


Changes in Care Provision During COVID-19 Impact Patient Well-Being

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Abstract

The fast onset and extensive impact of COVID-19 necessitated strict public health measures and temporary diversion of personnel and resources from other types of medical care. This study examined the prevalence of such disruptions and their impacts on patient-perceived well-being using an untargeted survey. The majority of surveyed patients experienced changes in their routine medical care. Of those whose appointments were postponed or canceled, most patients indicated an overall negative impact on their emotional and physical well-being. We highlighted the impact of disruptions in nonurgent medical care during a large-scale public health emergency.

Keywords

patient satisfaction, COVID-19, health care planning or policy, patient, expectations

Introduction

Since the coronavirus outbreak was declared a pandemic by the World Health Organization in March of 2020, there have been drastic changes to US health care delivery. Delaying elective procedures and conducting nonurgent medical visits remotely have allowed hospitals and providers to concentrate on combating COVID-19 and limit the community spread of the virus (1). Although minimizing in-person patient contact prevented health care systems from becoming overburdened (2), patients whose routine care was disrupted may be at a higher risk of morbidity and mortality due to both acute and chronic health conditions and exacerbations (3–5). From March to May of 2020, the US Centers for Disease Control and Prevention reported a 10% to 23% decrease in hospital admissions and emergency department visits for acute cardiovascular events, suggesting a possible avoidance or delay of timely care for medical emergencies (6,7). Disruption to care may also lead to an increase in medical visits post-pandemic. During the SARS outbreak in 2003, chronic care hospitalizations and outpatient visits rose significantly after the crisis in Taiwan (8).

In June 2020, CDC launched a national survey to quantify the prevalence of delay or avoidance of medical care due to concerns about COVID-19 (9). Going one step further, our study aims to better understand the impact of such appointment changes in the emotional and physical well-being of patients with health concerns other than COVID-19. We

examined the prevalence of changes to patient appointments and their subjective perception of the impact of these changes on their emotional and physical states.

Method

Study Design

This study (H-40253) was approved by Boston University Medical Center institutional review board, under Exempt Category 2.1. An online Qualtrics survey was distributed publicly over social media from May 7, 2020, to May 31, 2020. Survey links were shared and participation promoted on Twitter, Facebook, Reddit, and Craigslist forums. Usability pretesting was performed for both desktop and mobile versions prior to launch. Survey responses were collected anonymously and stored temporarily in a secure database in Qualtrics.

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Measures

Demographic information assessed included age, sex, ethnicity, highest education completed, employment (and recent changes to employment), household income, and current place of residence. The survey encompassed 3 main sections: (1) medical care being sought, (2) experience with telemedicine, and (3) experience with postponement or cancellation of scheduled care. Skip logic and conditional branching were employed to navigate the survey.

Participants

All individuals older than the age of 18 and currently residing in the United States were eligible to participate. Social media distribution was determined as the best method to reach a broad audience. The survey's overall readability was adjusted to a fifth-grade reading level to ensure widespread user accessibility.

Data Analysis

Completed survey responses were analyzed for significant trends and relationships. Descriptive statistics were calculated for patient demographics, types of changes in care, types of care being sought, and patient experience with telemedicine and delays in care. We further performed multivariate logistic regression analysis for demographic associations with changes in care and patient-perceived well-being reported as odds ratio, 95% CI, and *P* value. Analysis was conducted using SPSS version 26 for Mac OS.

Results

Due to the time-sensitivity of this survey, the number of completed responses was capped at 170, recorded over a 3-week period. Although a total of 173 responses were started, 170 were fully completed, resulting in a 98% completion rate. Participants came from 33 different states, of which California ($n = 33$, 20.63%), Massachusetts ($n = 20$, 12.50%), and Washington ($n = 13$, 8.13%) were the most represented.

In our study population, the majority of participants ($n = 113$, 69.75%) experienced either a delay in care or a switch to telemedicine due to COVID-19. Of these, 54 participants reported appointment postponement, 36 reported appointment cancellation, and 87 reported using telemedicine (phone: $n = 33$, video: $n = 54$). The types of care that were affected were predominantly specialist care (37.27%, $n = 60$) and primary care (35.40%, $n = 57$), followed by mental health care (17.39%, $n = 28$). Most participants sought other methods to access medical information (73.15%, $n = 109$). Looking for medical information online was the most popular (34.90%, $n = 52$), followed by consulting personal contacts who work in the medical field (20.13%, $n = 30$) and asking family and/or friends (15.44%, $n = 23$).

Table 1 demonstrates patient demographic associations with overall change in care, postponement or cancellation of appointments, and measures of emotional and physical well-being. Younger age ($P = .002$) and higher income ($P = .014$) were found to be significant predictors of changes in care. Lower education level ($P = .039$) was also associated with postponed or canceled appointment. Figure 1 summarizes patient perceptions of delay in care. Over half of those who had a change in appointment time reported to be either very anxious/worried or somewhat anxious/worried about their medical condition (62.24%, $n = 43$). A majority of these responders also reported that the time change has either significantly or somewhat affected their overall well-being (60.40%, $n = 41$). Of note, 23.53% ($n = 16$) felt that their medical issue worsened during the delay. Women were less likely to report worsening of their medical condition during the delay ($P = .001$).

Discussion

Due to public health measures precluding nonessential close contact, many patients experienced a disruption to their routine medical care. The majority of surveyed participants observed a switch to virtual format, a postponement or cancellation of appointment time, or both. Compared to CDC's reported 40.9% of US adults who avoided medical care due to the pandemic (9), our data included patients whose care were delayed by the hospital or provider and those who experienced a change in appointment format. Our results highlight the pandemic's significant impact on other aspects of medical care, not solely due to concerns for COVID-19 incidence and transmission. Specialist care, primary care, and behavioral health care were among the most affected types of visits, which corroborates CDC's finding that routine care was the most affected compared to emergency or urgent care (9).

To combat the difficulty of engaging directly with their medical providers, patients have been exploring other ways of getting information, notably through online sources such as news websites. Interestingly, few participants indicated using social media and public forums such as Twitter, Facebook, and Reddit, while prior studies have supported the widespread use of social media within the patient population (10,11). Such use was mostly focused on patient empowerment and social support instead of information gathering, which may explain the deviation of our results. Our data suggest an increased awareness of other information outlets among this patient population.

Previous studies have shown that prolonged wait times for medical care can lead to nonadherence to treatment and adverse outcomes, such as increased length of hospitalization and mortality (12,13). However, there is very limited literature on wait times and perceived patient well-being. Our study highlights the proportion of patients who felt moderate to high levels of anxiety and worry about their medical conditions. Around a quarter of these patients also felt their

Table 1. Multivariate Logistic Regression Analysis for Demographic Factors of Survey Participants on Changes in Medical Care and Patient Perceived Well-Being in March, 2020.

Demographic category	Overall change in care		Postponed or cancelled appointment		Physical condition worsening		Feeling anxious or worried		Affected overall well-being	
	Odds ratio (95% CI)	P value	Odds ratio (95% CI)	P value	Odds ratio (95% CI)	P value	Odds ratio (95% CI)	P value	Odds ratio (95% CI)	P value
Age	0.535 (0.372-0.799) ^b	.002	0.608 (0.408-0.989) ^a	.041	1.100 (0.691-1.750)	.687	0.815 (0.524-1.267)	.363	0.566 (0.309-1.037)	.065
Gender	1.238 (0.588-2.645)	.564	1.231 (0.628-2.413)	.545	0.058 (0.010-0.335) ^a	.001	0.883 (0.286-2.727)	.829	0.271 (0.063-1.162)	.079
Ethnicity										
White	2.190 (0.316-21.115)	.376	0.752 (0.145-3.907)	.734	0.610 (0.019-19.806)	.781	0.174 (0.009-3.376)	.247	0.417 (0.011-15.603)	.636
Hispanic	6.250 (0.696-82.789)	.096	1.111 (0.225-5.494)	.897	10.008 (0.538-185.984)	.122	0.868 (0.047-15.907)	.924	0.927 (0.022-39.123)	.968
Black	2.806 (0.114-82.491)	.505		- ^c		- ^c		- ^c		- ^c
Asian	2.003 (0.273-19.491)	.443	0.577 (0.104-3.197)	.529	0.073 (0.001-7.427)	.267	0.207 (0.009-4.540)	.317	1.104 (0.027-45.866)	.958
Other	0.918 (0.109-9.929)	.972	2.650 (0.334-21.036)	.356	0.037 (0.001-1.351)	.073	0.475 (0.024-9.507)	.627		-
Highest education level completed	0.764 (0.503-1.161)	.207	0.670 (0.458-0.980) ^a	.039	0.616 (0.275-1.378)	.238	1.464 (0.737-2.908)	.276	2.013 (0.892-4.541)	.092
Household income	1.435 (1.074-1.916) ^a	.014	1.373 (1.038-1.815) ^a	.026	0.913 (0.468-1.779)	.788	1.506 (0.908-2.499)	.113	1.155 (0.639-2.091)	.633
Currently employed	0.571 (0.223-1.389)	.209	0.601 (0.266-1.356)	.220	0.237 (0.033-1.677)	.149	0.329 (0.074-1.454)	.143	0.143 (0.026-0.801) ^a	.027
Change in employment	1.130 (0.478-2.674)	.781	1.253 (0.587-2.675)	.560	0.742 (0.124-4.448)	.744	1.194 (0.328-4.350)	.789	0.387 (0.085-1.760)	.219

^aSignificance <.05.

^bSignificance <.01.

^cBlank cells indicate too small of a sample size.

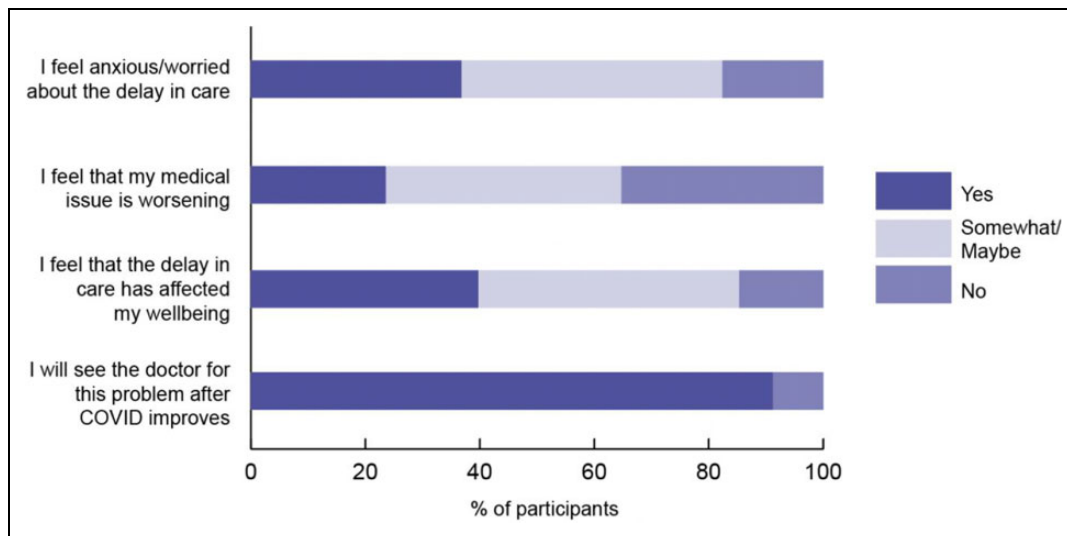


Figure 1. Stacked bar chart showing the impact of delays in medical care on patient well-being, of 68 survey participants whose appointments were delayed or canceled, collected in March of 2020.

conditions actively worsening but felt unable to address them. These findings, supported by similar data on care delay from a Finnish study (14), are concerning. There is an overlap of patients requiring timely routine care and those who are at an increased risk for COVID-19 (15). For this patient cohort, changes or delays in care may further exacerbate their increased risk for life-threatening health exacerbations. Other factors may also contribute to decreased access to care, such as disrupted public transportation, lack of phone and/or internet, and limited support services for the elderly people and persons with disability, further putting vulnerable patient groups at risk. These patients may benefit from greater transparency on the nature and course of COVID-19 in order to make informed decisions on seeking other care at the increased risk of exposure to the virus.

Our study suggests the need to offer faster, more organized, and all-inclusive responses when future health emergencies arise. Although epidemics have occurred in the past, such as SARS in 2002 to 2003 and Ebola in 2014, the relatively limited geographical containment of these events did not prepare for a robust disaster preparedness system on a global level. Pandemic preparedness, risk reduction, and recovery must be undertaken on both national and international levels to include more robust emergency management plans that require less diversion of resources, a better understanding of the types of problems that can be safely delayed without significant impacts on patient well-being, and greater patient access to information. Using a patient-centered approach, we have highlighted the needs of affected patients and identified areas for improvement.

Limitations

As in all survey studies, the applicability to a broader population must be considered. Geographically, a majority of

participants came from states that were the most affected during the study period, suggesting selection bias for patients who have been negatively affected by changes in their care. We attempted to minimize sources of error and bias inherent to surveys by using methods focused on public accessibility, but the methods of patient recruitment by social media likely limited our study population to individuals with internet access and literacy and contributed to our small sample size. In conclusion, our study demonstrates that the disruption to nonurgent medical care has been a major source of concern for patients and negatively impact well-being.

Authors' Note

The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Boston University School of Medicine or Boston Medical Center. This study (H-40253) was approved by the institutional review board at Boston University Medical Campus, under Exempt Category 2.1. All procedures in this study were conducted in accordance with the Boston University Medical Campus Institutional Review Board's approved protocols (H-40253). Written informed consent was obtained from survey participants for their anonymized information to be published in this article.

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Declaration of Conflicting Interests

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