Use of telehealth for cancer screening in primary care during COVID-19: an analysis of the Council of Academic Family Medicine Educational Research Alliance Survey 2022

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Background: *The COVID-19 pandemic caused rapid uptake of telemedicine in primary care settings affecting cancer screening.*
Objective: *This study aimed to understand provider perception of future cancer incidence and telehealth feasibility in cancer screening.*
Methods: *Data were gathered and analyzed as part of the 2020 Council of Academic Family Medicine's (CAFM) Educational Research Alliance (CERA) survey for primary analysis. The 2020 General Member COVID Survey examined demographics, the impact of faculty isolation, E-learning experience, cancer screening during COVID-19, and outpatient prenatal care. Survey participants were practicing family medicine physicians who were members of one of the CAFM organizations, with a response rate of 14.5%. Descriptive statistics were calculated. Analysis of Variance (ANOVA) was used to evaluate the relationship between telehealth sufficiency and provider age or year they earned their highest degree. Logistic regression evaluated the relationship between telehealth sufficiency and institution type.*
Results: *54% of respondents believe that there will be an increase in late-stage cancer. Respondents whose practice settings were not affiliated with medical schools were 1.94 times more likely to feel that telehealth would not be sufficient for cancer screenings in the future (odds ratio [OR] = 1.94, 95% confidence interval [CI]: 1.28, 2.93).*
Conclusion: *While our study shows that in light of the COVID-19 pandemic, primary care physicians believe there will be an increase in later stage cancer; they can also use telehealth to adequately maintain cancer screening practices. This research serves as a starting point to understanding where, in cancer screening, telehealth can be useful and how practitioners can provide high-quality hybrid care.*

Keywords: *cancer screening; primary care; family medicine; COVID-19; telehealth*

INTRODUCTION

Preventative health measures, like cancer screenings, are vital for both individual and population health.[1] Cancer screenings are important for cancer prevention, with early detection decreasing morbidity and mortality.[2] Cancer mortality has decreased 25% from 1990 to 2015, largely attributable to the introduction of early and effective screening techniques.[2] During this 25-year time period, mortality rates for colorectal cancer declined 47% in men and 44% in women[3]; the mortality rate of breast cancer decreased by 20% in women who received their recommended screenings versus those who delayed or did not receive screening[4]; and cervical cancer rates are dropped from 14.8 to 6.7 cases per 100,000 by 2011.[5]

Due to the spread of COVID-19, preventative health measures, such as cancer screenings, were largely scaled back.[6,7] Between January and April of 2020 screenings for breast, colon, and cervical cancer decreased by 95%, 86%, and 94%, respectively.[8] Moreover, many national professional organizations changed their cancer screening recommendations, with many suggesting 'immediate postponement'.[9] While these recommendations were put in place to protect patients and providers, many providers felt these changes hindered patient care.[10] Out of necessity, virtual cancer care became increasingly utilized by primary care providers.[11] Research has just begun in the use of virtual cancer screening, with limited data surrounding telemedicine feasibility and acceptance in different practice settings.[12]

Preliminary research shows promise for utilizing telemedicine for enhancing screening, acute management, and longitudinal cancer care; however, this research also highlights limitations when accounting for resources and comfortability for both patients and providers.[12,13]

We sought to address these gaps in knowledge by examining primary care providers' feelings on future cancer incidence and their sentiment on the role of telehealth in cancer screening as it pertains to practice setting. It is important to understand how practice setting influences primary care provider sentiment on telehealth sufficiency in cancer screening as these providers promote and perform the screenings, and serve as gatekeepers to specialized cancer care.[13,14] This research will aid in understanding the future impact of COVID-19 on our healthcare system from cancer-related burden and help examine the future of telemedicine in cancer screening.

METHODS

The CERA Survey

Data were gathered and analyzed as part of the 2020 Council of Academic Family Medicine's (CAFM) Educational Research Alliance (CERA) survey of practicing family physicians. CAFM is an initiative of four major academic family medicine organizations, including the Society of Teachers of Family Medicine, North American Primary Care Research Group, Association of Departments of Family Medicine, and Association of Family Medicine Residency Directors. CAFM invited members to propose survey questions for inclusion in the CERA survey. Approved projects were assigned a CERA Research Mentor to help refine questions. The project team worked with research mentors, the survey director, and the CERA steering committee to evaluate questions for consistency with the overall subproject aim, readability, and existing evidence of reliability and validity. Pretesting, conducted with family medicine educators who were not included in the sampling frame, evaluated questions for flow, timing, and readability. The American Academy of Family Physicians Institutional Review Board approved this study in November 2020.

Survey participants were members of one of the CAFM organizations. The pool excluded program directors, clerkship directors, and department chairs, based on the most recent survey of those groups. The survey contained qualifying questions to ensure that only practicing physicians and educators were participated. Survey participants were sent a link to the survey via SurveyMonkey® with a letter signed by the presidents of the four sponsoring organizations. Non-respondents received four requests to complete the survey via SurveyMonkey, and the final request was 2 days before survey closing.

The 2020 General Member COVID Survey examined demographics, the impact of faculty isolation, E-learning experience, cancer screening during COVID-19, and outpatient prenatal care. The survey population included 4,582 candidates. Of these, 177 were returned as undeliverable email addresses, and 58 were excluded (previously opted out of receiving SurveyMonkey surveys). Additionally, 64 respondents did not meet the qualifying questions and were excluded. The survey was delivered to a final sample of 4,283 family medicine physicians (4,133 U.S. and 215 Canada) between November 20, 2020, and December 15, 2020, with 862 completing the survey (14.5%). Respondents for this study were excluded if they had not provided clinical care in the past 12 months, had not earned a medical degree (MD, DO, or DNP) (195), or had incomplete data for analysis variables (45), yielding a final analytic sample size of 622.

Measures

The outcome variable, provider perceived changes in future cancer incidence due to the COVID-19 pandemic, was assessed based on the question *'during the COVID-19 pandemic I believe that changes in care seeking for cancer screening will lead to increased incidence of late stage cancer'* and measured on a five-point Likert scale ranging from 'strongly disagree' to 'strongly agree'.

Provider opinion on whether the telehealth services they had available to them were sufficient in maintaining cancer screenings was assessed based on the question '*telehealth services allow me to maintain my cancer screening practices'* and measured on a five-point Likert scale ranging from 'strongly disagree' to 'strongly agree'.

Analysis

STATA version 17.0 was used to complete the study analyses. Descriptive statistics, sample size, and percentages for categorical variables, and mean and standard error for continuous variables were generated. Additional descriptive statistics were generated for perceived change in cancer incidence and telehealth sufficiency in cancer screening. ANOVA was used to determine mean difference in telehealth sufficiency for cancer screening (dependent variable) by year the practitioner earned their highest degree and age of practitioner (both

individual independent variables). Chi-square goodness of fit was used to examine the relationship between telehealth sufficiency for cancer screening (dependent variable) and practice setting affiliation with medical school (independent variable). Mean difference, measures of association, and their corresponding confidence intervals are reported for both crude and adjusted (provider race and sex) models. Variable selection was based on prior research showing telemedicine acceptance and use fluctuations by provider age, experience level, and practice affiliation with academic institution.[15,16]

RESULTS

Participant Characteristics, Provider Perception, and Telehealth Sufficiency

The sample consisted of 60% female and 84% White. The average age of respondents was 48 (standard error [SE]: 0.5), with 94% earning MD or DO degrees with the year 2000 (SE: 0.5) being the average year they earned their degree. Twenty-six percent of participants practice in a community between 150,001 and 500,000 people, with most respondents practicing in either the South Atlantic or East North Central region. Fifty-seven percent of respondents practice in affiliation with a medical school with the majority having multiple residencies including family medicine (Table 1).

The majority of physicians feel that during the COVID-19 pandemic, changes in patient care seeking for cancer screening will ultimately lead to increased incidence of late-stage cancer and also feel that telehealth is sufficient for the maintenance of cancer screening practices (Table 1).

Association between Telehealth Sufficiency for Cancer Screenings and Medical School Affiliation

There was no significant association between telehealth sufficiency and the year the respondent received their highest degree, or respondent age (data not shown). Respondents whose practice setting was not affiliated with a medical school were 1.94 times more likely to feel that telehealth would not be sufficient for cancer screenings in the future (odds ratio [OR] = 1.94, 95% confidence interval [CI]: 1.28, 2.93). This association remained after adjusting for provider race and sex (Table 2).

CONCLUSION

Telehealth usage in cancer screening is likely to increase going forward,[17] regardless of COVID-19 prevalence. In our study, respondents who do not practice in affiliation with a medical school institution felt telehealth would not be sufficient for cancer maintenance screening practices. Prior research notes providers in smaller or less-resourced settings feel more apprehensive about telehealth uptake due to the significant financial and workforce implementation requirement.[18] Additionally, practitioners in rural settings may not have the infrastructure required to accommodate rapidly transitioning to telehealth, or a patient population that allows them to do so.[19] While patient sentiment toward telehealth feasibility is beyond the scope of this study, similar geographic and resource-based trends in patient apprehension to telehealth can be expected,[20,21] and future research should explore these themes in-depth.

DISCUSSION

Cancer screenings play a critical role in maintaining individual and population health. In the face of the COVID-19 pandemic, there has been high variability in the quantity[7] and nature[10] of cancer screenings, notably, an increase in telemedicine. This study investigated primary care providers' perception of future cancer incidence and the feasibility of telehealth in cancer screening in light of COVID-19. The majority of respondents believe that there would be an increase in future cancer incidence at later stages in light of COVID-19. The majority of respondents also believe that telehealth was sufficient to maintain their cancer screening practices.

Limitations

This study utilized a well-established national survey of family medicine providers across the United States and Canada in diverse practice and community settings. However, the survey was only sent to members of family medicine professional organizations and yielded a 14.5% response rate, a lower than average response rate compared to pre-pandemic CERA General Membership Physician Surveys.[22,23,24] For this study, respondents must have earned a medical degree and provided clinical care within the last 12 months, limiting generalizability to family medicine providers practicing clinically. If repeated among a larger group of primary care physicians (i.e., internal medicine), we anticipate a larger sample size and greater observed differences in cancer screening practices and telehealth perception. The design of the survey limited in-depth exploration of themes surrounding cancer screening and telehealth utilization. Future work should explore reasons behind differences in telehealth acceptance in cancer screening

Table 1. Sample demographic characteristics (*N* = 622).

Characteristic	*N* (%)
Sex	
Female	377 (60.2)
Male	241 (38.9)
Other	1 (0.3)
Choose not to disclose	3 (0.6)
Race	
American Indian or Alaska Native	2 (0.3)
Asian	52 (8.4)
Black or African-American	19 (3.0)
Native Hawaiian or Pacific Islander	2 (0.2)
White	523 (84)
Choose not to disclose	24 (3.9)
Ethnicity	
Hispanic	31 (5.0)
Non-Hispanic	591 (95.0)
Highest degree earned	
DNP	0 (0.0)
DO	62 (10.0)
MD	524 (84.0)
MD/PhD or DO/PhD	36 (6.0)
Workplace geographic location[a]	
New England (NH, MA, ME, VT, RI, or CT)	35 (5.6)
Middle Atlantic (NY, PA, or NJ)	73 (11.8)
South Atlantic (PR, FL, GA, SC, NC, VA, DC, WV, DE, or MD)	107 (17.0)
East South Central (KY, TN, MS, or AL)	19 (3.0)
East North Central (WI, MI, OH, IN, or IL)	121 (19.5)
West South Central (OK, AR, LA, or TX)	50 (8.0)
West North Central (ND, MN, SD, IA, NE, KS, or MO)	62 (10.0)
Mountain (MT, ID, WY, NV, UT, AZ, CO, or NM)	60 (10.0)
Pacific (WA, OR, CA, AK, or HI)	86 (13.9)
Canada	9 (1.5)
Workplace community size (persons)[b]	
Less than 30,000	39 (6.3)
30,000 to 75,000	74 (11.9)
75,001 to 150,000	107 (17.2)
150,001 to 500,000	159 (25.6)
500,001 to 1 million	88 (14.1)
More than 1 million	155 (25.0)
Institution affiliation with medical school[c]	
Yes	357 (57.4)
No	265 (42.6)
Institution residency status[c]	
Multiple residencies including family medicine	446 (71.7)
Multiple residencies not including family medicine	9 (1.5)
Only a family medicine residency	136 (21.9)
No residency education	31 (5.0)
Residency educator	
Yes	48 (7.7)

Continued

Table 1. Sample demographic characteristics (*N* = 622).

Characteristic	*N* (%)
No	574 (92.3)
	Mean (SE)
Age[d]	48 (0.5)
Year highest degree[e]	2,000 (0.5)
	***N* (%)**
Perceived change in cancer incidence[f]	
Agree	336 (54.0)
Neutral	162 (26.0)
Disagree	124 (20.0)
Telehealth Sufficient for Cancer Screening[g]	
Agree	338 (55.0)
Neutral	158 (25.0)
Disagree	126 (20.0)

SE = Standard Error.
[a] Question worded: In which state or province is your practice/program located?
[b] Question worded: Please estimate the size of the community in which your workplace is located.
[c] Question worded: Does your institution have…
[d] Participant age, in years (range 30–73).
[e] Year in which highest degree was earned in (range 1970–2019).
[f] Question worded: During the COVID-19 pandemic, I believe that changes in care seeking for cancer screening will lead to increased incidence of late-stage cancer.
[g] Question worded: Telehealth services allow me to maintain my cancer screening practices.

Table 2. Association between telehealth sufficiency for cancer screening and practice affiliation with medical school institution (*N* = 622).

	Not Medical School[a]	
	Crude OR (95% CI)	Adjusted[b] aOR (95% CI)
Telehealth Sufficient[c]		
Agree[d]	1.0 (ref)	1.0 (ref)
Neutral	1.15 (0.78,1.69)	1.08 (0.89,1.31)
Disagree[e]	1.94 (1.28,2.93)*	1.42 (1.15,1.75)*

*Significance at $p < 0.05$.
Confidence intervals that do not contain a value of 1 are indicated in bold and with *; aOR = Adjusted Odds Ratio, CI = Confidence Intervals.
[a] Based on the question: 'Is your institution a….'
[b] Model adjusted for race and sex.
[c] Based on the question: 'Telehealth services allow me to maintain my cancer screening practices'.
[d] Combines answer options 'strongly agree' and 'agree'.
[e] Combines answer options 'strongly disagree' and 'disagree'.

across diverse practice and provider types to inform practice and policy that best support patients and providers.

Disparities in cancer screening, diagnosis, and care were prevalent prior to the COVID-19 pandemic. Our findings illuminate that there could additional lapses in screenings based on provider sentiments toward screening and telehealth. While telehealth in cancer care has largely received positive feedback, our findings coincide with growing concerns surrounding accessibility for

individuals not technologically savvy and those who are older, non-White, and are of lower socio-economic status.[19] While certain aspects of cancer screening, such as history and self-exam instructions, can be conducted via telehealth, there are other aspects that require a physician (i.e., colonoscopy for colon cancer) or specialized technology (i.e., x-ray for mammogram) and limit the scope of telehealth. Moving forward, it is imperative that we have medical education tailored to helping providers feel comfortable with telemedicine and account for varying levels of telemedicine resources across practice settings. It is equally important that we fully understand the receptiveness of communities and patients to receiving virtual care. Taken together, we need a more complete understanding of which situations to utilize telehealth to provide high-quality care that benefits both patient and provider for cancer screening practices and beyond.

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