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Polypharmacy and patterns of prescription medication use among cancer survivors

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Abstract

Background: The population of cancer survivors is rapidly growing in the U.S. Long-term and late effects of cancer, combined with ongoing management of other chronic conditions, make survivors particularly vulnerable to polypharmacy and its adverse effects. We examined patterns of prescription medication use and polypharmacy in a population-based sample of cancer survivors.

Methods: Using data from the Medical Expenditure Panel Survey (MEPS), we matched cancer survivors (n=5,216) to non-cancer controls (n=19,588) by age, sex, and survey year. We defined polypharmacy as ≥5 unique medications. We estimated proportion of respondents prescribed medications within therapeutic classes and total prescription expenditures.

Results: A higher proportion of cancer survivors were prescribed ≥5 unique medications (64.0%, 95% CI 62.3–65.8%) compared to non-cancer controls (51.5%, 95% CI 50.4–52.6%), including drugs with abuse potential. Across all therapeutic classes, a higher proportion of newly (≤1 year since diagnosis) and previously (>1 years since diagnosis) diagnosed survivors were prescribed medications compared to controls, with large differences in central nervous system agents (65.8%

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[95% CI 62.3–69.3%] vs. 57.4% [95% CI 55.3–59.5%] vs. 46.0% [95% CI 45.0–46.9%]). Specifically, nearly 10% of survivors were prescribed benzodiazepines and/or opioids compared to about 5% of controls. Survivors had more than double prescription expenditures (median $1,633 vs. $784 among controls). Findings persisted across age and comorbidity categories.

Conclusion: Cancer survivors were prescribed a higher number of unique medications, including drugs with abuse potential, increasing risk of adverse drug events, financial toxicity, poor adherence, and drug-drug interactions.

Precis:

In a nationally representative sample, cancer survivors were prescribed more unique medications, five or more concurrent medications, and more medications with abuse potential compared to adults without cancer. Survivors may be at increased risk for consequences of polypharmacy, including adverse drug events, financial toxicity, poor adherence, and drug-drug interactions.

Keywords

cancer survivors; prescription drugs; comorbid conditions; healthcare utilization; financial burden

Background

With advances in early detection and treatment and increases in life expectancy, the population of cancer survivors in the U.S. will reach 26.1 million by 2040.[1] Almost half of cancer survivors have lived 10 years beyond diagnosis, and two-thirds have lived beyond five years.[2] Survivors have complex health needs.[3, 4] Nearly 70% of persons living with cancer have other chronic conditions[5] (e.g., diabetes, cardiovascular disease), which may be exacerbated by cancer-related toxicities.

Long-term and late effects of cancer treatment, combined with managing other chronic conditions, make cancer survivors particularly vulnerable to polypharmacy and its adverse effects. Polypharmacy, or taking multiple medications, may increase risk of adverse drug events, financial toxicity, poor adherence, and drug-drug interactions.[6] Survivors often have multiple prescribing physicians (e.g., oncologist and primary care provider),[7] with prescriptions dispensed at several pharmacies.[8] Prescriptions for similar cancer-related treatment effects and chronic conditions may add duplicative, unnecessary drugs to medication regimens. Growing evidence suggests polypharmacy challenges the delivery of high-quality survivorship care,[1] but most studies[9–12] focus on older survivors or clinic-based samples. Little information exists on the burden of polypharmacy in cancer survivors across diverse healthcare settings.

We examined polypharmacy and patterns of prescription medication use in a population-based sample of cancer survivors and adults without cancer. Specifically, we: (1) estimated prevalence of polypharmacy and prescription expenditures; (2) characterized patterns of prescription medication use within therapeutic classes; and (3) identified patient-level factors associated with polypharmacy.

Methods

Study Population

We used data from the Medical Expenditures Panel Survey (MEPS), a national survey that collects information on healthcare utilization and expenditures, health insurance, and health status from a representative sample of U.S. households. Data are collected in an overlapping panel design; data for each panel are collected in five rounds of in-person interviews over an approximate two-year period. We pooled data from 2008 – 2014, or overlapping panels 13 – 18.

Cancer Survivors.—We identified survey respondents (age ≥18 years) who reported ever having been diagnosed with cancer. We matched cancer survivors to respondents reporting no history of cancer (hereafter "non-cancer controls") by age (5-year intervals), sex, and survey year using a greedy matching algorithm without replacement,[13] with up to four non-cancer controls for every survivor. Persons reporting a diagnosis of non-melanoma skin cancer only were eligible to be selected as a control.

Polypharmacy.—MEPS respondents provide information on prescription medications, including date of first fill, number of refills, and name and address of pharmacy that filled each prescription. Pharmacies are contacted to supplement and verify responses, including data on drug type, dosage, quantity, and payment. Over the two-year survey period, MEPS collected prescription data in Rounds 1 and 3 of each panel. We defined polypharmacy as using five or more unique medications, a common measure used in geriatric populations.[10, 14]

Prescription Expenditures.—MEPS defines medical expenditures as the sum of direct payments for care provided during the survey year, including out-of-pocket payments and payments made by insurance and other sources. Prescription expenditures include amounts paid for prescriptions from all sources.

Statistical Analysis

Among both cancer survivors and non-cancer controls, we described median number of total medications (all fills and refills), unique medications, and total prescription expenditures. MEPS reports all prescriptions over a two-year period as separate records for each respondent. We matched these prescription records to standard identifiers for generic drugs in RED BOOK™ (Truven Health Analytics, Ann Arbor, MI) and Medi-Span® (Wolters Kluwer Health, Indianapolis, IN) to estimate number of unique medications and avoid double counting medications differing only by quantity, dose, or manufacturer. From unique medications, we estimated the proportion of respondents prescribed ≥5 medications. Some respondents (8.4% of survivors and 10.5% of controls) dropped out in Year 2, for whom total medications and total prescription expenditures are missing; however, we noted no significant differences in age and sex for respondents with missing vs. complete prescription information.

To better understand common medication classes (e.g., cardiovascular agents, metabolic agents), we examined the proportion of respondents prescribed medications within first-, second-, and third-level therapeutic classes and compared proportions by time since diagnosis. We categorized survivors as “newly diagnosed” (diagnosed ≤1 year from survey) or “previously diagnosed” (diagnosed >1 year from survey). We focused on medication classes used to manage side effects from cancer treatment or long-term sequelae, such as antidepressants and anxiolytics.[15, 16] We determined therapeutic class using Multum Lexicon,[17] a 3-level nested category system that assigns therapeutic class to each drug. For example, the first-level class “central nervous agents” comprises second-level classes of analgesics, anxiolytics, and muscle relaxants, among others. We excluded panels 17 and 18 (n=4,658) from this analysis because MEPS did not collect data needed to determine time since diagnosis.

Among cancer survivors, we used log binomial regression to identify patient-level factors associated with polypharmacy (≥5 unique medications). We present unadjusted and adjusted prevalence ratios and 95% confidence intervals.

In subgroup analyses, we estimated the prevalence of polypharmacy (≥5 unique medications) across categories of age and comorbidity, for both survivors and controls.

We conducted sensitivity analyses: 1) excluding persons newly diagnosed with cancer (diagnosed ≤ 1 year from survey date, n=962); 2) examining prevalence of polypharmacy, total and unique medications, and total prescription expenditures by time since diagnosis; and 3) with alternate definitions of polypharmacy (e.g., ≥3 or ≥7 unique prescriptions). These analyses did not change direction or magnitude of results. Therefore, we report results of the primary analysis only.

All analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC). To account for the complex survey design, we used survey weights, sampling strata, and primary sampling units. The study was approved by the Institutional Review Board at UT Southwestern Medical Center (#122016–060).

Results

Compared to non-cancer controls (n=19,588), a higher proportion of cancer survivors (n=5,216) were non-Hispanic white, unemployed, and received Medicaid or other public insurance (Table 1). Prevalence of chronic conditions was higher among survivors than controls, with notable differences in the proportion reporting heart disease, hypercholesterolemia, and arthritis. A higher proportion of survivors reported ≥2 comorbid conditions, physical limitations, and fair or poor health status compared to controls. Most (55.0%) survivors were diagnosed ≥5 years prior to the survey, and a similar proportion were diagnosed ≤ 1 year (21.4%) and 2–5 years (23.6%) prior. Breast (21.2%), prostate (15.2%), and colon (7.4%) cancer were the most common cancer types (data not shown).

Polypharmacy was more prevalent in cancer survivors compared to non-cancer controls (Table 2). Specifically, a higher proportion of survivors were prescribed ≥5 unique medications (64.0%, 95% CI 62.3–65.8%) than controls (51.5%, 95% CI 50.4–52.6%), and

we observed a similar pattern in sensitivity analyses by time since diagnosis (Supplementary Table 1). With the exception of lung cancer (79.6%, 95% CI 75.6–83.7%), prevalence was similar across cancer types (data not shown). Survivors were also prescribed a greater median number of total (35 vs. 21) and unique (6 vs. 4) medications. Median prescription expenditures were $1,633 among survivors and $784 among controls. In subgroup analyses (Table 3), these differences persisted by age and comorbidity. For example, among the 18–39-year age group, 41.8% of cancer survivors were prescribed ≥5 unique medications compared to 20.8% of controls.

Across all therapeutic classes, a higher proportion of newly and previously diagnosed cancer survivors were prescribed medications compared to non-cancer controls (Table 4), with large differences in central nervous system, psychotherapeutic, cardiovascular, and gastrointestinal agents. Prevalence of opioid and narcotic analgesic use was more than double among newly diagnosed (43.0%, 95% CI 39.3–46.8%) survivors compared to controls (21.2%, 95% CI 20.3–22.1%), and prevalence was 28.6% (95% CI 26.5–30.6%) among previously diagnosed survivors. This finding was similar in the subgroup of respondents with arthritis (Supplementary Table 2), where both newly and previously diagnosed survivors were prescribed more opioids than controls. A higher proportion of survivors were also prescribed benzodiazepines compared to controls, including combinations with opioids (Table 4).

Adjusted analyses of patient-level factors associated with polypharmacy showed cancer survivors with comorbid conditions, physical limitations, and good or fair/poor self-reported health (vs. excellent/very good), had higher prevalence of polypharmacy (Table 5). Survivors who were uninsured (vs. privately insured), unemployed, and non-Hispanic black or other race/ethnicity had lower prevalence of polypharmacy.

Discussion

In a large, nationally representative sample of cancer survivors, we found higher prevalence of all indicators of polypharmacy among survivors compared to adults without cancer. Survivors were prescribed more unique medications, five or more concurrent medications, and drugs with abuse potential. Cancer survivors also had substantially higher prescription expenditures than non-cancer controls. These findings persisted across categories of age and comorbidity, and differences in polypharmacy between survivors and controls were most striking in the youngest age groups and those with no comorbid conditions.

Cancer survivors had more than double the cost of prescriptions, suggesting polypharmacy contributes to the growing costs[18, 19] of cancer treatment and survivorship care. Many cancer patients and survivors report symptoms of financial toxicity,[20] including devastating out-of-pocket spending, worry about medical bills, and medical debt or bankruptcy. Differences in cost for specialty vs. non-specialty drugs may drive higher prescription expenditures among survivors. Because specialty drugs play an increasingly important role in managing chronic conditions,[21] the economic burden of these drugs may persist for many years after cancer diagnosis.[22] For example, newly and previously diagnosed survivors in our study had similar prescription expenditures ($783 and $757 annually), both higher than adults without cancer

($383 annually, data not shown). High medication costs may lead survivors to delay or discontinue refills, or make changes in regimens to defray out-of-pocket costs.[23, 24]

Nearly twice as many cancer survivors were prescribed drugs with abuse potential compared to adults without cancer, including benzodiazepines and opioids. Prescription patterns changed over the survivorship course, whereby a higher proportion of newly diagnosed survivors were prescribed these drugs than previously diagnosed survivors. Use tapered as time since diagnosis increased, but it remained markedly higher among both groups of survivors than controls. We also observed no difference in NSAID use among survivors and controls, and in the subgroup of respondents with arthritis, a condition where narcotics might be expected, we still found a higher proportion of survivors prescribed opioids. Because most survivors were diagnosed more than five years prior to the survey, these sensitivity and secondary analysis suggest opioids may be used inappropriately to manage chronic pain, or may reflect fragmented care,[3] as survivors transition from active treatment to primary care. Prolonged use of these drugs is concerning given increased risk of adverse psychological and physical effects, physical dependence, and withdrawal,[25, 26] particularly in light of the opioid crisis in the U.S.[27, 28]

Younger and healthier cancer survivors used a similar number of medications as older adults without cancer. Specifically, survivors aged 18–39 years had double the prevalence of polypharmacy compared to age-matched controls. Adolescent and young adult (AYA) cancer survivors comprise a unique, yet understudied, group in cancer research.[29, 30] AYA patients often receive fragmented care, caught between pediatric and adult oncology,[31] perhaps increasing likelihood of polypharmacy and multiple prescribing physicians. Compared to older cancer survivors, AYA survivors have earlier onset chronic conditions that accumulate over the life course.[32] Many AYA survivors report unmet healthcare needs, particularly for late-effects of treatment,[33] mental health, weight management, and pain management.[32] Financial challenges may also compromise adherence to multiple prescription regimens.[34] Despite the tendency to focus on polypharmacy and its consequences in older cancer patients,[10–12] our findings call attention to AYA survivors as a priority population for future research.

Compared to controls, survivors were more often prescribed psychotherapeutic, cardiovascular, and gastrointestinal agents. Similarly, we found chronic conditions, physical function, and health status were major drivers of polypharmacy in survivors. Some medications used to manage comorbidities and late effects may be duplicative, such as those for treatment-induced cardiotoxicity and pre-existing cardiovascular disease. Others, such as psychotherapeutic agents, may be added to medication regimens shortly after diagnosis and continue through survivorship. Cancer survivors can experience psychosocial distress—fear, anxiety, sadness, and depression—related to or many years after a new diagnosis of cancer.[35–37] Lastly, survivors may have more opportunity to be prescribed medications because they visit multiple physicians for several different health conditions.[38, 39]

MEPS respondents do not report prescription indication, a limitation common in pharmacoepidemiology research.[40] We could not determine the appropriateness of each medication, but studies on older cancer survivors suggest potentially inappropriate use is

common[12, 41, 42] and increases in the year following diagnosis.[43] We did not capture over-the-counter medications or supplements, potentially underestimating prevalence of polypharmacy in survivors. These limitations highlight the need for clinically annotated data, including indication and disease severity, to understand impact of polypharmacy on cancer outcomes.

In summary, our study provides compelling evidence that cancer survivors experience an additional care burden from polypharmacy and underscores the challenge of weighing risks and benefits of specific medications in context of a new or prior cancer diagnosis. Survivors may be at increased risk for the numerous consequences of polypharmacy, including adverse drug events, financial toxicity, poor adherence, and drug-drug interactions.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Characteristics of cancer survivors and non-cancer controls, Medical Expenditures Panel Survey, 2008– 2014 (n=24,804)

	Cancer Survivor (n=5,216)		Non-Cancer Control (n=19,588)	
	n	**weighted %**	**n**	**weighted %**
Sociodemographics				
Age				
18–39	572	8.8	2288	9.3
40–49	623	10.4	2455	11.0
50–59	1017	19.3	4045	20.6
60–69	1292	25.0	5128	27.0
70–79	1005	21.1	3540	19.7
≥80	707	15.3	2132	12.5
Female sex	3230	59.4	12652	62.9
Race/ethnicity				
Non-Hispanic white	3360	82.3	9626	71.9
Non-Hispanic black	910	8.2	3913	10.4
Hispanic	677	6.3	4131	10.9
Other Non-Hispanic	269	3.2	1918	6.8
Marital status				
Married	2706	56.5	10354	57.3
Not married	2510	43.5	9212	42.6
Unknown	0	0.0	22	0.1
Education				
Less than high school	1135	15.5	5034	17.6
High school or GED	2108	41.2	7464	39.7
Some college, Associates, or Other	734	14.6	2606	15.2
College degree	742	16.9	2550	15.5
Advanced or professional degree	456	11.4	1575	11.0
Unknown	41	0.5	359	1.1
Employment status				
Employed	1907	37.9	8362	44.5
Unemployed	3298	61.9	11018	54.9
Unknown	11	0.2	208	0.6
Insurance				
Medicaid (any)	1052	13.5	3467	11.7
Private (any)	2756	60.5	9908	59.4
Other public (any)	223	4.4	666	3.6
Medicare (only)	880	17.2	3267	17.8
Uninsured (only)	305	4.4	2280	7.4
Comorbid conditions				
Hypertension	3039	57.9	10301	52.7

	Cancer Survivor (n=5,216)		Non-Cancer Control (n=19,588)	
	n	**weighted %**	**n**	**weighted %**
Coronary heart disease	776	15.4	2285	12.5
Angina	369	7.1	994	5.3
Myocardial infarction	542	10.6	1470	8.0
Other heart disease	1197	24.5	3312	19.9
Stroke	586	10.8	1567	8.2
Emphysema	394	7.6	770	4.6
Hypercholesterolemia	2745	54.5	9092	48.7
Diabetes	1084	18.7	3639	16.5
Arthritis	2734	52.8	8193	44.2
Asthma	735	13.1	1948	10.0
Health indicators				
Comorbidity Count				
0	784	14.5	4733	21.6
1	879	16.8	3646	18.8
2+	3553	68.8	11209	59.6
Physical limitations				
Yes	1574	29.0	3992	21.6
No	3633	70.8	15347	77.4
Unknown	9	0.1	249	1.0
Health status				
Excellent	699	15.8	4003	23.4
Very good	1162	24.1	5421	30.1
Good	1586	30.5	5686	27.2
Fair	1137	19.6	3212	13.5
Poor	632	10.1	1079	4.9
Unknown	0	0.0	187	0.9

NOTE: To account for the complex survey design, we used survey weights, sampling strata, and primary sampling units when calculating standard errors for weighted survey estimates.

Table 2:

Total prescriptions and expenditures among cancer survivors and non-cancer controls (n=24,804)

	Cancer Survivor (n=5,216)		Non-Cancer Control (n=19,588)	
Total unique prescriptions, median (range)	6	(0 – 41)	4	(0 – 49)
≥5 unique prescriptions, weighted % (95% CI)	64.0	(62.3 – 65.8)	51.5	(50.4 – 52.6)
Total prescriptions, median (range)	35	(0 – 635)	21	(0 – 895)
Total expenditures, median (range)	$1633	($0 – 272,283)	$784	($0 – $220,510)

Abbreviations: CI, confidence interval

Table 3:

Prevalence of polypharmacy (≥5 unique prescriptions) by age and comorbidity (n=24,804)

	Cancer Survivor (n=5,216)			Non-Cancer Control (n=19,588)		
	n	**weighted %**	**95% CI**	**n**	**weighted %**	**95% CI**
Age						
18–39	220	41.8	34.5–46.0	360	20.8	18.3–23.4
40–49	318	51.4	46.5–56.2	633	28.8	26.3–31.2
50–59	571	54.5	50.8–58.2	1622	41.7	39.6–43.8
60–69	885	67.9	64.6–71.1	2862	58.6	56.9–60.3
70–79	730	72.8	69.4–76.3	2324	68.3	66.3–70.3
≥80	548	79.1	75.3–82.8	1423	68.8	66.2–71.5
Comorbidity count						
0	185	26.4	22.6–30.2	462	13.3	11.8–14.8
1	352	40.5	36.1–44.9	981	30.7	28.6–32.8
≥2	2735	77.7	75.7–79.6	7781	71.9	70.7–73.1

Abbreviations: CI, confidence interval

Table 4.

Proportion of newly diagnosed cancer survivors, previously diagnosed cancer survivors, and non-cancer controls prescribed medication within first-, second-, and third-level therapeutic classes (n=20,146)

	Newly Diagnosed[a] (n=962)		Previously Diagnosed[b] (n=3,258)		Non-Cancer Control (n=15,926)	
	wt %	95% CI	wt %	95% CI	wt %	95% CI
First-level therapeutic class						
Central nervous system agents	65.8	62.3–69.3	57.4	55.3–59.5	46.0	45.0–46.9
Cardiovascular agents	62.2	58.2–66.3	59.1	56.9–61.3	52.4	51.2–53.7
Metabolic agents	49.2	45.1–53.3	50.1	47.8–52.3	43.6	42.5–44.7
Gastrointestinal agents	31.9	28.7–35.2	29.6	27.6–31.6	22.0	21.1–22.9
Psychotherapeutic agents	25.4	22.1–28.8	26.8	25.3–28.4	18.3	17.5–19.0
Respiratory agents	23.9	20.3–27.6	26.7	24.8–28.6	21.4	20.5–22.2
Coagulation modifiers	16.3	13.5–19.1	16.1	14.6–17.6	13.1	12.4–13.9
Antineoplastic agents	13.0	10.6–15.3	9.2	7.9–10.5	2.1[c]	1.8–2.4
Immunologic agents	5.5	3.3–7.7	4.3	3.5–5.1	3.5	3.2–3.9
Second-level therapeutic class						
Beta-adrenergic blocker	27.5	24.3–30.8	26.2	24.2–28.2	21.8	20.9–22.8
Proton pump inhibitor	21.3	18.0–24.6	21.9	19.9–23.8	15.5	14.7–16.3
Antidepressant	21.1	18.0–24.3	25.6	24.0–27.1	17.5	16.7–18.2
Anxiolytics, sedatives, hypnotics	7.4	5.5–9.3	8.4	7.2–9.6	6.1	5.5–6.6
H2 agonist	4.5	2.7–6.2	4.0	3.2–4.9	3.6	3.3–4.0
Third-level therapeutic class						
NSAID	15.1	12.4 – 17.9	15.9	14.3 – 17.5	14.0	13.4 – 14.7
Benzodiazepine	14.6	11.8–17.4	13.4	11.8–14.9	9.0	8.3–9.6
Opioid/narcotic analgesic	43.0	39.3–46.8	28.6	26.5–30.6	21.2	20.3–22.1
Skeletal muscle relaxant	6.9	4.9–8.8	8.7	7.6–9.9	6.7	6.2–7.2
Opioid/narcotic analgesic and benzodiazepine	6.1	5.1–7.2	10.0	7.7–12.3	3.9	3.4–4.3
Opioid/narcotic analgesic and skeletal muscle relaxant	5.2	3.6–6.7	5.4	4.4–6.3	3.9	3.5–4.3

Abbreviations: wt, weighted; CI, confidence interval; NSAID, nonsteroidal anti-inflammatory drug

NOTE: Time since diagnosis estimated using age at diagnosis reported during Round 1 interview, panels 13 – 16

[a]Diagnosis ≤1 year from survey

[b]Diagnosis >1 year from survey

[c]Antineoplastics among controls include: anastrozole, letrozole, tamoxifen, raloxifen, and methotrexate

Table 5.

Factors associated with polypharmacy (≥5 unique prescriptions) among cancer survivors (n=5,216)

	Unadjusted		Adjusted[a]	
	PR	**95% CI**	**PR**	**95% CI**
Age				
18–39				
40–49	1.23	1.04–1.46	1.02	0.90–1.16
50–59	1.31	1.13–1.51	0.97	0.87–1.09
60–69	1.63	1.40–1.88	1.04	0.93–1.16
70–79	1.74	1.51–2.01	1.04	0.93–1.17
≥80	1.89	1.63–2.20	1.05	0.93–1.19
Female sex	1.01	0.96–1.07	1.06	1.01–1.10
Race/ethnicity				
Non-Hispanic white				
Non-Hispanic black	0.98	0.92–1.04	0.93	0.88–0.98
Hispanic	0.81	0.74–0.89	0.94	0.88–1.01
Other	0.83	0.74–0.94	0.89	0.81–0.99
Marital status				
Married				
Not married	1.06	1.01–1.12	0.97	0.94–1.00
Education				
Less than high school	1.13	1.07–1.20	0.99	0.95–1.03
High school degree or some college				
College degree or higher	0.98	0.92–1.04	1.00	0.96–1.05
Employment status				
Employed				
Unemployed	0.68	0.64–0.73	0.90	0.85–0.95
Insurance				
Private				
Medicaid (any) and other public	1.21	1.15–1.29	1.00	0.95–1.04
Medicare (only)	1.18	1.10–1.26	0.96	0.92–1.01
Uninsured (only)	0.67	0.55–0.82	0.81	0.70–0.95
Health indicators				
Comorbidity Count				
0				
1	1.53	1.26–1.87	1.46	1.21–1.77
2+	2.94	2.51–3.45	2.48	2.11–2.90
Physical limitations	1.51	1.44–1.58	1.15	1.10–1.21
Health status				
Excellent/very good				
Good	1.17	1.10–1.25	1.16	1.10–1.22
Fair/poor	1.31	1.23–1.40	1.16	1.09–1.22

	Unadjusted		Adjusted[a]	
	PR	**95% CI**	**PR**	**95% CI**
Time since diagnosis				
≤1 year	1.08	0.99–1.17		
2–5 years				
>5 years	1.02	0.95–1.10		

Abbreviations: PR, prevalence ratio; CI, confidence interval

[a]Adjusted for age, race/ethnicity, education, insurance, comorbidity count, physical limitations, and health status; adjusted analysis on 5,167 respondents