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Identifying contributors to disparities in patient access of online medical records: examining the role of clinician encouragement

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ABSTRACT

Objective: The aim of this study was to understand the influence of clinician encouragement and sociodemographic factors on whether patients access online electronic medical records (EMR).

Materials and Methods: We analyzed 3279 responses from the Health Information National Trends Survey 5 cycle 4 survey, a cross-sectional, nationally representative survey administered by the National Cancer Institute. Frequencies and weighted proportions were calculated to compare clinical encouragement and access to their online EMR. Using multivariate logistic regression, we identified factors associated with online EMR use and clinician encouragement.

Results: In 2020, an estimated 42% of US adults accessed their online EMR and 51% were encouraged by clinicians to access their online EMR. In multivariate regression, respondents who accessed EMR were more likely to have received clinician encouragement (odds ratio [OR], 10.3; 95% confidence interval [CI], 7.7–14.0), college education or higher (OR, 1.9; 95% CI, 1.4–2.7), history of cancer (OR, 1.5; 95% CI, 1.0–2.3), and history of chronic disease (OR, 2.3; 95% CI, 1.7–3.2). Male and Hispanic respondents were less likely to have accessed EMR than female and non-Hispanic White respondents (OR, 0.6; 95% CI, 0.5–0.8, and OR, 0.5; 95% CI, 0.3–0.8, respectively). Respondents receiving encouragement from clinicians were more likely to be female (OR, 1.7; 95% CI, 1.3–2.3), have college education (OR, 1.5; 95% CI, 1.1–2.0), history of cancer (OR, 1.8; 95% CI, 1.3–2.5), and greater income levels (OR, 1.8–3.6).

Discussion: Clinician encouragement of patient EMR use is strongly associated with patients accessing EMR, and there are disparities in who receives clinician encouragement related to education, income, sex, and ethnicity.

Conclusions: Clinicians have an important role to ensure that all patients benefit from online EMR use.

LAY SUMMARY

Online medical records are a widely available tool that might help to improve communication and help patients to better take care of their health. But past studies have shown that certain types of patients are less likely to use their online records, especially patients from racial and ethnic minorities and patients with lower income or less education. None of these studies tried to figure out the clinicians' role in encouraging patients to use these online medical records. In this study, we wanted to understand whether clinicians encouraging patients to use online medical records seemed to influence whether patients actually used these online records. We analyzed 3279 responses from a national survey that was administered across the United States by the National Cancer Institute. We found that participants who accessed their online medical records were also more likely to have received encouragement from their clinician. Participants who received encouragement from their clinicians were more likely to be female, have college education, a history of cancer, and higher-income levels. Taken together, our results suggest that clinicians have an important role to ensure that all patients benefit from online medical record access.

Key words: Electronic medical record, online patient portals, communication, physician–patient relationship, healthcare disparities

BACKGROUND AND SIGNIFICANCE

Patient portals represent a widely available tool that might address communication barriers and improve healthcare delivery. Since April 2021, the final rule for implementation of the 21st Century Cures Act prevents healthcare systems from information blocking, defined as any practice or policy that "interferes with access, exchange, or use of the electronic health information from patients and their legal guardians."[1]

As a result, healthcare institutions across the United States provide access to electronic health information (EHI) through online patient portals. Given the wide availability of portals and the federal mandate for transparency, portals represent a powerful tool to support communication and care delivery in the US healthcare system.

Patients who access their EHI through portals report several benefits. In adult cancer, patients report that using portals and reading notes helps them to make sense of their diagnosis and treatment, maintain communication with oncology clinicians, and engage with information.[2] Patients also report that reading notes through the portal provided a sense of control of one's health,[3–6] improved adherence to treatment and follow-up plans,[3] and bolstered understanding of their disease and treatment.[4,5] Across studies, only 3%–16% of adult patients reported increased worry or confusion after reading their clinical notes.[3,4,6,7]

Past studies have found socioeconomic disparities in which patients access portals. Patients and parents with lower education, historically minoritized status, and lower income are less likely to use portals,[8–11] despite 85% of US adults owning cell phones capable of accessing the portal[12] and 93% having internet access.[13] However, prior studies have not evaluated the role of clinicians in encouraging portal use to patients. In other areas of communication research, clinician endorsement of interventions is critical to support patient engagement. For example, active clinician endorsement of question prompt lists dramatically increases the frequency of questions asked by patients.[14]

In this study, we aimed to identify factors associated with online electronic medical record (EMR) access in a nationally representative sample of the 2020 Health Information National Trends Survey 5 (HINTS 5) cycle 4. We hypothesized that clinician encouragement might influence online EMR use behaviors of patients.

OBJECTIVE

The aim of this study was to understand the influence of clinician encouragement and sociodemographic factors on whether patients access their EMR online.

MATERIALS AND METHODS

Methods

We report this study following Strengthening the Reporting of Observational Studies in Epidemiology guidelines.[15]

Data sources

We used data from HINTS, a nationally representative cross-sectional survey of noninstitutionalized adults in the United States aged 18 and over. The HINTS survey was developed in 2003 by the Health Communication and Informatics Research Branch of the Division of Cancer Control and Population Sciences. The HINTS survey collects information about respondents' attitudes about health, cancer, health information, and technology. For additional details about HINTS methodology visit hints.cancer.gov.

Setting

We used data from HINTS 5, cycle 4 which was collected between February and June 2020 using a single-mode mail survey. The survey was sent to 15 350 randomly selected addresses in the United States, with over-sampling in census tracts with a higher proportion (34% or higher) of African American and Hispanic residents. Addresses were selected irrespective of medical care history or current care involvement.

Study size

After adjusting for unresolved households (ie, the households that never return a survey or refuse, or have mailings returned because they were undeliverable), the response rate was 36.7%, with a higher response rate among lower historically minoritized community (40.3%) versus higher-historically minoritized community (27.2%). Of 3777 respondents, we removed 498 responses that lacked complete data on all covariates, leaving a sample size of 3279 respondents in our final analytic dataset. Compared to the study sample, the excluded respondents were more likely to be over 70 years old, female, Hispanic or non-Hispanic Black, not college graduates, have lower incomes, have a history of cancer, and reside in rural locations (Supplementary Appendix S1).

Bias

The HINTS survey oversampled addresses in areas with higher densities of African Americans and Hispanic Americans to attempt to overcome potential nonresponse bias in these populations. In addition, to examine and adjust for potential bias in our study design, we examined differences in characteristics between respondents in our final analytic dataset and those that were removed due to missing data (Supplementary Appendix S1). Finally, we employed survey weights in analyses to ensure national representativeness of study results. Analyses were conducted in STATA 17.0 using sample weights to produce population point estimates and a set of 50 jackknife replicate weights to compute variance estimates. Weights were supplied by the Westat for the HINTS survey to account for nonresponse and noncoverage biases to the fullest extent possible. Weights were calculated based on probability of being sampled within the household, household nonresponse, and demographic information from the 2018 American Community Survey.

Variables

Our main outcome variables in this study were (1) a binary variable capturing whether respondents ever accessed their online EMR (ie, 1 if the answer to question "How many times did you access your online medical record in the last 12 months?" was greater than 0, 0 if the answer was 0), and (2) whether respondents were encouraged to use their portal (ie, 1 if the answer to question "Have any of your health care providers, including doctors, nurses, or office staff, ever encouraged you to use an online medical record?" was yes, 0 if the answer was no).

Our main independent variables of interest were the following self-reported respondent characteristics: age, gender assigned at birth, race and ethnicity, education, history of cancer, and history of chronic disease. For age, we created an ordinal variable with the following age groups: 18–29, 30–39, 40–49, 50–59, 60–69, and over 70. For sex, we created a binary variable indicating whether the respondent was listed as male or female on their original birth certificate. For race and ethnicity, we created 5 binary variables following the 5 US census categories for race and ethnicity based on self-report: Hispanic, non-Hispanic Asian, non-Hispanic Black or

African American, non-Hispanic White, and non-Hispanic other. For education, we created a binary variable which indicated whether the respondent completed college or postgraduate education. For history of cancer, we created a binary variable indicating whether the respondent reported ever being diagnosed with cancer. For history of chronic disease, we created a binary variable indicating whether the respondent indicated they had ever had diabetes, high blood pressure, heart condition, lung disease, or depression. We chose to operationalize chronic disease as a binary variable due to high collinearity among disease prevalence. We present results with chronic diseases examined separately in Supplementary Appendix S2.

Respondents who reported not accessing their EMR in the past 12 months were asked whether they did not access their EMR because they: (1) preferred to speak to their health care provider directly, (2) did not have a way to access the website, (3) did not have a need to use their EMR, (4) were concerned about the privacy or security of the website that hosted their EMR, (5) did not have an online medical record, (6) found it difficult to log in (eg, having trouble remembering a password), (7) were not comfortable or experienced with computers, and (7) had more than 1 online medical record. We created binary variables yes/no for each response and examined bivariate distributions of responses by respondent characteristics.

Statistical methods

We ran descriptive analyses to understand the distribution of our main outcome variables by respondent characteristics. We performed unadjusted bivariate logistic regression to assess the relationship between our main outcome variables and respondent characteristics. Then, we ran 3 sets of multivariate logistic regression models. The first model regressed respondent characteristics on EMR use. The second model regressed respondent characteristics and encouragement on EMR use. The third model regressed respondent characteristics on encouragement. Finally, of respondents who did not access their EMRs online, we used 2-tailed chi-squared tests to determine statistical significance of differences in reported reasons for nonuse by groups.

RESULTS

The estimated percentage of US adults who accessed their EMR was 41% and the estimated percentage of US adults who were encouraged to access their EMR was 51%. EMR users were more likely to be female compared to male, non-Hispanic White compared to racial and ethnic historically minoritized Americans, have a college degree or higher, have higher incomes, and have a history of cancer (Table 1) Americans who reported being encouraged to access their EMR online were more likely to be female compared to male, non-Hispanic White compared to racial and ethnic historically minoritized Americans, have a college degree or higher, have higher incomes, and have a history of cancer (Table 1).

In bivariate logistical regression, we observed significant differences in the rate of both access and encouragement by age, gender, ethnicity, race, education, income, and history of cancer (Table 2). Participants were more likely to have used the EMR if they received encouragement from their clinical team (odds ratio [OR], 11.5; 95% confidence interval [CI], 8.5–15.3), were female compared to male (OR, 1.7; 95% CI,

1.4–2.1), were non-Hispanic White compared to racial and ethnic historically minoritized Americans (OR, 1.8; 95% CI, 1.3–2.3), had a college degree or higher (OR, 2.5; 95% CI, 2.0–3.2), had higher income, and had a history of cancer (OR, 1.7; 95% CI, 1.2–2.4). Similarly, reporting clinician encouragement to use EMR was associated with being female compared to male (OR, 1.6; 95% CI, 1.2–2.0), non-Hispanic White compared to racial and ethnic historically minoritized Americans (OR, 1.3; 95% CI, 1.0–1.7), having college education or higher (OR, 1.9; 95% CI, 1.5–2.4), having higher-income categories, and having a history of cancer (OR, 1.6; 95% CI, 1.2–2.3) (Table 2).

In multivariate analyses we found that, controlling for other patient characteristics, EMR use was associated with female gender (OR, 1.9; 95% CI, 1.5–2.4), having a college degree or higher (OR, 2.0; 95% CI, 1.5–2.7), having higher-income categories, and having a history of cancer (OR, 1.9, 95% CI, 1.3–2.6; Table 3, model 1). Hispanic ethnicity was inversely associated with EMR use, compared to non-Hispanic White (OR, 0.5; 95% CI, 0.3–0.7). When including encouragement in the model, we found that income was no longer a significant covariate (Table 3, model 2). Controlling for all other factors, receiving encouragement was associated with female gender (OR, 1.7; 95% CI, 1.3–2.3), having a college degree or higher (OR, 1.5; 95% CI, 1.1–2.0), having annual incomes greater than 20k, and having a history of cancer (OR, 1.8; 95% CI, 1.3–2.5; Table 3, model 3).

The most frequently cited reasons for not accessing the EMR online were: preferring to speak directly with their provider (68%), followed by no need (61%), no online medical record (32%), privacy/security concerns (24%), uncomfortable or inexperienced with computers (19%), no way to access (20%), log-in problems (18%), and multiple medical records (5%). In Table 4, we present these reasons for not accessing the EMR, stratified by participant characteristics.

DISCUSSION

In this nationally representative dataset, we found overall low rates of online EMR use with statistically significant disparities by gender, race and ethnicity, and education, which may be partially driven by differential rates of encouragement from clinicians. We found that patients who were male, Hispanic, had less education, or had incomes under $50 000 were significantly less likely to access EMR than their female, White, college-educated, and higher-income counterparts. These findings are consistent with prior studies, which showed that education, gender, and race and ethnicity were associated with accessing portals[16,17] and e-communicating with clinicians in both pediatric and adult medicine.[8–11,18] These disparities matter because portal use is associated with improved communication, patient understanding, and quality of care.[10,19] Furthermore, in 2013, the Meaningful Use program was introduced to ensure the widespread availability of portals in the US healthcare system. However, our findings suggest that nearly 10 years later, portal use overall is still relatively low, especially among marginalized populations.

Unlike these prior studies, our analysis shows that clinician encouragement plays an important role in encouraging patients to access their EMR through online patient portals. Our analyses suggest that, even after controlling for structural inequities that could contribute to low portal use among marginalized groups, encouragement still plays an outsized

Table 1. Patient characteristics by patient online EMR use and encouragement, population estimates (*n* = 3279)

		Accessed		Encouraged	
	Total population percent	Percent of subgroup	*P*-value	Percent of subgroup	*P*-value
Total		41		51	
Age group			.053		.101
18–29	19	36		44	
30–39	16	42		54	
40–49	19	46		52	
50–59	19	48		58	
60–69	15	40		50	
Over 70	12	34		47	
Sex assigned at birth			<.001		.001
Male	49	35		45	
Female	51	48		56	
Race/ethnicity			<.001		.021
Hispanic	17	24		41	
Non-Hispanic Asian	5.2	46		52	
Non-Hispanic Black or African American	11	39		48	
Non-Hispanic White	64	46		54	
Non-Hispanic other	3.2	38		66	
Education			<.001		<.001
Less than college	69	34		46	
College degree or higher	31	57		62	
Income			<.001		<.001
<20k	14	28		33	
20–49k	24	34		45	
50–99k	31	43		52	
Over 100k	31	52		62	
Cancer history			.002		.007
History	8.9	53		62	
No history	91	40		50	
Chronic disease			<.001		.001
History	58	48		55	
No history	42	32		45	
Urban/rural			.351		.672
Urban	88	42		51	
Rural	12	37		50	

Note: *P*-values indicate statistical significance of Pearson's chi-squared tests for difference between accessed/encouraged by subgroup membership.

role in predicting online EMR use. This is a critical finding since clinician behavior is a modifiable factor with significant room for improvement—only 51% of all respondents reported being encouraged by their clinician to use the EMR. Prior studies of health behavior change suggest that clinicians can use 5 key strategies to encourage use of portals: "emphasizing patient ownership; partnering with patients; identifying small steps; scheduling frequent follow-up visits to cheer successes, problem solve, or both; and showing caring and concern for patients."[20] Future studies must identify strategies to successfully encourage patients in using portals for accessing their EHI. Furthermore, healthcare organizations must support clinicians in this endeavor by developing standardized workflows and accessible technologies to support portal use.

Respondents who were Hispanic, male, and noncollege educated were less likely to access their online EMR, even after controlling for encouragement. These disparities in access could be related to patient preferences, structural barriers such as internet and computer access, technological literacy, and characteristics of the portal interface, such as language, user interface, and complexity of content. Our findings also suggest that these disparities could partially be attributed to clinicians' actions, influenced by implicit biases

that influence the tone, content, or frequency of discussions encouraging online EMR use.

Although Hispanic Americans were least likely to access the online EMR (24% compared to 46% of non-Hispanic White Americans) compared to other racial and ethnic groups, they were not less likely to be encouraged to use the portal in multivariable analysis. Prior work suggests that language barriers could play a role in portal access. Hispanic patients demonstrated lower internet health information-seeking behaviors, associated partially with foreign-birth and language preferences.[21,22] While some components of portals can be translated to other languages, most of the content is in English. Taken together with our finding that male, noncollege-educated, and lower-income respondents are less likely to be encouraged to access the EMR online, our study suggests that Hispanic populations are least likely to access EMR due to multiple confounding factors, exacerbated even more by the fact that Hispanic men are less likely than other men to enroll and complete college[23] and undocumented Hispanic immigrants are less likely to access any healthcare services[24] compared to other racial and ethnic groups. The role of multiple confounding factors is supported by our findings that Hispanic ethnicity is associated with encouragement in bivariate analysis, but not when adjusted for these other

Table 2. Unadjusted bivariate logistic regression results (OR [95% CI])

	Accessed	Encouraged
Encouraged	11.45*** [8.55, 15.34]	
Age group (ref: not in the category)		
18–29	0.75 [0.51, 1.11]	0.72 [0.49, 1.06]
30–39	1.00 [0.71, 1.41]	1.16 [0.83, 1.63]
40–49	1.24 [0.90, 1.70]	1.04 [0.74, 1.45]
50–59	1.41* [1.03, 1.93]	1.39* [1.05, 1.86]
60–69	0.92 [0.69, 1.22]	0.94 [0.73, 1.23]
Over 70	0.72* [0.56, 0.93]	0.83 [0.64, 1.07]
Gender assigned at birth (ref: male)		
Female	1.69*** [1.37, 2.13]	1.56** [1.20, 2.00]
Race/ethnicity (ref: not in the category)		
Hispanic	0.39*** [0.28, 0.55]	0.60* [0.41, 0.88]
Non-Hispanic Asian	1.21 [0.64, 2.30]	1.02 [0.56, 1.87]
Non-Hispanic Black or African American	0.88 [0.59, 1.29]	0.87 [0.60, 1.25]
Non-Hispanic White	1.75*** [1.33, 2.32]	1.32* [1.04, 1.68]
Non-Hispanic other	0.86 [0.42, 1.79]	1.89 [0.89, 4.03]
Education (ref: less than college)		
College degree or higher	2.53*** [2.00, 3.20]	1.93*** [1.53, 2.43]
Income (ref: not in the category)		
<20k	0.51** [0.33, 0.80]	0.41*** [0.29, 0.59]
20–49k	0.65* [0.47, 0.90]	0.75* [0.56, 0.99]
50–99k	1.06 [0.85, 1.32]	1.07 [0.81, 1.41]
Over 100k	1.90*** [1.41, 2.55]	1.95*** [1.45, 2.61]
Cancer history (ref: no history)		
History of cancer	1.69** [1.22, 2.35]	1.63** [1.15, 2.32]
Chronic disease history (ref: no history)		
History of chronic disease	1.95*** [1.49, 2.56]	1.46** [1.17, 1.83]
Urban/rural (ref: urban)		
Rural	0.82 [0.54, 1.25]	0.94 [0.69, 1.27]

Note: *P*-values indicate statistical significance for difference between accessed/encouraged by subgroup membership; $n = 3279$.
* $P < .05$.
** $P < .01$.
*** $P < .001$.

Table 3. Multivariate regression model results (adjusted odds ratios [95% CI])

	Encouraged	Accessed (not incl. encouragement)	Accessed (including encouragement)
Encouraged	N/A	N/A	10.34*** [7.66, 13.97]
Age group (ref: 18–29)			
30–39	1.20 [0.75, 1.92]	0.85 [0.50, 1.44]	0.74 [0.40, 1.37]
40–49	1.09 [0.67, 1.77]	1.06 [0.67, 1.68]	1.06 [0.60, 1.87]
50–59	1.26 [0.76, 2.07]	1.01 [0.65, 1.57]	0.88 [0.55, 1.41]
60–69	1.01 [0.67, 1.53]	0.73 [0.45, 1.17]	0.68 [0.39, 1.17]
Over 70	0.88 [0.57, 1.33]	0.55** [0.35, 0.85]	0.52* [0.30, 0.89]
Gender assigned at Birth (ref: male)			
Female	1.74*** [1.31, 2.32]	1.88*** [1.47, 2.41]	1.58** [1.20, 2.07]
Race/ethnicity (ref: non-Hispanic White)			
Hispanic	0.8 [0.53, 1.20]	0.49*** [0.33, 0.71]	0.46** [0.28, 0.76]
Non-Hispanic Asian	0.87 [0.48, 1.59]	0.86 [0.43, 1.71]	0.87 [0.45, 1.69]
Non-Hispanic Black or African American	0.95 [0.65, 1.40]	0.79 [0.53, 1.19]	0.78 [0.46, 1.32]
Non-Hispanic Other	2.13 [0.86, 5.29]	0.78 [0.32, 1.89]	0.49 [0.17, 1.37]
education (ref: less than college)			
College degree or higher	1.45* [1.07, 1.96]	1.98*** [1.47, 2.65]	1.92*** [1.36, 2.69]
Income (ref: <20k)			
20–49k	1.79** [1.19, 2.71]	1.31 [0.79, 2.18]	0.99 [0.52, 1.87]
50–99k	2.36*** [1.55, 3.58]	1.84** [1.18, 2.86]	1.26 [0.76, 2.08]
Over 100k	3.64*** [2.20, 6.04]	2.60*** [1.56, 4.34]	1.57 [0.88, 2.79]
Cancer history (ref: no history)			
History of cancer	1.77** [1.26, 2.49]	1.85*** [1.32, 2.59]	1.54* [1.04, 2.29]
Chronic disease history (ref: no history)			
History of chronic disease	1.65*** [1.30, 2.10]	2.38*** [1.78, 3.19]	2.28*** [1.65, 3.15]
Urban/rural (ref: urban)			
Rural	0.96 [0.70, 1.32]	0.75 [0.51, 1.10]	0.7 [0.43, 1.13]

Notes: weighted estimates; $n = 3279$.
* $P < .05$.
** $P < .01$.
*** $P < 0.001$.

Table 4. Percentage of respondents who did not access their EMR online and reasons for not accessing (population point estimates)

	Prefer to speak directly (%)	No need (%)	No record (%)	Privacy/security concern (%)	Comfort (%)	No way to access website (%)	Log-in problems (%)	Multiple records (%)
All respondents	68	61	32	24	19	20	18	5.2
Age group (*P*-value[a])	**.006**	.244	.549	.329	**<.001**	.183	.303	**.042**
18–29	58	66	38	17	7.8	22	12	1.9
30–39	61	61	31	22	10	14	18	5.9
40–49	58	61	32	26	14	16	21	6.4
50–59	76	67	31	26	18	19	17	4.8
60–69	81	53	31	33	39	24	26	9.6
Over 70	82	54	27	26	44	31	20	3.6
Biological gender (*P*-value)	.548	**.030**	.784	**.036**	.521	.134	**.009**	.469
Male	67	65	33	21	19	23	15	4.7
Female	69	56	32	28	21	18	22	5.9
Race/ethnicity (*P*-value)	.445	**<.001**	.228	.464	.832	.205	.608	**.002**
Hispanic	63	55	28	23	17	20	21	3.2
Non-Hispanic Asian	69	50	34	23	21	15	21	4.4
Non-Hispanic Black or African American	76	40	24	30	20	33	20	4.3
Non-Hispanic White	69	69	36	24	20	19	17	5.3
Non-Hispanic other	61	56	28	12	13	20	14	22
Education (*P*-value)	**.014**	.854	.598	.733	**<.001**	.190	.162	.234
Less than college	71	61	32	25	23	22	19	4.8
College degree or higher	59	61	34	23	6.9	17	16	6.6
Income (*P*-value)	**.002**	**.014**	.906	.464	**<.001**	.136	.203	.974
<20k	75	48	30	29	26	27	24	4.8
20–49k	78	62	31	27	28	24	20	5.5
50–99k	64	60	34	23	18	19	18	4.9
Over 100k	58	70	33	21	9.3	15	14	5.5
Cancer (*P*-value)	**.002**	.429	.065	.623	**<.001**	.057	**.007**	.768
No history	67	62	33	24	18	20	17	5.3
History of cancer	82	56	23	26	37	29	31	4.7
Chronic disease (*P*-value)	.060	.644	.550	**.015**	**.040**	.640	.092	.469
No history	63	62	34	20	15	19	15	4.7
History of chronic disease	72	60	31	28	23	21	21	5.7
Urban/rural (*P*-value)	.960	.857	.747	**.031**	.097	.944	**.023**	.123
Urban	68	61	32	25	19	20	19	5.6
Rural	68	62	34	17	26	21	12	2.5
N	1651	1626	1598	1659	1628	1640	1607	1595

Notes: Numbers represent the percent of each subpopulation who indicated that this was a reason for not accessing their EMR online, reasons for nonuse limited to subsample of respondents who reported never accessing their EMR online; subsample sizes differ by reasons provided due to missing data, totals may not sum to 100% due to rounding.

[a] *P*-values indicate statistical significance of chi-squared test of difference between group proportions; bolded *P*-values highlight *P*-values <.05.

factors. As such, encouragement alone is unlikely to mitigate these multiple barriers. Future research should strive to more fully understand the barriers and facilitators to EMR use among Hispanic patients.

In addition to these sociodemographic factors, accessing online EMR and receiving encouragement to access EMR were associated with the history of both cancer and chronic disease. For patients with ongoing chronic health issues, this access could help them to better understand their treatment plans, prevention strategies, and support a sense of control over their health.[2–6] Patients with a history of cancer will have ongoing health complications and late effects due to the cancer and its treatments.[25,26] Many cancer survivors do not receive adequate monitoring of these complications, and many survivors struggle to access survivorship clinics with expertise in the management of these long-term health issues.[27–29] By leveraging the EMR in conjunction with other applications, clinicians might improve engagement and self-management for these patients with chronic, ongoing health needs. However, current work has mostly focused on encouraging enrollment and access to these online portals. Future

work should strive to understand how to make these online portals most useful for patients with history of chronic disease and/or cancer, rather than focusing on access alone.

Notably, data collection was conducted at the beginning of the COVID-19 pandemic. The use of telemedicine, remote patient monitoring, virtual triage and screening tools, and portals to access EHI came to the forefront at the start of the surge.[30–33] For example, when COVID testing became available, due to the volume of testing, it was not feasible for many practices to call patients with results, and some offices mandated portal access to get results. However, recent data also indicate that low-income families had limited internet access, connectivity issues, lacked internet-connecting devices, and faced financial hardships due to the pandemic. Black, Hispanic, and low-income families were hit hardest by digital inequity.[34] These factors compounded with the lack of digital literacy previously documented among Hispanic populations in the United States, could have potentially limited online access to EMR. However, the true impact of COVID on these results remains unknown and could have affected different populations uniquely. Future research is needed.

This study should be interpreted in light of limitations. First, this questionnaire did not assess for multiple structural barriers to online EMR use. Behavior is influenced by multilevel factors, and future studies should examine the role of these additional factors. Second, the constructs of "race" and "ethnicity" are incomplete and ever-changing social constructs that are used to label diverse populations of people with complex, interacting identities, societal structures, cultural norms, and heritages. For example, the category of "Hispanic" conflates many different people groups. Prior studies have found differences in health information-seeking behavior among people from Hispanic and Latin cultures, as well as differences between US-born versus foreign-born patients.[35,36] Future studies should identify factors contributing to this disparity in portal access among Hispanic and Latin subpopulations. This same recommendation must be applied to the racial categories as those do not take into consideration the complexity of different racial groups that represent the diaspora of Black/African American, Asian, Pacific Islander, and Indigenous communities. Despite this limitation, we believe that the use of racial and ethnic categories can highlight areas where disparities exist and serve as proxy for other factors that are difficult to measure, such as structural or interpersonal racism. Third, the HINTS data are cross-sectional and only represent 1 point in time. Thus, the associations found in this article are not necessarily causal. Likewise, data collection was conducted at the beginning of the COVID-19 pandemic. This may have affected access patterns both in favor of, and against both access and survey completion. Finally, while the response rate of 36.7% could lead to selection bias, we believe that the sampling and weighting strategy employed by HINTS administrators minimized this bias and improved representativeness and generalizability. Future studies should aim to confirm these results with more detail and higher response rates in local settings. Lastly, while not a limitation, these results precede the enactment of the 21st Century Cures Act mandate in April 2021 which required that all electronic portals be available to patients in a timely manner and free of charge. While many organizations are using portals to satisfy this requirement, we cannot observe for changes related to this mandate.

CONCLUSION

Clinician encouragement of EMR use is strongly associated with patients accessing their EMR online. In addition to finding persistent disparities in online EMR use related to gender, race and ethnicity, education, and income found in previous HINTS cycles, we also found disparities in clinician encouragement of portal use among similar subgroups. Future studies should evaluate the role of clinician behaviors in facilitating portal use, and how to facilitate these supportive clinician behaviors. The 21st Century Cures Act guarantees the widespread access to EHI; therefore, it is imperative to ensure that the benefits of the policy change are accessible to all patient populations.

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AUTHOR CONTRIBUTIONS

BAS and SL contributed to the conception and design of the work, acquisition of data, interpreting data, and drafting and revising the manuscript. JEBB, AES, and JWM contributed to the conception and design of the work, interpretation of data, and revision of the manuscript. All authors approved the final manuscript and agree to be accountable for all aspects of the work.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *JAMIA Open* online.

CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY

This study analyzed publicly available data from the HINTS dataset. This data can be accessed from https://hints.cancer.gov/data/download-data.aspx.

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