Perceptions on Preventative Care During the Covid-19 Pandemic: A Survey Using Clinical Scenarios

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Abstract

One significant side effect of the Covid-19 pandemic is the decline in preventative healthcare services. The reduction in inpatient and outpatient visits has been attributed to fears of contracting the virus. Our study utilized a cross sectional survey of adults to determine patient risk assessment for receiving preventative care during the pandemic, specifically mammography, colonoscopy, and immunizations, through clinical scenarios (ranked high, medium, or low risk). Based on the scenario, the respondent indicated whether they would schedule their appointment for the relevant procedure within the next month. We hypothesized that more people would choose to seek care as their symptomatic severity and risk factors increased including increased age, outweighing their Covid-19 fears against the urgency of their clinical presentation. Consistent with the hypothesis, there were statistically significant differences to increasing scenario intensity for all procedures (mammography, immunization, colonoscopy). Regarding age, low risk immunization respondents 65 years and older were more likely to get their flu shot than those in the 18-49 or 50-64 age brackets, whereas no significant differences were found for colonoscopy and mammography among eligible age groups. These empirical results epidemiologically support proposed projection models stating there will likely be an increased incidence in late-stage cancers and immunization preventable disease due to missed/unscheduled appointments attributed to the pandemic. Thus, physicians should strongly encourage their patients to receive missed preventative care.

Introduction

During the height of the pandemic, it was widely reported that fewer patients sought non-Covid-19 related healthcare. According to one poll, nearly half of Americans delayed essential medical care due to concerns about becoming infected with the virus, with 11% reporting that missing care exacerbated a medical condition.¹ The CDC reported a 42% decline in both outpatient and emergency medical visits from March-May 2020.²⁻⁴ This reduction in patient visits has been attributed to fears of contracting Covid-19.³⁻⁶ Insurance reimbursement data since the onset of the pandemic has shown that colon screenings dropped 86% and breast and cervical 94% following the declaration of a national emergency.⁷ The number of cancer screenings have risen recently but have not yet reached pre-pandemic levels.⁸ Compared to 2019, there has been a 94% decline in mammography appointments, signaling that the vast majority of patients are rescheduling or cancelling their appointments.⁹

All of this suggests anecdotally that patients were weighing the risks of contracting Covid-19 against the benefits of receiving medical services. To empirically test the extent to which participants engaged in such risk/benefit analyses, we asked participants in our study whether they would seek care during the Covid-19 pandemic based on scenarios with respect to mammography, colonoscopy, and immunizations under varying circumstances of severity. The primary outcome of the study was patient's willingness to receive preventative care.

We hypothesized:

- Greater willingness to receive care as scenario severity increases across the three modalities of preventative care.
- Less willingness to receive preventative care among higher risk Covid-19 age groups.

Methods

Survey

We used a cross sectional survey on adults (18-65+ years old) in Southern California, to assess patient risk willingness to receive preventative care, specifically mammography, colonoscopy, and immunizations, during the Covid-19 pandemic before vaccine distribution. This study qualified for self-determination exemption, which was approved by the UCI Institutional Review Board before commencement of the study. The survey was conducted over a 5-month period (July 2020 - November 2020) and analysis completed in August 2021. All individuals aged 18+ were able to participate in the survey. However, only respondents eligible for mammography and colonoscopy were included in the relevant data analysis. The anonymous survey was conducted in English and included the scenarios (3 categories with 3 questions per category) and demographic information. The scenarios focused on three main preventative medicine modalities: mammography, immunizations (seasonal influenza vaccine), and colonoscopies. For each category, there were three separate questions concerning a high, medium, or low risk scenario, stratified by the likelihood of underlying disease pathology, based on symptoms and family history. For each question, the corresponding United States Preventative Task Force (USPTF) recommendations were provided. For example, the high-risk colonoscopy scenario below included a positive family history and symptoms for colorectal cancer –

Scenario: “You are 55 years old and are 5 years overdue for your screening colonoscopy. You have a positive family history of colon cancer. You have noticed a lot of red blood in your stool and an unintentional twenty-pound weight loss. Considering Covid-19, would you schedule your colonoscopy appointment within the next month? “yes” or “no?”

Sample

We surveyed 577 adults (18-65+ years old) in Southern California by newsletters of 20 local faith groups, 3 alumni organizations, and 2 professional groups across Southern California.

Collected demographics included: sex, age, ethnicity, highest degree of education, possession of health insurance, previous use of preventative care services, and whether the participant believes they have had Covid-19.

Analyses

Descriptive statistics were conducted with Microsoft Excel software (version 16.43). PASW Statistics 18.0 software (IBM, Chicago, IL) was utilized to apply Pearson’s Chi-squared test of independence where a

p value <0.05 was considered significant. Respondents of all ages were included in analysis of flu immunization choices. Only respondents aged 50 and above were included in analysis of propensity towards mammography and colonoscopy choices.

Results

For the mammography and colonoscopy scenarios, the proportion of respondents choosing to obtain preventative medicine procedures increased significantly by given case severity (Figure 1A, 1B). For the low severity mammography scenario, 65.5% responded “Yes” whereas 86.6% (Medium Risk) ($p<0.001$) and 98.0% (High Risk) ($p<0.001$) responded “Yes.” For low-risk colonoscopy 58.1% of participants responded “Yes”, 85.7% (Medium risk) ($p<0.001$) and 98.3% (High risk) ($p<0.001$). For flu immunization scenarios, the percentage of respondents choosing to obtain an immunization varied significantly only between the low (80.9%) and medium severity (92.0%) scenarios ($p<0.001$) (Figure 1C).

Choice of mammography and colonoscopy did not differ significantly within each level of scenario severity among included age groups. On the other hand, there was a significant difference in flu immunization responses between the age groups 18-49 and 50-64 compared to the 65+ age group within the low severity scenario ($p<.001$), (Figure 2).

Respondents who have taken preventative medicine in the past were more likely to schedule a mammogram or colonoscopy in the high-risk scenario than those who have not had preventative medicine in the past ($p<0.001$). Respondents who have not had preventative medicine in the past were less likely to choose flu immunization in the low severity scenario than those who have ($p<0.001$). No significant associations were found for the preventive medicine scenarios between race, education level, past Covid-19 infection, or insurance status.

Discussion

As expected, most respondents reported that they would schedule an appointment for preventative care if they experienced severe symptoms. Moreover, significantly fewer people chose to pursue care based on the low-risk scenarios for mammography, colonoscopy, and immunizations (Figure 1), (Figure 2).

Symptomatic suspicion for underlying pathology played a significant role in patient’s decision-making calculus. For colonoscopy and mammography there was statistical significance for all scenarios with the highest and lowest compliance percentages for the high/low risk scenarios respectively, supporting our primary hypothesis. The immunization case scenario results did not follow the same pattern: the high severity scenario had a significantly lower “% response yes” than the medium severity scenario ($p>0.05$). One explanation for this discrepancy is the interpretation of scenario severity. The medium risk scenario involved diabetes, which may have been interpreted to be more severe than the high-risk scenario, which described chronic obstructive pulmonary disorder and pneumonia.

Regarding age, low risk immunization respondents 65 years and older were more likely to get their flu shot than those in the 18-49 and 50-64 age brackets (Figure 2). There was no statistical significance between age groups for high or medium immunization case severity. These results contradicted our initial hypothesis that people who are at higher risk for Covid-19 would choose to delay preventative care to avoid contagion exposure. For mammography and colonoscopies, there was no significant difference comparing the different age brackets 50-64 and 65+. However, due to the exclusion of respondents less than 50 years old, who are not recommended for mammograms and colonoscopies, these results are less striking.

The clinical significance of these results may be even more insightful than the statistical significance found. Unfortunately, preventative medicine is designed to screen for asymptomatic early disease, such as in the low-risk scenarios that we found were the most likely to be cancelled/avoided. This raises alarms for an increase in missed early-stage disease. Projection models predict delaying colonoscopies for more than a year could have a 10% decrease in total years gained through screening.¹⁰ During Covid-19 new cancer diagnoses have significantly declined, which could lead to an increased incidence in late-stage cancers.¹¹ When comparing our hypothetical preventative care compliance rates to previous years nationally, we observed a decline in low-risk mammography in comparison to the national averages (66% down from 73%) and low risk colonoscopy (58% down from 70.8%) for historically the most compliant demographic groups (i.e. Caucasian college educated adults).¹²⁻¹⁵

Study Limitations

While our results point to significant differences in people's desire to pursue preventative care based on case severity, there were limitations to our study. One of the main limitations was that our study is based on hypothetical scenarios. People may respond differently in real life when faced with decisions concerning preventative care and Covid-19 exposure risks.

Most of the survey respondents were college educated Caucasians. Thus, our results should be considered in the context of the study's population, namely educated, Caucasian men and women who historically are the most compliant with preventative medicine.¹²⁻¹⁵

Conclusion

This study highlights that patients were reluctant to seek medical care during the heat of the Covid-19 pandemic unless they were very sick. Patient education initiatives must balance the necessity of receiving preventative care with the established safety protocols. Unfortunately, Covid-19 or no Covid-19, patients will continue to develop cancer, making early detection vital, and as more variants develop, we must emphasize the importance of preventative medicine to avoid another drop-off in care.

The length and scope of the worldwide Covid-19 pandemic may have long-term unforeseen impacts on increased rates of previously preventable diseases and contagious viral pathology, with the presentation

of more advanced, difficult, and expensive treatments.¹¹ Thus, it is important to further develop robust systems to remind, encourage and engage patients to pursue neglected preventative care.

Declarations

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Consent to participate: All participants provided informed consent prior to study participation.

Consent for publication: No individuals data or images are available

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Code availability: N/A

Authors' contributions: Christopher and Clare Boldt designed the study, oversaw all aspects of data collection, management, and analysis, and reviewed, revised, and finalized the manuscript. Jonathan Pang assisted in statistical analysis. Dr. Emilie Chow and Dr. Mukamel assisted with study design and execution, data collection and data management and reviewed the final manuscript.

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Figures

Figure 1

The choice for mammography and colonoscopy, but not flu immunization, varies significantly by case severity A) Respondents choosing mammography by case severity; B) Respondents choosing

colonoscopy by case severity; C) Respondents choosing flu immunization by case severity; p-values < 0.05 (*), $p < 0.01$ (**), or $p < 0.001$ (***) are indicated; NS, not significant

Figure 2

Given the same case severity, the choice for flu immunizations significantly varies by age in the low severity case only A) Respondents choosing flu immunization by case severity and age; B) Respondents

choosing flu immunization given low case severity by age; p-values < 0.05 (*), p < 0.01 (**), or p < 0.001 (***) are indicated; NS, not significant

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Surveyappendix1.pdf](#)