Disproportionate effects of the pandemic on colorectal cancer screening: A US population-based study

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♦ Background

Previous reports indicated recovery of colorectal cancer screening after a significant drop in the first months of the COVID-19 pandemic. However, information on impact of COVID-19 on CRC screening rates and modalities specifically during a longer time frame and among different populations, including the ones with more unfavorable social determinants of health (SDoH), is extremely limited. Furthermore, there is no information on trend of overall recommendations to screening by providers during the pandemic.

♦ Objective

To examine the impact of **COVID-19** on recommendation to **colorectal cancer (CRC) screening**, screening uptake, and screening pattern using a national population-based data.

♦ Questions

-Did COVID-19 impact colorectal cancer screening uptake?
-Did COVID-19 impact pattern of colorectal cancer screening?
-Did COIVD-19 have different impact in sub-populations with unfavorable social determinants of health?

♦ Hypothesis

COVID-19 impacted different aspects of colorectal cancer screening, including referral to screening by providers, screening uptake, and pattern of screening modality. This change was **disproportionate among subgroups with unfavorable SDoH**.

♦ Methods

We extracted data from the **National Health Interview Survey 2019** and **2021**.

We aimed to compare following outcomes variable of interest between 2021 and 2019:

- Receiving **recommendations to CRC screening** by a provider.
- Rate of being **up to date with CRC screening**
- **Past two-year CRC screening uptake**
- **Patterns of screening modalities**: colonoscopy, stool-based tests, and CT Colonography.

We also conducted in-depth analyses to **investigate these trends in different subpopulations** based on following factors:

- Personal
- Socioeconomic (e.g. determinant of health)
- Clinical determinants.

We used **generalized linear models to analyze prevalence ratio (PR)** of outcome measures of interest in 2021 vs 2019.

We also analyzed **data from various quartiles (Q1-Q4),** comparing the outcome variables between each quartile of 2021 with its counterpart from 2019.

♦ Results

Our database represented **95.1 and 97 million of the US population** in 2019 and 2021, respectively.

Screening recommendations:

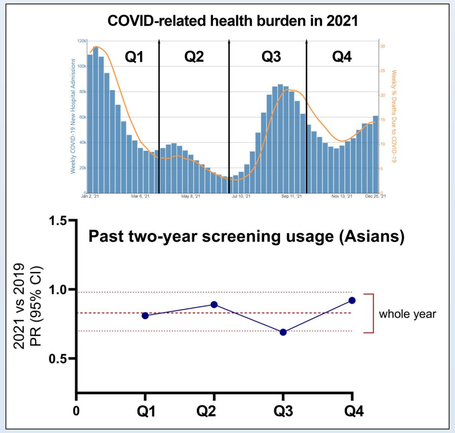
- Overall **dropped by 20%**, which was **more pronounced** in Hispanics (28%), uninsured (41%) and those with average income (35%).

Past two-year screening usage:

- Remained unchanged in total population
- **Hispanics, Asian Americans, and females** had more significant drop in past two-year colonoscopy and increase in the stool-based screening usage.
- **Asian Americans, who experienced a significant drop** in **past two-year screening (29.29% vs 35.24%, PR= 0.83).**

Being up to date with colorectal cancer screening:

- **No significant increase in** adjusted (for SDoH and clinical features) **CRC screening uptake** in 2021 compared to 2019 (adjusted PR= 1.01, 95% CI 0.99,1.02).



♦ Summary

The **COVID pandemic** has led to **reduced recommendations** for colorectal cancer screening, a **slowdown in screening uptake**, and a **notable shift in screening patterns**, **especially** among **Asian Americans**.

♦ Limitations

- The cross-sectional design examines CRC screening at two discrete points in time but does not consider underlying trends in CRC screening leading up to 2019.
- Data from the NHIS survey are self-reported and thus subject to reporting and recall biases, as respondents are asked if they have undergone screening in the preceding years.

♦ Strengths

- **First report** on impact of COVID-19 on recommendations to screening.
- **Granular analysis** of CRC screening among different population sub-populations.
- **Extended window** to examine COVID-19 impact on CRC screening.

♦ Conclusions

The **pandemic had a disproportionate impact on screening** recommendations and actual screenings.

Asian Americans were most affected due to a significant worsening of the already existing important disparity in colorectal cancer screening within this group.