Circulation: Cardiovascular Quality and Outcomes

RESEARCH LETTER

Sociodemographic Disparities in Outpatient Cardiology Telemedicine During the COVID-19 Pandemic

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Severe acute respiratory syndrome coronavirus 2 infected millions of people, causing profound stress to health care systems. To enhance the resilience of health care delivery and to limit disease spread, health care systems implemented video and telephone visits in lieu of in-person outpatient visits. We sought to understand the differences in utilization of video visits in outpatient cardiac care across different racial and socioeconomic groups.

In this single-center retrospective study, we identified patients with outpatient cardiology encounters (in-person, video, or telephone) between March 23, 2020, and July 3, 2020, at Massachusetts General Hospital. This date range was selected as virtual visits (video and telephone) were highly encouraged during this time period, with >70% visits conducted as virtual visits. Patient characteristics included age, sex, race, language, income level, insurance type, education, and visit week. We estimated household income by assigning the median household income for the patient's zip code from the US census. Using patient-visit level data, we specified a generalized estimation equation to assess the independent association of sociodemographic variables on the likelihood of video visit. This project was approved by the Mass General Brigham Institutional Review Board. To minimize the possibility of unintentionally sharing information that can be used to reidentify private information, the analytical codes used for this study are available from the corresponding author upon reasonable request.

A total of 10113 patients (11394 visits) were included in our analysis (Table). After adjustment, older patients were less likely to have had video visits (odds ratio [OR], 0.57 [0.51–0.64], for patients 61 to 75; OR, 0.29 [0.25–0.33], for patients >75, reference ≤60). Non-English speaking patients were less likely to have had video visits (OR, 0.59 [0.46–0.76], reference: English speaking). Compared with patients with commercial insurance, Medicaid and Medicare patients were less likely to have video visits (OR, 0.75 [0.59–0.95] and OR, 0.56 [0.51–0.64], respectively). Compared with those with a college degree, those with high school or lower education were less likely to make video visits (OR, 0.63 [0.56–0.71]) while those with graduate/postgraduate degree were more likely to make video visits (OR, 1.22 [1.07–1.39]). Compared with those with a median income of >$110000, those with estimated income of $70000 or less and those with estimated income of $71000 to 90000 were less likely to have video visits (OR, 0.57 [0.50–0.65] and OR, 0.87 [0.78–0.98], respectively). Finally, at the beginning of our study period, there were no differences in the likelihood of video visit by race. However, as the weeks went by, the odds of making a video visit increased roughly by13% per week for non-Black patients while the odds of making video visit for Black patients did not change over time (Table).

Our study identified significant disparities in video telemedicine between different racial and socioeconomic groups. Patients who were Black, poorer, non-English speaking, or with lower education had lower utilization of video visits, which confirms and extends prior work to a larger dataset and longer time period.[1] Although our data source and study design limit our ability to make

Key Words: cardiology ■ coronavirus ■ health ■ health policy ■ quality improvement

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This manuscript was sent to Dennis T. Ko, MD, Senior Guest Editor, for review by expert referees, editorial decision, and final disposition.
For Sources of Funding and Disclosures, see page 913.

Circulation: Cardiovascular Quality and Outcomes is available at http://www.ahajournals.org/journal/circoutcomes

Nonstandard Abbreviations and Acronyms

OR	odds ratio

causal inferences, our results highlight the potential role of structural bias since our predictor variables are social constructs and social variables.[2] Several studies have highlighted lack of digital access in older adults especially those with lower income, an issue further compounded by existence of other disabilities.[3,4] Work schedules, broadband access, or access to computing devices may all have been mechanisms of structural bias, although we cannot directly measure these mechanisms or others from this study design. Improving access and usability for video platforms (eg, non-English software or access to broadband) could address these structural barriers and improve equity.[3,4] Conversely, payment policies that reduce access for telephone visits could worsen disparities further.

Our study has several limitations. First, it is a single-center study and the extent to which these results apply to other clinical areas is unknown. However, large administrative data sets do not typically include granular data, highlighting the importance of single-center analysis for this analytic aim. Second, we did not assess whether a decrease in accessing cardiac care overall may have contributed to observed disparity. The small number (<1%) of virtual visits prepandemic also limited our ability to compare to historical trends. Third, our study did not examine clinical outcomes related to these disparities. It is conceivable that video visits allow better communication, better assessment of patient's clinical status, and more patient satisfaction, all of which could influence clinical outcomes.

In conclusion, during the early surge, large disparities exist in the utilization of video technology in outpatient cardiology. Such differences may lead to further disparities outcomes in disadvantaged groups and worsening inequity. Urgent measures are needed to improve equity in telemedicine platforms.

ARTICLE INFORMATION

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Sources of Funding

This work was funded with a grant from the American Heart Association (18 CDA 34110215) awarded to Dr Wasfy and the Massachusetts General Physicians Organization.

Disclosures

Dr Wasfy declares serving as a co-chair of the American College of Cardiology Roundtable on Telemedicine (without compensation). The other authors report no conflicts.

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Table. Sociodemographic Characteristics of Patients and Both Unadjusted and Independent Association With Video Telemedicine

Covariate	n (%)* (N=11 394 patient-visit)	Unadjusted association†		Adjusted association‡	
		Proportion video (%)	*P* value	OR	95% CI
Sex			0.064		
Female	6578 (57.7)	36.7		Reference	
Male	4816 (42.3)	35.0		1.09	1.00–1.19
Language			<0.001		
English	10 829 (95.0)	36.7		Reference	
Non-English	565 (5.0)	20.5		0.59	0.46–0.76
Payor			<0.001		
Commercial	5201 (45.7)	48.2		Reference	
Medicaid	431 (3.8)	34.1		0.75	0.59–0.95
Medicare	5762 (50.5)	25.0		0.56	0.51–0.64
Age group			<0.001		
≤60 y	3192 (28.0)	53.2		Reference	
61–75 y	4565 (40.1)	36.1		0.57	0.51–0.64
>75 y	3637 (31.9)	20.7		0.29	0.25–0.33
Income group			<0.001		
>$110 000	2444 (21.4)	40.7		Reference	
$91 000–$110 000	2132 (18.7)	38.7		0.88	0.77–1.01
$71 000–$90 000	4101 (36.0)	38.1		0.87	0.78–0.98
$70 000 or less	2717 (23.9)	26.2		0.57	0.50–0.65
Education			<0.001		
College graduate	4466 (39.2)	41.0		Reference	
Grad school or more	1533 (13.5)	44.2		1.22	1.07–1.39
High school or less	2856 (25.1)	25.8		0.63	0.56–0.71
Declined/unavailable	2539 (22.3)	33.4		0.81	0.73–0.91
Race			<0.001		
White	10 043 (88.1)	36.4		Reference	
Asian	348 (3.1)	41.4		1.08	0.60–1.95
Black	378 (3.3)	25.4		1.36	0.77–2.40
Others/declined§	625 (5.5)	32.3		0.91	0.57–1.45
Race × week‖					
White × week				1.13	1.11–1.14
Asian × week				1.13	1.06–1.20
Black × week				1.03	0.97–1.09
Others × week				1.12	1.08–1.18

OR indicates odds ratio.

*Proportion of total sample by sociodemographic characteristic.

†Univariate comparisons based on χ^2 tests.

‡OR estimates based on multivariable logistic regression adjusting for sex, age, race, neighborhood median income, education level, language at home (English vs others), and payor group.

§Including patients self-identified as Hispanic, Latino, or Dominican race.

‖Week is a continuous variable with value of zero for the first week of the study period. The interaction terms represent the change in the odds ratio of making a video visit as the pandemic period increases by one week.