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## Is social distancing keeping patients from the ED?



### 1. Introduction

In response to COVID-19, public health organizations issued recommendations to limit transmission. These recommendations include physical distancing, frequent hand hygiene, and use of personal protective equipment (PPE) [1,2]. In conjunction with state-level mandated shelter-in-place orders and the closure of schools and non-essential businesses, daily life in the U.S. has changed dramatically. We sought to characterize perceptions of public health recommendations and explore the decision to seek medical care for common symptoms.

### 2. Methods

We conducted a 39-question survey assessing attitudes and behaviors associated with public health recommendations. To understand the impact on individual medical decision making, we asked participants to describe their approach to care for common symptoms before and during the pandemic, classifying behaviors according to escalation of care: 1) stay home and see if it gets better (“wait and see”); 2) call my doctor; 3) present to an emergency department (ED), urgent care (UC), or call 911. We recruited U.S. adults fluent in English in mid-April 2020. The survey was administered via Amazon Mechanical Turk [3].

Descriptive statistics were calculated. Multivariable logistic regression was used to investigate for predictors of escalation or de-escalation of care. Data were analyzed using Stata Version 16.

### 3. Results

937 respondents were included. Mean age was 37.9 and most were white (74%), male (59%), medically insured (83%), college educated (50%), and without chronic health conditions (73%). All states were represented and most participants (84%) lived in area state with a stay-at-home order in place.

The majority of patients followed Centers for Disease Control recommendations for daily behaviors “often” or “all the time” (Fig. 1). Most participants followed recommendations to work from home (74%), go out only for essential errands (77%) wash hands frequently (87%) and practice social distancing (89%); only half wore a mask in public.

More than half of participants were “very” or “extremely” concerned about their personal and family’s health. About half (54.1%) felt that if they contracted COVID-19, they would develop a severe illness and 10% believed they would be unable to recover. Most participants agreed

or strongly agreed the novel coronavirus affected their daily work, family, or social activities (91%), that it is important for the general public to follow recommendations of public health officials (93%), and the pandemic will be shorter if public health recommendations are followed (88%).

Medical decision making before and after the start of the COVID-19 pandemic is visualized in Fig. 2. For all symptoms, there was an increase in “call your doctor” during the pandemic. However, fewer patients would present to an ED or UC for respiratory symptoms during the pandemic (chest pain: 38 → 33%), while rates of evaluation for abdominal pain and arm/leg weakness remained consistent.

Multivariable logistic regression of predictors of de-escalation of care did not identify any predictors consistent across all four symptoms. Males were more likely to de-escalate care for shortness of breath or weakness of an arm/leg (odds ratio (OR): 1.74 [95% CI 1.20–2.54]; OR 1.62 [95% CI 1.04–2.54]). Those with chronic conditions were less likely to de-escalate care for shortness of breath or weakness of an arm/leg (OR 0.27 [95% CI 0.13–0.56], OR 0.43 [95% CI 0.20–0.91]). Participants more concerned about their personal health were less likely to de-escalate care for abdominal pain (OR 0.48, 95% CI [0.29–0.79]). There were no identified predictors of de-escalation of care for chest pain.

### 4. Discussion

At the onset of the COVID-19 pandemic in April 2020, U.S. adults adapted their behaviors in accordance with public health recommendations and believed these mandates would lessen the impact of the pandemic. Participants reported changing how they would seek care for common symptoms, with an increase in “call my doctor” for all symptoms and a decrease in seeking emergency care for respiratory symptoms—despite COVID-19 causing primarily respiratory symptoms. This highlights the increasing role of telemedicine during this crisis and the need to further investigate how patients seek medical care.

Reduced ED visits and hospital admissions for common diagnoses during the pandemic have been puzzling—our findings highlight the importance of understanding and addressing health-related worries to understand changes in behaviors [4,5]. Fear and uncertainty are common. Most participants worry about their own and their family’s health, their ability to obtain medical care, and prolonged, severe illness if they contracted COVID-19. When people are concerned about their health, they are more likely to alter their behavior [6]. Although our survey cohort was young and relatively healthy, limiting generalizability, these results demonstrate the importance of investigating health-related worries when interpreting behaviors moving forward.

In the weeks following the initiation of public health recommendations, public perceptions were overall favorable and participants reported adherence to mandates in the setting of worry about personal health and reluctance to seek emergency care for COVID-19-related symptoms. We must consider patient fears and uncertainties regarding COVID-19 to better understand how patients seek medical care.

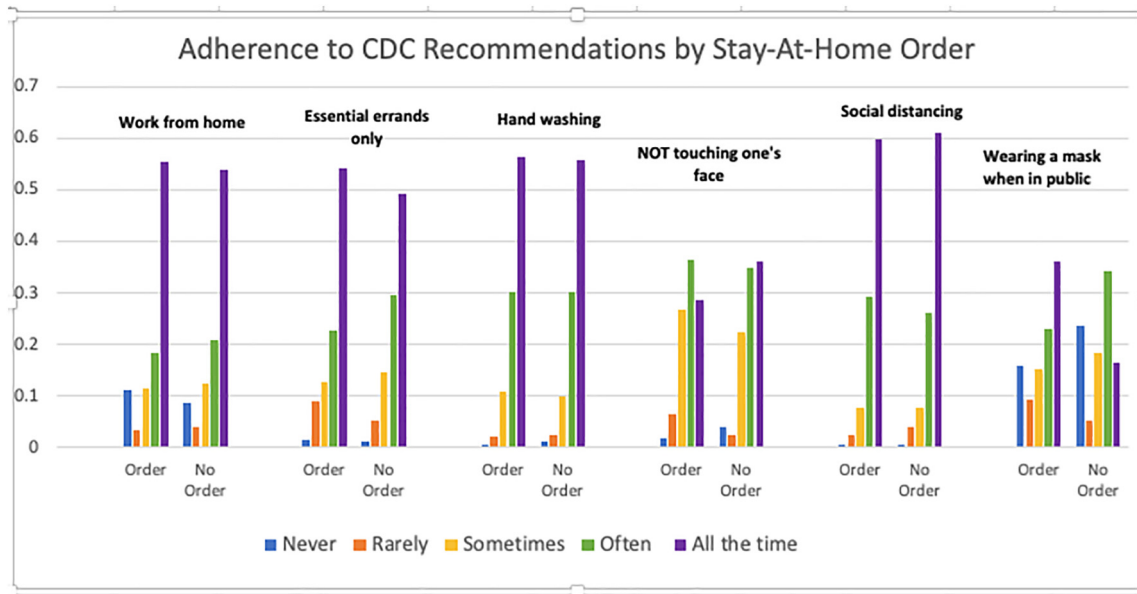


Fig. 1. Adherence to harm-reduction strategies.

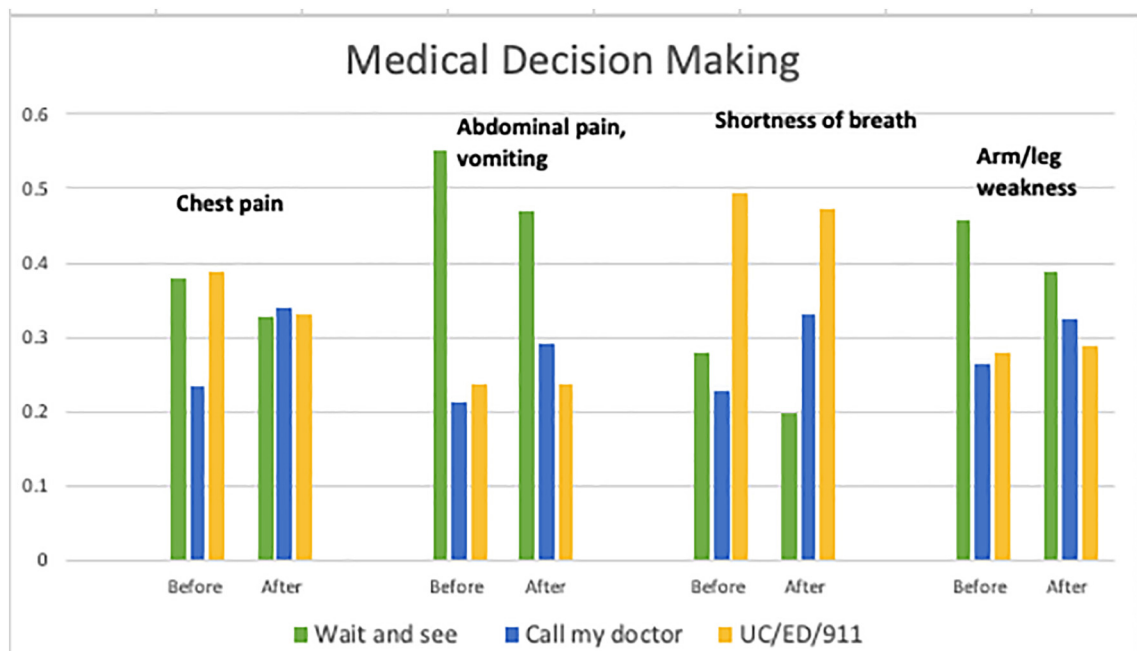


Fig. 2. Changes in healthcare decision-making.

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**Declaration of Competing Interest**

The authors report no conflicts of interest.

**Appendix A. Supplementary data**

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ajem.2020.07.025>.

## References

- [1] How Coronavirus Spreads. CDC; 2020 [https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html?CDC\\_AA\\_reVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fprepare%2Ftransmission.html](https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html?CDC_AA_reVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fprepare%2Ftransmission.html) Accessed May 8, 2020.
- [2] Advice for Public. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>. Accessed May 8, 2020.
- [3] Buhrmester M, Kwang T, Gosling SD. Amazon's mechanical Turk: a new source of inexpensive, yet high-quality, data? *Perspect Psychol Sci*. 2011;6(1):3–5. <https://doi.org/10.1177/1745691610393980>.
- [4] Lazzarini M, Barbi E, Apicella A, Marchetti F, Cardinale F, Trobia G. Delayed access or provision of care in Italy resulting from fear of COVID-19. *Lancet Child Adolesc Heal*. 2020;4(5):e10–1. [https://doi.org/10.1016/S2352-4642\(20\)30108-5](https://doi.org/10.1016/S2352-4642(20)30108-5).
- [5] De Filippo O, D'Ascenzo F, Angelini F, et al. Reduced rate of hospital admissions for ACS during covid-19 outbreak in Northern Italy. *N Engl J Med*. April 2020. <https://doi.org/10.1056/NEJMc2009166> NEJMc2009166.
- [6] Blendon RJ, Benson JM, DesRoches CM, Raleigh E, Taylor-Clark K. The Public's response to severe acute respiratory syndrome in Toronto and the United States. *Clin Infect Dis*. 2004;38(7):925–31. <https://doi.org/10.1086/382355>.

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