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A Comparative Analysis of Online Medical Record Utilization and Perception by Cancer Survivorship

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Abstract

Background: Cancer survivors face many challenges including coordinating care across multiple providers and maintaining medical records from multiple institutions. Access and utilization of online medical records could help cancer survivors manage this complexity. Here, we examined how cancer survivors differ from those without a history of cancer with regards to utilization and perception of medical records.

Methods: We conducted a cross-sectional study of 3491 respondents, from the Health Information National Trends Survey 5, Cycle 2. The association of medical record utilization and perceptions with cancer survivorship was assessed using survey-weighted logistic regression.

Results: Cancer survivors (n=593) were more likely to report that a provider maintains a computerized medical record (Adjusted Odds Ratio [AOR] = 2.05; 95% CI = 1.24 –3.41) and

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CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

COMPLIANCE WITH ETHICAL STANDARDS

This study was exempt from institutional review board review due to the use of publicly available and de-identified data.

DATA AVAILABILITY

The datasets generated during and/or analyzed during the current study are publicly available from the Health Information National Trends Survey (HINTS) website: <https://hints.cancer.gov/data/default.aspx>

were more likely to report confidence in medical record safeguards (AOR = 1.44; 95% CI = 1.03–2.03). However, cancer survivors were no more likely to access online medical records than those without a history of cancer (AOR = 1.13, 95% CI= 0.69–1.86). Cancer survivors were no more likely to report privacy concerns as a reason for *not* accessing online medical records, however, survivors were more likely to report a preference for speaking directly with a provider as a reason for *not* accessing online medical records (AOR = 2.24; 95% CI = 0.99–5.05).

Conclusion: Although cancer survivors are more likely to trust medical record safe guards and do not express increased concerns about online medical record privacy, a preference to speak directly with provider is a barrier of use.

Keywords

online medical records; cancer survivors; perceptions; utilization; HINTS

INTRODUCTION

There are an estimated 16.9 million cancer survivors nationwide and the National Cancer Institute (NCI) has estimated that by 2029, the proportion of cancer survivors in the United States will increase by 29%.¹ Improvements to cancer survivorship rates are due, in part, to advanced treatments and improved survivorship care planning. However, patients managing treatments and on-going long-term survivorship care require tools to assist with disease management and communications from multiple providers throughout the continuum of care.² To optimize disease management, the American Cancer Society recommends that cancer survivors keep copies of 1) pathology reports, 2) imaging test results, 3) surgical records, 4) hospital discharge summaries, 5) medication records, 6) radiation therapy records, and 7) contact information for multiple providers.³ Managing all of these materials creates unique challenges for cancer survivorship and disease management. The complexity of this task is illuminated by the numerous guides that exist to assist cancer survivors in organizing their medical records.^{4–8} However, little is known specifically about how cancer survivors utilize and perceive medical record as compared to those without a history of cancer.

Broadly, medical records can exist as traditional paper records or electronic medical records.⁹ Online medical records are electronic medical records *that patients can access* through a secure online patient health portal. In 2009, the American Recovery and Reinvestment Act (ARRA) was signed into law, and mandated that all doctors and hospitals adopt “meaningful” use of electronic medical records by 2014 to maintain Medicare and Medicaid reimbursement levels.¹⁰ This has led to a dramatic increase in electronic medical record use nationwide. New rule changes proposed by the U.S. Department of Health and Human Services in February 2019 are designed to increase patient access to electronic medical records at no cost to patients.¹¹

Considering the degree of disease management and continuous communication with multiple providers that cancer survivors must manage through their cancer care, cancer survivors are a unique patient population that may benefit from accessing medical records and additional services provided by patient health portals that host online medical records.

Previous studies have reported that cancer survivors can benefit from having access to electronic medical records from their providers as a source to review follow-up visits, their treatment plan, and results from medical examinations^{12,13}, as well as enhance their ability to relay their medical information to family members and providers within their survivorship care team.¹⁴ Access to online medical records, could potentially also facilitate access to cancer survivorship care plans. There have been some efforts to use electronic medical records to automate survivorship care plan creation¹⁵⁻¹⁷ and allow online access for cancer survivors¹⁷.

Importantly, patients who actively engage with their online medical records through patient health portals experience a 6% increased odds in medication adherence¹⁸ and, additionally report overall improvements in patient empowerment and understanding of their medical issues^{19,20}. Beyond simply accessing records, patient health portals that host online medical records may offer other services that promote patient engagement. Depending on the services rendered by the host portal, patients may be able to also review medications²¹, message providers²², and create personal reminders thorough a patient diary option²³. Access to the services provided online medical records may also have the potential to improve clinical outcomes²⁴.

Despite the potential benefit of online medical records, cancer survivors could have distinctive concerns about accessing online medical records. Maintaining confidentiality and privacy are a primary concern regarding online medical records²⁵. Medical information regarding cancer diagnosis and treatment can potentially be sensitive in nature, and cancer survivors could be concerned about unwanted disclosure to employers or others with whom they do not wish to share their diagnosis or treatment²⁶. There is limited evidence to date regarding whether cancer survivors access medical records more often as it helps them manage their detailed medical history, or whether cancer survivors may be more likely to mistrust online access to medical records due to privacy concerns associated with sharing and third-party access to their medical information. Importantly, here we build on previous descriptive analyses of prevalence²⁷, and to our knowledge, we are one of the first studies to comprehensively investigate how cancer survivors differ from those without a history of cancer with regards to utilization and perception of medical records while accounting for important confounders including age, gender, and race. Moreover, we further examined potential effect modification by older age (less than 65 vs. 65 and older) and gender.

METHODS

Study design and data source

We performed a cross-sectional analysis utilizing data from the Health Information National Trends Survey (HINTS), a previously-collected, nationally representative sample of the non-institutionalized U.S. adult population.²⁸ Since 2003, HINTS has been administered by the NCI to provide information about how cancer risks are perceived and assess cancer information access and usage. Questionnaire items based on both medical records broadly and online medical records specifically began with HINTS 5, Cycle 2, therefore this secondary analysis is restricted to a sample of data collected from January 26 through May

2, 2018. This study was exempt from institutional review board review due to the use of publicly available, de-identified data.

The HINTS study design has been reported elsewhere.²⁸ In brief, the sampling strategy consisted of a two-stage design in order to represent the entire U.S. population. In the first stage, a stratified sample of addresses was selected from the U.S. Postal Service file of residential addresses. In the second stage, one adult was selected within each sampled household. Potential respondents were mailed a questionnaire and 3,504 individuals submitted at least partially complete questionnaires generating a response rate of 32.9% for HINTS 5, Cycle 2. Our analytic study population included respondents with valid responses to the questionnaire item on history of cancer (n=3491). A cohort schema can be seen in Supplemental Digital Content 1.

Measures

Self-reported history of cancer from any site (n=593) was ascertained with the following questionnaire item: “Have you ever been diagnosed as having cancer?”. Those without a reported history of cancer represented the comparison group (n=2898) for analyses. Covariates were selected based on known confounders and risk factors for cancer including: age at the time of survey, gender, race, education and income. Trust, confidence, and access to medical records were ascertained by seven questionnaire items. Respondents who reported being offered access to online medical records were asked a series of further follow-up questions regarding online medical records utilization. These questions covered frequency of online medical record use, reasons for *not* using medical records (e.g. prefer to speak directly to a provider), reported reasons for using medical records, and medical record usefulness. Details regarding survey questions can be found in the supplemental material (Supplemental Digital Content 2).

Statistical analysis

Due to the complex survey design of HINTS, and to generate representative estimates of the total U.S. population correcting for nonresponse and non-coverage bias, we used survey weighting techniques in all analyses. A full-sample weight was used to calculate population estimates and 50 replicate weights were calculated using the jackknife variance estimation method to compute standard errors. Weighted chi-square tests for categorical variables and t-tests for continuous variables were used to compare differences in demographic characteristics by history of cancer. Weighted logistic regression models were fit assessing differences between those with and without a history of cancer for opinions, access to, and utilization of online medical records. Full models were adjusted for known confounders including age, gender, and race. Complete-case analysis was used for all analyses.

Sensitivity Analyses

Non-melanoma skin cancer patients may not represent the experience of other cancer survivors. Therefore, we conducted a sensitivity analysis where we excluded non-melanoma skin cancer patients from our study population. We also hypothesized medical record use and utilization may vary by age and gender, thus we examined potential effect modification

by age (less than 65 vs. 65 and older) and gender in separate sensitivity analyses. All statistical analyses were conducted in SAS version 9.4 (SAS Institute Inc., Cary, NC).

RESULTS

We present demographic characteristics comparing cancer survivors to respondents with no history of cancer in Table 1. Among 3491 HINTS respondents, representing an estimated 248,808,025 non-institutionalized U.S. residents, cancer survivors were more likely to be older (63.21 years vs. 47.35 years, <0.0001), of White race (90.03% vs. 74.28%, <0.0001), and have higher levels of educational attainment ($p = 0.0148$) when compared to respondents with no history of cancer. There were no differences in gender and income by history of cancer. The most frequent cancer types among HINTS respondents with a single primary cancer were skin, breast, cervical, colon, and prostate. Approximately 20% of cancer survivors reported being diagnosed with more than one cancer type.

Cancer survivors were more than two-fold more likely (adjusted odds ratio (AOR) = 2.05; 95% CI = 1.24, 3.41) to report having a provider maintain a computerized medical record when compared to respondents with no history of cancer after adjustment for age, race, and gender (Table 2). Cancer survivors were 44% more likely (AOR = 1.44; 95% CI = 1.03, 2.03) to feel very confident in the safe guards of medical records when compared to respondents with no cancer history. Cancer survivors had a 46% increased likelihood of ever being offered online records (AOR = 1.46; 95% CI = 1.07, 2.01) when compared with those with no history of cancer; of which cancer survivors were six-fold more likely to report being offered access by a health care provider (AOR = 5.88; 95% CI = 1.79, 19.31). Cancer survivors were equally as likely to access online medical records at least once in the last 12 months of completing the survey as respondents without a history of cancer (Table 3). Cancer survivors were greater than two-fold more likely to report *not* accessing online medical records because they preferred to speak directly to their healthcare provider (AOR = 2.24; 95% CI = 0.99, 5.05). Cancer survivors and those without cancer history were equally likely to report concerns with privacy as a reason for not accessing medical records (AOR = 1.13; 95% CI = 0.43, 2.97). There was no difference between cancer survivors and those without a history of cancer with regards to not accessing online records due to lack of online access or no reported need. Similarly, there was no difference in cancer survivors and those without a history of cancer in utilizing medical records for medication refills, paperwork, to request a correction, messaging a healthcare provider, downloading records, or adding information. Models with additional adjustment for socioeconomic characteristics were consistent with our primary models (data not shown).

Sensitivity Analyses

Findings were consistent when non-melanoma skin cancer patients (~28%) were excluded from analyses, Supplemental Tables 1–2. (Supplemental Digital Content 3).

Gender stratified models are presented in Supplemental Tables 3–4 (Supplemental Digital Content 3). In general, our findings were consistent between men and women. However, among men, cancer survivors were significantly more likely to report using an online medical record to add information (Men AOR = 3.15; 95% CI = 1.32, 7.49). Among women,

cancer survivors did not differ from those without a history of cancer in utilizing online medical records to add information (Women AOR = 0.83; 95% CI = 0.37, 1.87).

Age stratified models (age 65 and older vs. less than 65 are presented in Supplemental Tables 5–6 (Supplemental Digital Content 3). Once again, findings were generally consistent between individuals age 65 and older and individuals less than 65 years of age. However, cancer survivors less than 65 years of age were more likely to report that they did not utilize online medical records because they preferred to talk to a provider directly as compared to those less than 65 without a history of cancer (less than 65 AOR = 4.53; 95% CI = 1.18, 17.44), although results were very imprecise due to small sample sizes in stratified analysis. No significant association was observed among those 65 and older (AOR = 0.88, 95% CI = 0.27, 2.84).

DISCUSSION

In this study, we examined how cancer survivors compare to those without a history of cancer with regards to the utilization and perception of medical records. Cancer survivors represent a distinct patient population that faces many unique challenges including coordinating care across multiple providers, organizing and maintaining medical records from multiple institutions and providers during and after treatment completion. In this nationally representative sample, we found that cancer survivors were more likely to report that a provider maintains their computerized medical records, and were also more likely to report receiving an offer to access online medical records compared to those without a history of cancer. This increased access to online medical records could be partly attributed to cancer survivors' having multiple providers, particularly at large medical centers with electronic medical systems as well as extended engagement with healthcare systems due to their ongoing survivorship care. However, despite this, in our study, we observed that over 40% of cancer survivors have never accessed their online medical records. Increasing online medical utilization has the potential to increase patient engagement, enhance continuity of care, promote patient empowerment, and aid in informed decision-making among all patients, and particularly cancer survivors.^{14,20,29}

While a greater proportion of cancer survivors reported receiving access to online medical records, they were no more likely to utilize medical records than respondents without a history of cancer (AOR = 1.13; 95% CI = 0.69, 1.86). This observation of increased access to online medical records without increased utilization, suggests the interplay of multiple determinants that influences a survivor's utilization of online medical records. Specifically, cancer survivors were almost two-fold more likely to report not using online medical records because they prefer to speak directly with their provider. The current study supports previous findings that effective patient-provider communication is an important determinant for online medical record utilization.^{22,30} Wherein the current study observed that respondents prefer to talk directly with a healthcare provider rather than accessing online medical records; Strekalova et al.³¹ observed that a healthcare provider's recommendation increased the likelihood of online medical record utilizations. Collectively, these findings underscore patient-provider communication as a vital determinant of online medical record utilization and effective survivorship care. Previous research has shown that patient-provider

communication is related to both cancer patients' quality of life and satisfaction.³² Although online medical records can potentially enhance patient-provider communication by allowing patients to prepare for their inpatient visits and better recall relevant care issues³³, our findings suggest that cancer survivors must feel assured that online medical information supplements, rather than replaces, direct contact with a provider. Moreover, cancer survivors may prefer to talk directly with providers due to the complexity of cancer follow-up care and psychosocial needs. Cancer survivors are more likely to have additional scans and tests for recurrence³⁴, as compared to those without a history of cancer. While online access to these tests may be convenient, the absence of on-going trusted patient-provider communication to help interpret tests results and address immediate questions may discourage utilization of online medical records altogether.

In addition, although we adjusted for age in our models, cancer patients tend to be older than the general population, and as such, may be more likely to have limited digital literacy. In general, older adults often prefer written materials over digital materials and report feeling ignored by organizations implementing digital technologies.³⁵ Previous research among breast cancer survivors 55 years and older, found that cancer survivors preferred to receive survivorship care information from brochures rather than from the internet or computer-based educational sources.³⁶ Finally, qualitative research among patients living with a chronic disease has indicated that to be effective, online medical records must be "multifaceted, self-care promoting, and integrated into the patient's existing health and psychosocial infrastructure".³⁷ If the cancer patients in our study did not view online medical records as useful, this may have enhanced their desire to speak directly with a provider. In our study, cancer survivors and those without a history of cancer were equally likely to report having "no need" to access medical records. We also observed that reasons for medical record utilization did not vary between cancer survivors and those without a history of cancer. The lack of observed difference in these findings could indicate that current online medical records do not fully meet the unique needs of cancer survivors. Overall, our findings further illustrate the on-going challenge of effectively integrating information technology tools with patient-provider interactions.³⁰

Beyond online medical utilization, our study also examined cancer survivors' perceptions of medical records. Given the sensitive nature of medical information regarding a cancer diagnosis and the potential consequences of unwanted medical information disclosure to employers or others, we hypothesized that cancer survivors may be more concerned with the safety and confidentiality of their online medical records. Surprisingly, we found that cancer survivors were significantly more likely to report feeling *very confident* in medical record safeguards. In addition, there was no difference in avoidance of the usage of online medical records due to privacy concerns between cancer survivors and those without a history of cancer. These findings are consistent with limited previous research. In a study where respondents were presented with various hypothetical scenarios regarding electronic health information and then asked their willingness to share the information, those with a history of cancer were more willing to share inherited genetic information as compared to those without a history of cancer.³⁸ It is possible that increased contact and interaction with the healthcare system, such as that experienced by cancer survivors, may increase confidence in

existing safeguards. The decreased confidence among those without a history of cancer may be a characteristic of a less engaged patient population.

Moreover, we did observe that among individuals less than 65 years of age, cancer survivors were significantly more likely to report not utilizing medical records because they preferred to speak directly to a provider. A corresponding association was not observed in individuals greater than or equal to 65 years of age. One possible explanation is that older patients – both with and without a history of cancer – prefer to speak to a provider directly, and being a cancer survivor does not influence this preference. This could potentially be driven by a lack of trust of online health information resources by older adults or limited digital literacy.³⁹ It is also possible that having a history of cancer induces an increased preference for direct provider communication among those younger than 65.

Our study builds on previous descriptive data²⁷, and is one of the first to comprehensively examine cancer survivors' utilization and perception of medical records as compared to those without a history of cancer, utilizing a large, nationally representative data source while accounting for important confounders. However, our study does have some limitations, including self-report bias and a cross-sectional design. It is also possible that other unmeasured comorbid conditions could impact medical record utilization and perceptions, possibly attenuating our results. In addition, we do not know which online medical records cancer survivors had access to, and ascertainment of the type of online medical records cancer survivors have access to may be important from a care coordination and/or quality of life perspective. Moreover, we were not able to control for cancer stage and severity. In addition, our study sample included both those diagnosed with cancer recently and those diagnosed many years ago (35% five or less years from diagnosis; 18% 6–10 years from diagnosis; and 47% eleven or more years from diagnosis). The inclusion of this heterogeneous group of cancer survivors may have attenuated our findings. Finally, we were not able to account for computer literacy, which could have influenced our findings. Despite these limitations, we were able to demonstrate significant differences in cancer survivors' utilization and perception of online medical records as compared to those without a history of cancer. Key strengths of this study include a large, nationally representative patient population, detailed information on medical record utilization and perceptions, and a direct comparison of cancer survivors with those without a history of cancer. Our study demonstrates that cancer survivors trust medical record safeguards more than those without a history of cancer, direct communication with a provider remains a primary concern. It is important that future efforts to incorporate online medical records into cancer survivorship care coordination enhance patient-provider communication, rather than replace it. Although access to online medical records needs to be increased, it will be important that any increases in access are accompanied by increases in utility.

Conclusion

In this nationally-representative sample, cancer survivors are more likely to report that a provider maintains their computerized medical records and are more likely to trust medical record safeguards in place than those without a history of cancer. Cancer survivors are no more likely than those without a history of cancer to choose not to access online medical

records due to concerns about privacy. However, cancer survivors are more likely to choose not to access online medical records due to a preference to speak directly with a provider.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1:

Demographic characteristics by history of cancer status, among 3491 respondents of HINTS 5 Cycle 2 – year 2018.

	All Respondents	No Cancer History	Cancer Survivors	
<i>N</i>	3491	2898	593	
Estimated <i>N</i>	248,808,025	225,448,699	23,359,326	
	<i>N</i> (Weighted %) ^a or Mean (SD)			<i>p</i> value ^b
Gender				
Male	1310 (49.10)	1091 (46.50)	219 (44.40)	0.1238
Female	1911 (50.90)	1596 (50.50)	315 (55.60)	
Age, Mean (SD)	48.83 (0.36)	47.35 (0.42)	63.21(1.13)	<0.0001
Age Group				
18 – 34	398 (23.81)	391 (25.71)	7 (5.36)	<0.0001
35 – 49	623 (26.65)	584 (28.20)	39 (11.51)	
50 – 64	1056 (30.20)	902 (29.78)	154 (34.19)	
65 – 74	697 (11.59)	527 (10.18)	170 (25.35)	
75+	455 (7.76)	291 (6.13)	164 (23.60)	
Race				
Black	551 (12.98)	484 (13.67)	67 (6.40)	<0.0001
White	2402 (75.78)	1934 (74.28)	468 (90.03)	
Other	328 (11.24)	305 (12.05)	23 (3.57)	
Education				
Less than High School	275 (8.99)	238 (9.40)	37 (4.99)	0.0148
High School Graduates	630 (22.23)	506 (21.67)	124 (27.70)	
Some College	1039 (39.99)	849 (39.93)	190 (40.57)	
College Graduate or More	1507 (28.79)	1275 (28.99)	232 (26.73)	
Income				
< \$20,000	577 (17.60)	488 (17.88)	89 (14.69)	0.1939
\$20,000 - <\$35,000	428 (11.85)	339 (11.50)	89 (15.39)	
\$35,000 - <\$50,000	404 (13.54)	334 (13.31)	70 (15.90)	
\$50,000 - <\$75,000	567 (17.81)	467 (17.65)	100 (19.37)	
\$75,000	1109 (39.20)	959 (39.65)	150 (34.65)	

^aPresented as column weighted percentage.

^b*p* values determined using either weighted Chi-square or t-tests.

Sub-groups may not sum to total respondents due to missing or invalid responses.

Odds Ratios (ORs) and 95% Confidence Intervals (CIs) for associations between history of cancer with odds of trust and access of medical records.

Table 2:

Outcome	Cancer Survivors (N = 593)		No Cancer History (N = 2898)		Model 1 ^a	Model 2 ^b
	N (%) ^c	N (%) ^c	N (%) ^c	N (%) ^c	OR (95% CI)	OR (95% CI)
Provider Maintains Computerized Medical Record						
Yes	507 (89.11)	2288 (76.17)	2.33 (1.45 – 3.75)	2.05 (1.24 – 3.41)		
No/Don't Know	76 (10.89)	583 (23.83)	-	-		
Confident in Medical Record Safe Guards						
Very	228 (42.51)	896 (31.54)	1.49 (1.09 – 2.04)	1.44 (1.03 – 2.03)		
Somewhat & Not	355 (57.49)	1970 (68.46)	-	-		
Withheld Info due to Privacy Concerns about Medical Record						
Yes	35 (8.90)	264 (9.08)	1.31 (0.63 – 2.69)	1.72 (0.82 – 3.64)		
No/Don't Know	548 (91.10)	2601 (90.92)	-	-		
Ever Offered Online Records						
Yes	347 (60.34)	1510 (49.86)	1.67 (1.24 – 2.25)	1.46 (1.07 – 2.01)		
No/Don't Know	244 (39.66)	1375 (50.13)	-	-		
Offered Online Medical Record Access by Health Care Provider						
Selected	323 (98.66)	1416 (94.04)	4.13 (1.08 – 15.76)	5.88 (1.79 – 19.31)		
Not Selected	11 (1.34)	62 (5.96)	-	-		
Offered Online Medical Record Access by Insurer						
Selected	54 (14.74)	319 (22.58)	0.72 (0.42 – 1.24)	0.66 (0.37 – 1.16)		
Not Selected	280 (85.26)	1159 (77.42)	-	-		

^aModel adjusted for age

^bModel adjusted for age, race, and gender.

^cPresented as column total and weighted percentage

(-) Represents referent outcome. No cancer history group is referent for odds ratio exposure.

Sub-groups may not sum to total respondents due to missing or invalid responses.

Odds Ratios (ORs) and 95% Confidence Intervals (CIs) for associations between history of cancer with online medical record utilization among respondents ever offered online medical record access (n=1857)

Table 3:

Outcome	Cancer Survivors (N = 347)		No Cancer History (N = 1510)		Model 1 ^a	Model 2 ^b
	N (%) ^c	OR (95% CI)	N (%) ^c	OR (95% CI)	OR (95% CI)	OR (95% CI)
Online Medical Records Access and Use Frequency						
Frequency of Use in Last 12 Months						
1	192 (58.60)		905 (58.53)	1.16 (0.71 – 1.89)	1.13 (0.69 – 1.86)	
None	145 (41.40)		587 (41.47)	-	-	
Reasons for Not Using Online Medical Record						
Prefer to Speak Directly to Provider						
Yes	115 (85.82)		431 (71.04)	1.98 (0.89 – 4.44)	2.24 (0.99 – 5.05)	
No	19 (14.18)		132 (28.96)	-	-	
No online Access						
Yes	23 (12.74)		71 (9.34)	0.90 (0.41 – 1.98)	0.99 (0.42 – 2.30)	
No	110 (87.26)		491 (90.66)	-	-	
No need						
Yes	77 (67.15)		345 (64.76)	1.04 (0.51 – 2.11)	1.02 (0.48 – 2.18)	
No	56 (32.85)		218 (35.24)	-	-	
Concerned about Privacy						
Yes	19 (14.49)		91 (12.22)	1.01 (0.40 – 2.54)	1.13 (0.43 – 2.97)	
No	114 (85.51)		469 (77.12)	-	-	
Reason Online Medical Record Was Utilized						
Medication Refill						
Selected	83 (41.69)		357 (38.49)	0.99 (0.61 – 1.62)	1.02 (0.63 – 1.65)	
Not Selected	112 (58.31)		534 (61.51)	-	-	
Paperwork						
Selected	82 (45.79)		356 (43.63)	1.25 (0.74 – 2.09)	1.30 (0.78 – 2.15)	

Outcome	Cancer Survivors (N = 347)		No Cancer History (N = 1510)		Model 1 ^a		Model 2 ^b	
	N (%) ^c	N (%) ^c	N (%) ^c	N (%) ^c	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Not Selected	115 (54.21)	531 (56.37)	-	-	-	-	-	-
To Request Correction								
Yes	20 (9.98)	60 (6.24)	1.55 (0.56 – 4.30)	1.62 (0.62 – 4.23)				
No	176 (90.02)	826 (93.76)	-	-				
Messaging HCP								
Yes	98 (46.61)	438 (52.97)	0.73 (0.46 – 1.15)	0.77 (0.49 – 1.23)				
No	100 (53.39)	451 (47.03)	-	-				
Downloading Records								
Yes	53 (24.01)	240 (25.50)	0.95 (0.56 – 1.62)	1.04 (0.62 – 1.75)				
No	144 (75.99)	652 (74.50)	-	-				
Adding Info								
Yes	55 (27.92)	210 (23.01)	1.45 (0.89 – 2.37)	1.42 (0.87 – 2.33)				
No	142 (72.08)	678 (76.99)	-	-				
Making Decision								
Yes	53 (27.15)	219 (23.52)	1.33 (0.81 – 2.18)	1.39 (0.86 – 2.26)				
No	145 (72.85)	670 (76.48)	-	-				
Usefulness								
How Useful is Medical Record?								
Very & Somewhat	159 (81.65)	735 (82.76)	0.97 (0.43 – 2.22)	0.95 (0.42 – 2.17)				
Not Very/Not At All/Don't Use	35 (18.35)	149 (17.24)	-	-				

^aModel adjusted for age

^bModel adjusted for age, race, and gender

^cPresented as column total and weighted percentage

(-) Represents referent outcome. No cancer history group is referent for odds ratio exposure.

Sub-groups may not sum to total respondents due to missing or invalid responses.