Research Article

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The Association between Fatalistic Beliefs and Late Stage at Diagnosis of Lung and Colorectal Cancer

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Abstract

Background: Fatalistic beliefs may be implicated in longer help-seeking intervals, and consequently, greater risk of advanced stage at cancer diagnosis.

Methods: We examined associations between fatalism and stage at diagnosis in a population-based cohort of 4,319 U.S. patients with newly diagnosed lung or colorectal cancer participating in the Cancer Care Outcomes and Research Surveillance (CanCORS) study. Fatalistic beliefs were assessed with an established measure. A fatalism score (range, 4–16) was created by summing Likert scale responses to four items. Cancer stage at diagnosis was abstracted from medical records by trained staff. Logistic regression was used to assess the association between fatalism score and advanced stage at diagnosis (IV vs. I–III), adjusting for sociodemographic and clinical characteristics.

Results: Overall, 917 (21%) patients had stage IV cancers (lung: 28%, colorectal: 16%). The mean fatalism score was 10.7 (median = 11; interquartile range, 9–12). In adjusted analyses, a higher fatalism score was associated with greater odds of stage IV diagnosis (OR per unit increase in fatalism = 1.05; 95% confidence interval 1.02–1.08; $P = 0.003$). Patients with the highest fatalism score had an adjusted 8.9% higher frequency of stage IV diagnosis compared with patients with the lowest score (25.4% vs. 16.5%).

Discussion: In this large and socioeconomically, geographically, and ethnically diverse population of patients with lung and colorectal cancer, fatalistic beliefs were associated with higher risk of advanced stage at diagnosis. Longitudinal studies are needed to confirm causation.

Impact: These findings support the value of incorporating information about the curability of early-stage cancers in public education campaigns. *Cancer Epidemiol Biomarkers Prev; 24(4); 720–6.* *©2015 AACR.*

Introduction

Many patients with cancer are diagnosed after a symptomatic presentation, because effective screening tests exist for few cancer sites and participation rates are suboptimal. For example, in England, more than 90% of all patients with cancer are diagnosed following symptomatic presentations (1). As stage at diagnosis is a key determinant of cancer survival, interventions to ensure that symptomatic patients are diagnosed at the earliest possible stage can help to reduce cancer mortality.

Psychosocial factors are important candidates for influencing the length of the period from symptom onset to presentation to a doctor (i.e., the "patient interval"), and, consequently, the stage at diagnosis (2, 3). These factors encompass both cognitive (e.g., awareness of potential associations of symptoms with cancer) and emotional processes (e.g., fear of cancer or embarrassment about symptoms; ref. 4).

Fatalism, whether it relates to a general belief that life events are predetermined and inevitable, or "cancer fatalism," defined by Powe as "the belief that death is inevitable when cancer is present" (5), has been implicated in longer patient intervals in a study of intended help seeking for breast cancer among asymptomatic women (6). Individuals with more fatalistic beliefs may be both more fearful of a cancer diagnosis and more skeptical about the value of early detection of cancer, and therefore, may delay seeking medical help (7). Several studies have shown that cancer fatalism influences cancer screening uptake (8–10). Direct evidence that fatalism is associated with longer patient intervals in symptomatic patients is limited, although two small single-center studies including a few hundred patients each and primarily examining the potential determinants of ethnic disparities in cancer outcomes have shown that fatalistic beliefs were associated with advanced stage of diagnosis of breast and lung cancer (11, 12). Specifically, an association between endorsing the fatalistic belief "if it's meant to be, I will stay healthy" and advanced stage at diagnosis was reported in a sample of 540 women with breast cancer (11). Furthermore, in 357 patients with lung cancer, there

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was an independent association between one of three fatalism items ("bad things are meant to be") and advanced stage at diagnosis (12). It is therefore important to extend the focus of prior inquiries about the potential influence of fatalism on stage at diagnosis to larger and more representative samples of patients and encompass cancers other than those previously studied.

Against this background, we hypothesized that patients with cancer with higher scores on measures of fatalistic beliefs will be more likely to be diagnosed with cancer at a more advanced stage. We have subsequently examined this hypothesis association in a large population-based survey of newly diagnosed patients with lung and colorectal cancer.

Materials and Methods

Data

Study design and participants. The CanCORS (Cancer Care Outcomes Research and Surveillance) study prospectively enrolled U.S. adults diagnosed with lung or colorectal cancer in 2003–2005 who lived in certain geographic areas (northern California; Los Angeles County, CA; North Carolina; Iowa; or Alabama) or received care in one of five health maintenance organizations (HMO), or fifteen Veterans Affairs medical centers (13, 14). Participants were representative of U.S. patients with these cancers (15). Patients were identified within weeks of diagnosis and interviews (with the patient or a surrogate, if the patient was deceased or too ill to participate) conducted approximately 4 to 6 months after diagnosis. Interviews were conducted by telephone; trained interviewers used computer-assisted telephone interviewing software to navigate complex skip patterns. The study was approved by human subjects committees at all participating institutions.

Among 9,732 CanCORS participants, we studied the 5,453 for whom interviews were conducted with the patients themselves. We then excluded 761 patients who did not respond to all four fatalism items and 373 patients for whom data on stage at diagnosis were not available, resulting in an analysis sample of 4,319 patients (Fig. 1).

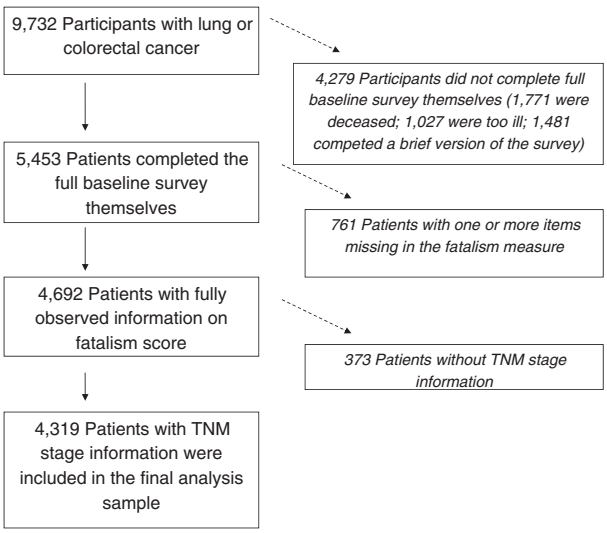

Figure 1.
Analysis sample derivation.

Data items. A four-item measure assessing general fatalism that had been developed for the Americans' Changing Lives Panel Study (House JS, http://sodapop.pop.psu.edu/codebooks/hwboa/acl.pdf) and reported by Jacobson was included in the questionnaire for patients who completed the survey themselves (16). Patients were asked how strongly they agreed or disagreed with the following four statements:

- When bad things happen, we are not supposed to know why, we are just supposed to accept them.
- People die when it is their time to die and nothing can change that.
- Everything that happens is a part of God's plan.
- If bad things happen, it is because they were meant to be.

Responses were on a 4-point Likert scale (strongly agree/agree/disagree/strongly disagree; coded as 4, 3, 2, and 1). Jacobson reported results of a factor analysis showing that the four items formed a single scale with high internal reliability ($\alpha = 0.77$; ref. 16), whereas in our analysis sample, we have observed a slightly higher value ($\alpha = 0.79$).

Trained abstractors documented stage at diagnosis from medical records based on the criteria of the American Joint Committee on Cancer, 6th edition. Medical records were available for 87% of patients; for other patients, stage data were obtained from cancer registries. Information was also available on cancer site (colorectal or lung), age, sex, race/ethnicity, education, income, marital status, smoking status, count of self-reported co-morbid conditions using the Katz and colleagues questionnaire (17), self-reported health status a year before the interview (0–100 on a visual analogue scale, 100 = perfect health), symptom status at diagnosis (yes/no), and CanCORS study site. Variables were categorized as in Table 1.

Statistical analysis

We compared patients included in the analysis with those excluded (because of not completing an interview themselves, missing responses to all four fatalism items or missing stage at diagnosis, see Fig. 1) using logistic regression. After examining Spearman rank correlation coefficients for pairwise associations between the four fatalism items, to maximize power, replies to each of the four items were summed and the total score was used in the main analysis; higher scores reflected higher levels of fatalistic beliefs. We categorized advanced stage at diagnosis as stage IV (vs. I–III) and examined crude and adjusted associations between advanced stage at diagnosis and fatalism using logistic regression. We initially tested whether there was evidence that the association between fatalism and stage at diagnosis varied by cancer site by an interaction term *fatalism*cancer* site, but found no such evidence ($P = 0.40$). We therefore included all patients in the same model, adjusting for cancer site, and sex, age, race/ethnicity, education, income, marital status, smoking status, number of comorbidities, health status a year before interview, and study site. Subsequently, to aid interpretation, we predicted the proportion of patients diagnosed in stage IV for each score of the fatalism scale, by direct standardization using the regression model (18). The fully observed dataset was used for sample descriptions (Table 1) and 5 imputed datasets, produced through multiple imputation as previously described (19), were used in the logistic regression models, and outputs were combined with the SAS MIANALYZE procedure. In the current analysis, imputed data

Table 1. Distribution of the fatalism scores ($n = 4,319$ patients who completed a postdiagnosis interview themselves, with fully observed information on fatalism score and stage at diagnosis)

Patient characteristics	*N*	Median	Mean	*P*
Sex[a]				
Men	2372	11	10.5	<0.001
Women	1947	11	10.9	
Age at diagnosis[a]				
<55	950	11	10.8	<0.001
55–59	553	10	10.4	
60–64	604	11	10.4	
65–69	671	11	10.7	
70–74	588	11	10.7	
75–80	525	11	10.9	
80+	428	11	10.9	
Race/ethnicity				
White	3115	11	10.5	<0.001
Hispanic	310	12	11.3	
Black	577	11	11.3	
Asian	200	11	10.9	
Other	117	11	11.3	
Educational attainment				
<High school	730	12	11.8	<0.001
High school/some college	2514	11	10.9	
≥College degree	1070	9	9.5	
Missing	5	12	12.4	
Income in past year (US $)				
<20,000	1181	12	11.3	<0.001
20,000–39,999	1133	11	10.8	
40,000–59,999	677	10	10.4	
≥60,000	1000	10	9.8	
Missing	328	12	11.2	
Study site				
5 Integrated health-care delivery systems	606	10	10.3	<0.001
8 counties in Northern California	905	11	10.4	
Los Angeles County	962	11	10.5	
State of Alabama	486	12	11.4	
22 counties in North Carolina	446	11	11.1	
State of Iowa	409	11	11.0	
15 Veterans Affairs Medical Centers	505	11	10.9	
Married/living with partner				
Yes	2686	11	10.6	0.01
No	1630	11	10.8	
Missing	3	9	9.7	
Smoking status				
Never smoker	1242	11	10.8	<0.001
Former smoker	2583	11	10.6	
Current smoker	487	11	11.0	
Missing	7	11	11.1	
Comorbidities (count of)				
0[b]	1724	11	10.7	0.24
1	1441	11	10.6	
2	718	11	10.8	
≥3	436	11	10.9	
Symptom status at diagnosis				
"Yes, symptomatic"	3541	11	10.7	0.23
"No, diagnosed without symptoms"	777	11	10.6	
Missing	1	12	12.0	
Cancer site[a]				
Colorectal	2396	11	10.6	0.06
Lung	1923	11	10.8	
Stage at diagnosis[a]				
I	1266	11	10.7	0.007
II	849	11	10.5	
III	1287	11	10.6	
IV	917	11	10.9	
Fatalism scores[a]				
4	98			
5	47			
6	108			
7	151			
8	443			
9	505			
10	544			
11	664			
12	923			
13	322			
14	179			
15	133			
16	202			
Health status a year before interview				
Median 90 (inter-quartile range, 75–100)	4,286			
Total	4,319			

[a]Information on these variables was fully observed (no "missing" values) in the analysis sample.
[b]Included missing observations.

only relate to the small proportion of records with missing income (8%) and education, marital, and smoking status information (<1% for all three), as all other variables were complete in the analysis sample (a priori restricted to patients with fully observed fatalism and stage at diagnosis, Fig. 1).

Sensitivity and supplementary analyses. In sensitivity analyses we examined alternative parameterizations of stage at diagnosis and fatalism score, i.e., by categorizing advanced stage at diagnosis as stage III/IV vs. I/II; by analyzing scores for each fatalism item individually; and by excluding the religious beliefs ("God's plan") item from the total fatalism score. In supplementary analysis, we also examined the potential moderating effect of symptom status at diagnosis by repeating the main analysis model, also adjusting for symptom presence at the time of diagnosis (yes/no) and an interaction between symptom presence and fatalism score. Finally, in a subgroup of patients with known grade and/or lung cancer tumor type (non–small cell/small cell), we additionally adjusted for tumor grade and/or type.

Results

Sample description

Compared with the final sample (Fig. 1), excluded patients (who were predominantly deceased, or too ill to participate at the time of the baseline survey and thus were not asked the fatalism items) were more likely to have had lung than colorectal cancer and to be male, older, Asian and smokers, and with lower educational attainment and income, higher count of comorbidities and more advanced stage at diagnosis ($P < 0.01$ for all; Supplementary Table S1). Among patients included in the analysis, the median age was 65 (interquartile range, 56–73) and there was a slight preponderance of colorectal cancer and male patients (56% and 55% of the sample, respectively). Just under three quarters of patients where White (72%) and 7%, 13%, and 5% were Hispanic, Black, and Asian, respectively. Most patients (82%) had symptoms at the time of diagnosis. Further sample details are provided in Table 1.

Stage at diagnosis

Among all patients 1,266 (29%), 849 (20%), 1,287 (30%), and 917 (21%) patients were diagnosed in stages I to IV, respectively. The proportion diagnosed with stage IV cancers was greater among patients with lung than colorectal cancer (28% vs. 16%, $P < 0.001$).

Fatalism

The mean fatalism score was 10.7 (median score, 11; interquartile range, 9–12). Responses to the four individual items were moderately correlated (pairwise Spearman rank correlation coefficients range, 0.34–0.55; $P < 0.001$ for all). There were differences in fatalism scores by race/ethnicity, with mean scores of 10.5 for White, and 11.3, 11.3, and 10.9 for Hispanic, Black, and Asian patients, respectively ($P < 0.001$). On average, women had higher mean fatalism scores than men (10.9 vs. 10.5, $P < 0.001$) and the same was true for current smokers compared with former smokers and nonsmokers (11.0, 10.6, 10.8, respectively; $P < 0.001$). Patients with lower educational attainment had higher fatalism scores than patients with higher education (11.8, 10.9, and 9.5, respectively, for non-high school graduates, high school graduates, and college graduates; $P < 0.001$). Patients with lower income also had higher fatalism scores than patients with higher income (11.3 and 9.8, respectively, for patients with annual income <$20,000 and >60,000; $P < 0.001$). There were no notable associations of fatalism with count of comorbid conditions, symptomatic detection status, or cancer site.

Crude associations

In crude analysis (logistic regression), higher fatalism scores were associated with advanced stage at diagnosis [OR per unit increase in fatalism = 1.05, 95% confidence interval (CI): 1.02–1.08, $P = 0.001$]. Other factors associated with stage IV diagnosis included lung cancer, younger age, lower count of comorbidities, being a current smoker, and symptomatic detection ($P < 0.01$ for all, Table 2).

Adjusted associations

Adjusted analysis (logistic regression) revealed a very similar association between fatalism and stage IV diagnosis (OR per unit increase in fatalism = 1.05, 95% CI, 1.02–1.08, $P = 0.003$, Table 2). Patients with the highest fatalism score (16) had an OR of 1.77 (95% CI, 1.21–2.57) for advanced stage at diagnosis compared with those with the lowest score (4), equivalent to an absolute adjusted difference of 8.9% in the proportion of patients diagnosed with stage IV cancers (Table 3). Similarly, patients with the highest score (16) had an OR of 1.34 (95% CI, 1.10–1.60) for stage IV diagnosis compared with those in mid-scale (10), equivalent to 4.7% increase in the proportion of patients diagnosed with stage IV cancers. There was also evidence that lung cancer, male sex, younger age, and lower count of comorbid conditions were associated with higher odds of stage IV diagnosis ($P < 0.01$ for all, Table 2).

Sensitivity analysis

When we examined the association of fatalism with stage III/IV diagnosis, the direction of association remained but its strength was attenuated, such that there was only weak evidence for an association (OR, 1.03; 95% CI, 1.00–1.05; $P = 0.055$; Supplementary Table S2). When running logistic regression models that included each individual fatalism item separately instead of the total score (four separate models) the observed findings were concordant with those of the main analysis, with respective OR >1.0 and some significant associations. Repeating the analysis using a total score but excluding the "God's plan" individual item also produced concordant results (OR, 1.06; 95% CI, 1.02–1.10; $P = 0.004$). Similarly, inclusion of symptomatic detection status and an interaction variable *symptomatic detection*fatalism score* produced concordant findings to those observed in the main analysis with no evidence for an interaction ($P = 0.68$). Adjustment for tumor grade and/or lung cancer type made no material difference to the findings of the main analysis model.

Discussion

In a large population-based survey of patients with lung and colorectal cancer, we observed an independent association between higher fatalism scores and advanced stage at diagnosis of lung and colorectal cancer. Sensitivity analyses provided concordant findings.

Although previous research has documented associations between fatalism and lower participation in cancer screening (8–10), evidence linking fatalism with clinical outcomes such as stage at diagnosis is limited. Our inquiry is methodologically similar to two previous studies, and a smaller qualitative study of patients with breast cancer (11, 12, 20), but has a substantially larger and sociodemographically and geographically more diverse sample that includes patients with both lung and colorectal cancer.

Powe and Finnie suggest that the two factors that shape fatalism are angst, defined as the perceived collapse of meaning in the presence of despair about the future, and nihilism, defined as lived experiences of coping with feelings of meaningless, hopelessness, and despair (5). Accordingly, cancer fatalism takes shape as individuals experience others being diagnosed with cancer at an advanced stage, leading to poor outcomes and death. This can lead to skepticism about the value of cancer screening or prompt symptomatic presentation, leading to prolonged intervals to presentation and increasing the risk of advanced stage at diagnosis (21). In addition, cultural or religious values emphasizing acceptance may accentuate fatalistic attitudes among some groups (22). Modifying entrenched fatalistic beliefs is not likely to be easy, but evidence that an understanding of the value of prevention or early diagnosis can be held in parallel with fatalism suggests that exposure to culturally appropriate information on the value of early detection might be beneficial (23). If fatalistic beliefs can be modified, campaigns to promote symptom awareness are also likely to contribute to more rapid symptomatic presentation (24). In a recent development of a new scale, Shen and colleagues propose that fatalism is a multidimensional construct, encompassing "predestination," "luck," and "pessimism" (25). The Fatalism scale used in the current study more closely resembles the predestination dimension, and it will be important in future work to examine the differential effects of these three elements on screening and help-seeking behaviors.

Strengths of our study include its relatively large and diverse patient population and high data quality, including information

Table 2. Factors associated with diagnosis of cancer at stage IV[a]

Variable	Stage IV (%)	Crude ORs for stage IV	95% CI	*P*[a]	Adjusted ORs for stage IV	95% CI	*P*[a]
Fatalism (per one unit increase 4–16 scale)		1.05	1.02–1.08	0.001	1.05	1.02–1.08	0.003
Sex							
Men	22.6	—		0.015	—		<0.001
Women	19.6	0.83	0.72–0.97		0.73	0.61–0.86	
Age at diagnosis							
<55	24.6	—		<0.001	—		<0.001
55–59	24.1	0.97	0.76–1.24		0.93	0.72–1.20	
60–64	23.7	0.95	0.75–1.21		0.88	0.69–1.14	
65–69	20.0	0.76	0.60–0.97		0.72	0.56–0.93	
70–74	21.8	0.85	0.67–1.09		0.83	0.63–1.08	
75–80	16.8	0.62	0.47–0.81		0.60	0.44–0.80	
80 or more	13.3	0.47	0.34–0.64		0.48	0.34–0.67	
Race/ethnicity							
White	20.3	—		0.204	—		0.87
Hispanic	23.6	1.20	0.91–1.59		1.18	0.86–1.62	
Black	23.5	1.20	0.97–1.48		1.03	0.82–1.30	
Asian	24.5	1.27	0.91–1.78		1.11	0.77–1.60	
Other	23.9	1.24	0.80–1.91		1.09	0.70–1.72	
Education							
<High school	20.4	—		0.019	—		0.099
High school/some college	22.6	1.14	0.93–1.40		1.23	0.98–1.53	
≥College degree	18.5	0.89	0.70–1.13		1.06	0.80–1.41	
Income (US $)							
<20,000	23.0	—		0.50	—		0.82
20,000–39,999	21.9	0.92	0.75–1.12		0.97	0.78–1.20	
40,000–59,999	20.4	0.86	0.69–1.08		0.89	0.68–1.15	
≥60,000	20.3	0.88	0.71–1.07		0.91	0.70–1.19	
Study site							
5 Integrated health-care delivery systems	20.1	—		0.001	—		0.134
8 counties in Northern California	23.1	1.19	0.93–1.53		1.20	0.93–1.56	
Los Angeles County	20.6	1.03	0.80–1.32		0.97	0.74–1.26	
State of Alabama	23.3	1.20	0.90–1.61		1.11	0.82–1.51	
22 counties in North Carolina	13.5	0.62	0.44–0.86		0.85	0.59–1.21	
State of Iowa	23.2	1.20	0.89–1.63		0.82	0.59–1.13	
15 Veterans Affairs Medical Centers	23.8	1.24	0.93–1.65		1.00	0.73–1.37	
Married/living with partner							
Yes	20.7	—		0.28	—		0.134
No	22.1	1.09	0.94–1.26		1.13	0.95–1.34	
Smoking status							
Never smoker	18.8	—		<0.001	—		0.109
Ex-smoker	21.2	1.16	0.98–1.37		0.89	0.73–1.09	
Current smoker	27.5	1.63	1.28–2.09		1.13	0.85–1.49	
Comorbidities							
0	23.9	—		0.004	—		0.003
1	20.2	0.81	0.68–0.97		0.78	0.65–0.94	
2	18.8	0.74	0.59–0.92		0.70	0.56–0.89	
≥3	17.9	0.69	0.53–0.90		0.65	0.48–0.87	
Cancer site							
Lung	27.6	—		<0.001	—		<0.001
Colorectal	16.2	0.51	0.44–0.59		0.44	0.36–0.52	
Symptoms at diagnosis							
Yes	23.4	2.33	1.85–2.94	<0.001			
No	11.6	—					
Health status a year before interview (0–100)		1.00	1.00–1.01	0.028	1.00	1.00–1.01	0.223

Abbreviation: ORs, odds ratios.

[a]From univariable or multivariable regression, as applicable. Multivariable regression models adjusted for all variables in the table except symptom status at diagnosis.

on stage at diagnosis abstracted from medical records and the use of validated instruments for assessing fatalism. We were also able to adjust our analysis for a large number of potential confounders, including age, sex, race/ethnicity, education, income, comorbidity, smoking status, and prior health status.

Our study has two principal limitations. First, our analysis included only patients who were alive and able to complete the baseline survey, resulting in relative under representation of older and more comorbid patients and those with more advanced stage at diagnosis (Supplementary Table S1). However, sample attrition and nonresponse patterns are a necessary but not sufficient condition for nonresponse bias in estimates of associations. After appropriate adjustment for case-mix the effect of such bias in surveys with an appropriately defined sampling frame is small

Table 3. Proportion of patients diagnosed with stage IV cancers (crude and case-mix adjusted)

Fatalism score	*N*	Observed (crude) rate	Adjusted percentage[a]
4	98	18.4%	16.5%
5	47	14.9%	17.2%
6	108	18.5%	17.8%
7	151	17.9%	18.5%
8	443	16.7%	19.2%
9	505	21.4%	19.9%
10	544	23.7%	20.7%
11	664	21.8%	21.4%
12	923	19.2%	22.2%
13	322	27.0%	23.0%
14	179	16.2%	23.8%
15	133	27.8%	24.6%
16	202	29.2%	25.4%

[a]Adjusted proportions calculated from the logistic regression model—this is the expected percentage that would have been observed if the case-mix of patients in each fatalism score category was the same as in the total sample.

(26, 27). Achieving more representative patient samples might be possible if interviews are conducted sooner after diagnosis; however, this is rarely feasible in large population-based studies of patients with cancer.

Second, as for any cross-sectional study, the causal direction of the observed association cannot be proven. Fatalism could lead to advanced stage at diagnosis, but it is also possible that advanced stage at diagnosis could lead to higher fatalism scores, although Powe has reported unpublished data indicating that cancer fatalism has declined from pre- to postdiagnosis (28). Nevertheless, a causal association of fatalism with advanced stage at diagnosis is plausible. If people believe that cancer is inevitably fatal, then they might delay or avoid seeking medical help after symptom onset or participation in cancer screening, and thus have a higher risk of advanced cancer at diagnosis. Although we did not observe statistically significant differences in fatalism scores based on presence or absence of symptoms, patients may have differed in how long they waited to seek care after developing symptoms. Other studies of asymptomatic individuals have documented associations between fatalism and both intended help seeking and participation in cancer screening, further supporting a causal effect of fatalism on the length of the patient interval and stage at diagnosis (6–10). Prospective cohort studies involving fatalism measurement in individuals who are free of cancer at study entry would be ideal, but would require large populations and adequate follow-up to achieve sufficient numbers of cancer cases. Critically, new prospective studies would be associated with ethical challenges (i.e., leaving fatalistic beliefs about cancer curability unchallenged during follow-up could be considered unethical). This may explain why the few previous studies have also measured fatalism after diagnosis (11, 12).

When fatalism items form part of surveys of patients after a cancer diagnosis, there may be ethical concerns about use of cancer-specific fatalism items, and this was the rationale for using a general fatalism item in the CanCORS study. A qualitative study confirmed low acceptability of cancer fatalism questions among recently diagnosed patients with breast cancer (29). General (as opposed to cancer-specific) fatalism items may have both merits (e.g., less likely to be prone to bias resulting from knowledge of cancer diagnosis) and limitations (it makes the argument for public health interventions aimed at reducing "cancer fatalism" less direct). Subject to research ethics considerations, future surveys of patients with cancer may be able to investigate differences in results from use of general and cancer-specific fatalism items.

In conclusion, we identified an association between fatalism and advanced stage at diagnosis for patients with newly diagnosed lung and colorectal cancer, most of whom had presented with symptoms. The consistency of these findings with those from other qualitative and quantitative studies, the plausibility of the association and its large size suggest that the findings should be considered in the context of public health policy initiatives and education campaigns designed to shorten the patient interval of newly diagnosed cancer cases (30,31). Traditionally such strategies have focused on cognitive aspects (i.e., "awareness" of cancer symptoms) but including "antifatalism" components could have a powerful impact. Such approaches may include factual information about the high probability of long-term survival when the diagnosis occurs at a nonadvanced stage and the availability of effective treatments that offer good health-related quality of life.

Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

Disclaimer

The views expressed in this publication are those of the authors and not necessarily those of the National Cancer Institute, the Department of Veterans Affairs, the NHS (National Health Service), the National Institute for Health Research (NIHR), the (UK) Department of Health, or any other funder.

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