Twenty percent had no reported symptoms, 31% had one, 29% had two, and 20% had all three symptoms.

Table 2 presents unadjusted findings. In general, higher levels of comorbidity, as indicated by various associations with diagnoses, ADL and IADL dependencies, and worse self-rated health, were associated with all three symptoms, as were higher levels of hospital care and potentially burdensome medical treatments. Nursing home residence demonstrated a mixed or negative association with symptomatology, as did education, wealth, and older age.

Table 3 presents the results of multivariate regression models, which generally reflected associations of comorbidity with symptomatology. More diagnoses were associated with dyspnea (odds ratio [OR] 1.24, 95% confidence interval [CI] 1.17–1.30) and depression (OR 1.14, 95% CI 1.08–1.21). More ADL dependencies were associated with clinically significant pain (OR 1.06, 95% CI 1.03–1.09), dyspnea (OR 1.06, 95% CI 1.02–1.10), and depression (OR 1.10, 95% CI 1.07–1.12). More IADL dependencies were associated with depression (OR 1.12, 95% CI 1.08–1.18), and worse self-rated health with clinically significant pain (OR 0.83, 95% CI 0.77–0.88), dyspnea (OR 0.89, 95% CI 0.84–0.95), and depression (OR 0.83, 95% CI 0.78–0.89).

Potentially burdensome medical treatments also remained significantly associated. Cancer treatment was associated with clinically significant pain (OR 1.65, 95% CI 1.41–1.92); life support during a hospital stay (OR 1.71, 95% CI 1.42–2.06) and oxygen for a lung condition (OR 14.78, 95% CI 11.28–

19.38) were associated with dyspnea; and life support during a hospital stay with depression (OR 1.20, 95% CI 1.04–1.39). More hospital nights in the last two years of life were associated with clinically significant pain (1–14 nights, OR 1.32, 95% CI 1.20–1.46; 15 or more, OR 1.58, 95% CI 1.34–1.86), dyspnea (1–14, OR 1.35, 95% CI 1.16–1.56; 15 or more, OR 1.90, 95% CI 1.62–2.23), and depression (1–14, OR 1.18, 95% CI 1.00–1.38; 15 or more, OR 1.42, 95% CI 1.20–1.70).

Several variables exhibited inverse or mixed associations with symptoms. Living in a nursing home at the time of death was associated with less clinically significant pain (OR 0.74, 95% CI 0.64–0.86) and less dyspnea (OR 0.78, 95% CI 0.67–0.90). Older age was associated with less clinically significant pain, less dyspnea, and less depression (OR <1 for most or all age categories in each symptom outcome). Black race was associated with less depression (OR 0.48, 95% CI 0.39–0.58). More household wealth was associated with less clinically significant pain (\$150,000 or more, OR 0.82, 95% CI 0.68–0.99) and less depression (\$150,000 or more, OR 0.81, 95% CI 0.69–0.95).

Discussion

We analyzed proxy reports of patient end-of-life experiences from a large, nationally representative survey to assess factors associated with symptoms, for which evidence-based strategies could improve management. Many important demographic, clinical, and treatment-related factors are associated with pain, dyspnea, and depression.

Our research advances understanding by providing population-level estimates of these associations. The associations we identified could assist in clinical and population strategies for targeting assessment and management of these common and important end-of-life symptoms. Even if these factors are not the cause of symptoms, they can act as a trigger to undertake screening for the presence of symptoms. Recent reports underscore the importance of our results and demonstrate persistent gaps in the screening and management of end-of-life symptoms.^{8,9} A recent nationally representative study, for example, found that over 40% of advanced cancer outpatients did not undergo regular pain screenings, and only 11% received timely treatment for dyspnea.⁹

To illustrate how our results can be used to improve care, we used dyspnea as an example. We found that receiving oxygen is highly associated with dyspnea. Oxygen is a common treatment for advanced lung disease, but recent evidence indicates that it may be misapplied in nonhypoxemic patients.²³ In addition to evaluating the appropriateness of oxygen, providers should consider alternative evidence-based symptom strategies such as maximizing medical therapy, opioids, and pulmonary rehabilitation.³ The presence of dyspnea in a nonhypoxemic patient could therefore be used as a trigger for providers to investigate the appropriateness of these alternative strategies.

Proxy reports are now a national standard for evaluating end-of-life care, with Medicare's implementation of a national caregiver report that includes hospital patients' symptoms. Such reports inevitably reflect both the patient's and proxy's experiences, and further research is needed to understand and inform their validity. The evidence base is inconsistent with respect to the impact of a variety of factors on the validity of proxy reports, including the contributions of caregiver distress and the proxy's relationship to the

TABLE 2. CHARACTERISTICS OF STUDY POPULATION^a

Characteristic	Moderate or severe pain			Presence of dyspnea			Presence of depression		
	All (n = 8254)	No (n = 4137)	Yes (n = 4117)	p value	No (n = 4217)	Yes (n = 4037)	p value	No (n = 4395)	Yes (n = 3859)
Age									
<65	12.6%	8.7%	16.4%	<0.001	11.1%	14.4%	<0.001	9.9%	15.6%
65–75	20.0%	17.3%	22.5%		17.6%	21.9%		18.2%	21.4%
75–85	31.9%	33.2%	30.7%		30.8%	32.8%		31.4%	32.2%
>85	35.5%	40.8%	30.4%		40.6%	31.0%		40.5%	30.9%
Female	53.1%	51.7%	54.5%	0.007	53.8%	53.0%	0.56	53.0%	53.8%
Ethnicity				0.38			0.91		
Non-Hispanic white	82.4%	82.6%	82.3%		82.5%	82.3%		80.5%	84.1%
Non-Hispanic black	10.8%	10.6%	11.0%		10.9%	10.6%		12.9%	8.8%
Hispanic	5.4%	5.2%	5.5%		5.4%	5.7%		5.2%	5.9%
Other	1.4%	1.6%	1.2%		1.3%	1.4%		1.4%	1.2%
Region of death				0.23			0.17		
Northeast	21.0%	22.1%	20.0%		21.4%	20.8%		21.4%	20.7%
Midwest	28.2%	27.9%	28.5%		28.1%	28.9%		28.7%	28.4%
South	35.5%	35.1%	35.8%		34.6%	36.1%		36.0%	34.8%
West	15.1%	14.6%	15.5%		15.5%	14.1%		13.5%	15.9%
Foreign	0.3%	0.3%	0.2%		0.4%	0.2%		0.4%	0.2%
Education				0.015			<0.001		
Some high school or less	54.6%	53.8%	55.3%		52.3%	56.1%		54.0%	54.5%
High school graduate	29.6%	29.3%	30.0%		29.9%	29.9%		29.1%	30.7%
Some college or more	15.8%	17.0%	14.7%		17.8%	14.0%		16.9%	14.8%
Mean household wealth				<0.001			<0.001		
\$14,999 or less	27.5%	25.3%	29.6%		25.7%	29.5%		25.5%	29.8%
\$15,000 to \$149,999	30.5%	28.8%	32.1%		28.3%	32.3%		29.5%	31.3%
\$150,000 or more	42.0%	45.8%	38.4%		45.9%	38.2%		45.1%	38.9%
Mean income				0.10			0.005		
\$14,999 or less	30.4%	29.2%	31.4%		28.7%	31.9%		30.1%	30.6%
\$15,000 to \$29,999	30.4%	30.5%	30.2%		29.8%	31.1%		29.8%	31.1%
\$30,000 or more	39.3%	40.2%	38.3%		41.5%	37.0%		40.1%	38.3%
Relationship of proxy to decedent				0.38			<0.001		
Spouse	33.8%	34.4%	33.2%		35.5%	31.4%		34.9%	31.9%
Son or daughter	43.9%	43.1%	44.6%		41.3%	47.3%		43.3%	45.6%
Other	22.3%	22.4%	22.2%		23.2%	21.3%		21.9%	22.5%
Mean months between decedent's death and proxy's interview	11.12	11.23	11.00	0.14	11.40	10.66	<0.001	11.08	10.95

(continued)

TABLE 2. (CONTINUED)

Characteristic	Moderate or severe pain			Presence of dyspnea			Presence of depression			
	All (n = 8254)	No (n = 4137)	Yes (n = 4117)	p value	No (n = 4217)	Yes (n = 4037)	p value	No (n = 4395)	Yes (n = 3859)	p value
Clinical										
Mean number of diagnoses (0–6) ^b	2.08	1.95	2.20	<0.001	1.78	2.36	<0.001	1.90	2.26	<0.001
Mean number of ADL dependencies (0–6) ^c	3.76	3.44	4.07	<0.001	3.45	4.07	<0.001	3.24	4.27	<0.001
Mean number of IADL dependencies (0–5) ^d	3.11	2.96	3.26	<0.001	2.95	3.26	<0.001	2.76	3.44	<0.001
Mean self-rated health score (1–5 scale) ^e	2.25	2.44	2.08	<0.001	2.44	2.08	<0.001	2.42	2.09	<0.001
Had depression	48.4%	36.9%	59.3%	<0.001	41.3%	60.7%	<0.001	—	—	—
Had arthritis	67.9%	59.5%	76.0%	<0.001	—	—	—	—	—	—
Mean hospital nights in the last two years of life				<0.001			<0.001			<0.001
0	31.5%	37.4%	25.8%		39.3%	24.3%		37.0%	26.1%	
1–14	37.0%	36.8%	37.2%		37.8%	36.5%		37.3%	37.0%	
15 or more	31.5%	25.8%	37.0%		22.9%	39.2%		25.7%	36.9%	
Lived in nursing home at the time of death	30.2%	32.4%	28.1%	<0.001	31.6%	29.1%	0.042	27.3%	33.1%	<0.001
Medical treatments										
Used life support during hospital stay	21.7%	19.4%	24.0%	<0.001	15.6%	28.0%	<0.001	19.6%	24.5%	<0.001
Used dialysis during hospital stay	5.5%	4.5%	6.5%	0.003	4.1%	7.0%	<0.001	4.5%	6.7%	0.003
Received treatment for cancer	18.8%	14.1%	23.4%	<0.001	17.9%	19.7%	0.20	17.9%	19.7%	0.30
Received oxygen for lung condition	15.6%	12.3%	18.8%	<0.001	2.0%	28.6%	<0.001	12.6%	19.1%	<0.001

^aReported values account for complex survey design.^bScale composed of: cancer, lung disease, heart disease, stroke, dementia, diabetes.^cScale composed of: help with dressing, walking, bathing, eating, transferring, toileting.^dScale composed of: help with meals, groceries, phone calls, medication, managing money.^eScale composed of: 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent.

ADL, activities of daily living; IADL, instrumental activities of daily living.

TABLE 3. ADJUSTED ASSOCIATIONS OF CHARACTERISTICS WITH CLINICALLY SIGNIFICANT PAIN, DYSPNEA, AND DEPRESSION^a

Characteristics	Adjusted ORs (95% CIs)		
	Moderate or severe pain	Presence of dyspnea	Presence of depression
Age			
<65	—	—	—
65–75	0.70 (0.56–0.87)	0.78 (0.59–1.03)	0.68 (0.53–0.86)
75–85	0.49 (0.39–0.61)	0.67 (0.52–0.86)	0.48 (0.39–0.60)
>85	0.43 (0.35–0.53)	0.58 (0.44–0.76)	0.31 (0.24–0.40)
Female			
Ethnicity	1.05 (0.93–1.17)	0.88 (0.77–1.01)	0.92 (0.79–1.06)
Non-Hispanic white	—	—	—
Non-Hispanic black	0.87 (0.72–1.06)	0.91 (0.75–1.10)	0.48 (0.39–0.58)
Hispanic	0.83 (0.68–1.02)	0.93 (0.71–1.22)	0.93 (0.73–1.19)
Other	0.75 (0.50–1.11)	1.18 (0.75–1.85)	0.78 (0.38–1.60)
Region of death			
Northeast	—	—	—
Midwest	1.16 (1.00–1.35)	1.05 (0.87–1.25)	1.00 (0.85–1.17)
South	1.05 (0.91–1.20)	0.97 (0.82–1.14)	0.92 (0.78–1.08)
West	1.27 (1.05–1.55)	0.89 (0.73–1.09)	1.22 (0.97–1.53)
Foreign	1.88 (0.73–4.82)	0.54 (0.15–1.91)	0.76 (0.32–1.82)
Education			
Some high school or less	—	—	—
High school graduate	1.02 (0.87–1.19)	0.99 (0.86–1.15)	1.05 (0.90–1.22)
Some college or more	0.96 (0.83–1.10)	0.86 (0.72–1.04)	0.88 (0.74–1.06)
Mean household wealth			
\$14,999 or less	—	—	—
\$15,000 to \$149,999	1.01 (0.87–1.17)	1.08 (0.89–1.30)	0.94 (0.81–1.10)
\$150,000 or more	0.82 (0.68–0.99)	0.95 (0.76–1.20)	0.81 (0.69–0.95)
Mean income			
\$14,999 or less	—	—	—
\$15,000 to \$29,999	1.02 (0.90–1.16)	0.98 (0.85–1.15)	1.16 (0.98–1.37)
\$30,000 or more	0.98 (0.82–1.18)	0.90 (0.74–1.09)	1.15 (0.96–1.39)
Relationship of proxy to decedent			
Spouse	—	—	—
Son or daughter	1.17 (1.03–1.33)	1.46 (1.23–1.75)	1.32 (1.12–1.56)
Other	1.07 (0.92–1.25)	1.14 (0.97–1.35)	1.36 (1.16–1.60)
Clinical			
Mean number of diagnoses (0–6) ^b	1.01 (0.96–1.06)	1.24 (1.17–1.30)	1.14 (1.08–1.21)
Mean number of ADL dependencies (0–6) ^c	1.06 (1.03–1.09)	1.06 (1.02–1.10)	1.10 (1.07–1.12)
Mean number of IADL dependencies (0–5) ^d	1.01 (0.96–1.06)	0.99 (0.93–1.05)	1.12 (1.08–1.18)
Mean self-rated health score (1–5 scale) ^e	0.83 (0.77–0.88)	0.89 (0.84–0.95)	0.83 (0.78–0.89)
Had depression	1.99 (1.76–2.24)	1.71 (1.53–1.90)	—
Had arthritis	2.24 (1.91–2.63)	—	—
Mean hospital nights in the last two years of life			
0	—	—	—
1–14	1.32 (1.20–1.46)	1.35 (1.16–1.56)	1.18 (1.00–1.38)
15 or more	1.58 (1.34–1.86)	1.90 (1.62–2.23)	1.42 (1.20–1.70)
Lived in nursing home at time of death	0.74 (0.64–0.86)	0.78 (0.67–0.90)	1.04 (0.91–1.18)
Medical treatments			
Used life support during hospital stay	1.08 (0.92–1.27)	1.71 (1.42–2.06)	1.20 (1.04–1.39)
Used dialysis during hospital stay	1.06 (0.80–1.41)	1.15 (0.87–1.53)	1.12 (0.86–1.47)
Received treatment for cancer	1.65 (1.41–1.92)	0.90 (0.75–1.08)	0.83 (0.68–1.02)
Received oxygen for lung condition	1.16 (0.99–1.37)	14.78 (11.28–19.38)	1.07 (0.89–1.29)

^aAnalysis accounts for complex survey design.^bScale composed of: cancer, lung disease, heart disease, stroke, dementia, diabetes.^cScale composed of: help with dressing, walking, bathing, eating, transferring, toileting.^dScale composed of: help with meals, groceries, phone calls, medication, managing money.^eScale composed of: 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent.

CI, confidence interval; OR, odds ratio.

decedent.²⁴ Reports also suggest proxies may differ in the task of estimating physical and emotional symptoms.^{25–27} Despite these issues, bereaved family reports of patient distress are an indicator of an unmet need that requires investigation and can signal a need for improvement.

We faced several limitations. First, we addressed the prevalence, but not the severity of dyspnea and depression. However, these symptoms occur at high rates and are troublesome to patients and families, and evidence-based symptomatic treatments for them are underutilized.^{8,9} Second, HRS assesses symptoms using limited items, and proxies may have overrepresented symptom prevalence. Our results, however, fall within the range of previous estimates of symptom prevalence.^{28–30} Third, proxy reports raise concerns about the timing of interviews, so we controlled for the time elapsed between decedent's death and proxy's interview in multivariate models. Fourth, HRS lacks measures of existential well-being, but depression, which we included in models of pain and dyspnea, may encompass an existential dimension. Fifth, we found that nursing home residence was associated with less pain, dyspnea, and depression. This may be due to increasing cognitive impairment among patients in nursing homes and thus poorer reporting of symptoms. We did not have access to objective data on cognitive impairment and could not further investigate these associations. Finally, because of the many comparisons we evaluated, some of the associations we identified may be due to chance.

In summary, we found that the population-level prevalence of clinically significant pain, dyspnea, and depression is high and that multiple observable factors are associated with the presence of these symptoms. These factors can assist clinicians and managers in targeting patients for symptom assessment and management. Our results combined with recent reports of practice gaps provide a starting point for both research and action.

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Author Disclosure Statement

Drs. Singer, Meeker, Teno, Lynn, and Lunney all report no potential conflicts of interest. Dr. Lorenz has served as a consultant to Otsuka Pharmaceutical as a member of the Data Monitoring Committee for the Phase II development of Sativex, a novel cannabinoid analgesic.

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