

Study reveals reductions in breast cancer screening uptake during COVID-19 pandemic

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A review of COVID-19 studies globally has revealed reductions in breast cancer screening participation during 2020, with differences between geographic regions and health care settings.

The findings, published today in *eLife*, suggest the need for continued monitoring of access to [breast cancer screening](#) and early diagnosis services, to help identify if prevention services may need strengthening to increase participation for disadvantaged groups.

Breast cancer is the most common cancer worldwide, with 2.3 million cases diagnosed and 685,000 deaths in 2020. Mammography-based [screening](#) programs allow for the early detection and treatment of [breast cancer](#) to help improve [patient outcomes](#), but these programs were strained by the COVID-19 pandemic in 2020.

"Previous work on modeled evaluations of breast cancer screening, with a focus on tumor stages and mortality as patient outcomes, suggested that scenarios are likely to differ based on region and the organization of screening services," says first author Reagan Lee, a [medical student](#) at the Usher Institute, University of Edinburgh, Scotland, UK.

"For this study, we wanted to collate existing available data from different populations on breast screening participation levels before and after the first COVID-19 wave, when restrictions were put in place in nations with and without population-based screening programs."

Reagan's mentor was senior author, Professor Jonine Figueroa, a molecular epidemiologist, Honorary Fellow at the University of Edinburgh's Usher Institute and Senior Investigator and Distinguished Scholar at the U.S. National Cancer Institute, part of the National Institutes of Health.

In different countries, screening models vary from opportunistic to

population-based screening. Opportunistic screening is offered to individual patients during routine medical visits or consultations, and occurs more commonly in private health care settings. Settings for opportunistic screening can present different levels of organization and coordination.

For instance, it can be performed according to a documented screening policy, following a defined protocol, system of quality assurance, and so on. Population-based screening is a government program that invites all eligible individuals in defined groups to reach most of the population at higher risk of the disease, according to the national screening policy.

For their study, the team performed a rapid literature review to document and estimate the COVID-19 pandemic's global impact on breast cancer screening during the whole of 2020. They investigated two primary study outcomes: reported changes in screening volume and screening uptake.

They searched Medline, the World Health Organization COVID-19 database and governmental databases. From 935 independent records, they identified 26 eligible studies from 13 countries. These countries had international movement controls in place during the pandemic, including internal movement controls, stay-at home requirements, public transport closures and other measures.

Analyzing these studies, the team observed reported reductions in both screening volume and uptake rates among eight countries: Australia, Brazil, Canada, China, Italy, Mexico, the UK and US.

To investigate screening volume, they extracted summary data from 17 studies across these countries. The data came from 106,484,908 women before and after COVID-19 infection control measures were put in place. The team found that reductions in screening volume in five

countries with national population-based screening ranged from 13% to 31% during 2020. Among two countries that consist of more opportunistic screening programs—Mexico and Brazil—this reduction ranged from 61% (Mexico) to 41% (Brazil).

Within the US, which has a mixture of insurance providers, there was a wide range of change in screening volumes. Population participation volumes varied from an increase of more than 18%, to a reduction of 39%, depending on the study and health care setting. The analysis suggests that this variable change may be in part influenced by participants' insurance status, depending for example on whether they are covered by a national public or private health care insurance.

For screening uptake, the team then analyzed a total of nine studies that reported breast cancer screening participation levels, representing more than 46,257,402 people across five countries: Belgium, Brazil, New Zealand, the UK and US. They saw considerable variability in change during 2020, ranging from an increase in uptake of 2–8% in the UK to a reduction in uptake of 43.5% in Brazil. In the US, they identified consistent negative changes in screening uptake.

Many countries had physical distancing measures to reduce COVID-19 infection that likely had a role in the observed reduced overall screening volumes and uptake in 2020—both for nations with opportunistic and population-based screening programs. Reductions in screening capacity potentially another likely factor, with social distancing, staggered appointments and cleaning measures across some countries resulting in less time allocated to screening itself.

The authors add that there are certain limitations to this review. Most notably, almost all studies analyzed had a high risk of bias due to insufficient statistical analysis and confounding factors. Another key limitation is the fact that COVID-19 is an evolving field with fast

publication turnovers; more papers could have been published since the review started.

There have been many improvements in capacity and uptake to breast screening programs that were not covered in this review. Despite this, the review could be built upon to identify more clearly the global impact of COVID-19 on breast cancer detection and subsequent care as more data become available including for other countries and areas not captured in this review.

The authors noted that "While participation uptake and volumes are not conclusive of patient outcomes themselves, our work suggests they are important metrics that require monitoring by health systems and key demographics. This could help inform future prevention and early diagnosis efforts, especially to encourage greater uptake among specific groups that have lower participation rates."

The study has been published and will be included in *eLife's* Special Issue on the impact of the COVID-19 pandemic on cancer prevention, control, care and survivorship.

More information: Reagan Lee et al, A rapid review on the COVID-19's global impact on breast cancer screening participation rates and volumes from January-December 2020, *eLife* (2023). [DOI: 10.7554/eLife.85680](https://doi.org/10.7554/eLife.85680)

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