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Effect of the COVID-19 pandemic on elective cataract surgery wait times

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Objective: Lengthy wait times for cataract surgery can negatively affect patients' quality of life and increase the incidence of falls and depression. The COVID-19 pandemic has presented significant challenges to the delivery of elective cataract surgeries. The effects of the COVID-19 pandemic on cataract surgery wait times in the Alberta Health Services' Edmonton zone were studied by examining the wait times before and during the pandemic.

Methods: This study was conducted based on a retrospective population-based design. Data were compiled from a centralized database related to hospital-based cataract surgery (Royal Alexandra, Fort Saskatchewan, and WestView Health Centre) between April 2019 and March 2022 (i.e., 3 fiscal years).

Results: The average wait time for cataract surgery increased from 14.4 ± 1.4 weeks in 2019–2020 to 18.2 ± 2.7 weeks in 2020–2021 ($p = 0.005$) and then decreased to 11.5 ± 1.3 in 2021–2022 ($p < 0.001$). The number of completed surgeries decreased from 13,103 in 2019–2020 to 9,308 ($p = 0.09$) and 10,365 ($p = 0.1$) during the next 2 years. The annual operating room time for scheduled cases was reduced to 4463 hours ($p = 0.42$) and 4552 hours ($p = 0.15$) during the pandemic compared with 5541 hours before the pandemic. However, the average waitlist size decreased from 6629 at the end of 2019–2020 to 6122 ($p = 0.029$) and 4011 ($p < 0.001$) during the next 2 years.

Conclusion: The COVID-19 pandemic resulted in significantly increased average wait times for elective cataract surgery during the first year of the pandemic. Because of a reduction of the waitlist size, the wait times decreased during the second year of the pandemic.

In Canada, more than 1.1 million people aged 65 years and above (or 18.2% of the age group) develop visually significant cataracts.¹ While surgical treatment of cataracts can significantly improve patients' quality of life, lengthy wait times have been shown to negatively affect this and increase the incidence of falls due to decreased vision.² There is a strong association between the development of cataracts and depressive symptoms, which are relieved with cataract surgery.³ As demands for cataract surgery are increasing, health care systems have been constantly working on controlling and reducing wait times for this procedure.

The World Health Organization (WHO) declared the coronavirus outbreak a pandemic in March 2020. As of March 2022, Albertans have experienced 6 waves of the pandemic since the beginning of the 2019–2020 fiscal year. At the time this study was conducted, more than 583,000 cases of COVID-19 infection have been recorded in Alberta, and 4558 lives have been lost.⁴

The global COVID-19 pandemic has presented significant challenges to the health care system in balancing the delivery of elective surgical procedures such as cataract surgery with managing the pandemic. This resulted in a postponement of elective surgeries around the world because of the COVID-19 pandemic.⁵ COVID-19 has had a significant effect on surgeries in Alberta as well. Along with the ongoing pandemic, Albertans have experienced 242% increase in the postponement of scheduled nonurgent surgeries (from 3599 to 8693).⁶

Alberta Health Services (AHS) has had to postpone thousands of nonurgent scheduled surgeries at various points since the beginning of the pandemic to increase the number of hospital beds, physicians, and staff required to take care of COVID-19 patients. As the surgical activity decreased from 2019–2020 to 2020–2021, the main operating room activity for all nonurgent surgeries was reduced by 7% (from 289,535 to 268,340).⁶ About 25,000 nonurgent scheduled surgeries, from all disciplines including ophthalmology, were postponed during the first wave. In addition, there were approximately 5000 postponements in the second and third waves. It also was estimated that during the fourth wave, as of the end of November 1, 2021, ~22,000–25,000 surgeries were delayed.^{6,7}

This study compares the effects of the COVID-19 pandemic on cataract surgery wait times in the AHS Edmonton zone by examining the wait times before (i.e., April 2019–March 2020) and during (i.e., April 2020–March 2022) the pandemic.

Methods

This study was conducted based on a retrospective population-based design. Cataract surgeries performed in the AHS Edmonton zone at AHS institutions (i.e., Royal Alexandra Hospital, Fort Saskatchewan Community Hospital, and WestView Health Centre) between April 2019 and March

2022 were compiled from a centralized database (Light-House database). During the study period, 80% of cataract surgeries in the Edmonton zone were performed within these 3 AHS sites. The remainder of cataract surgeries were performed in community nonhospital surgical facilities (NHSF). The study period spans 3 full fiscal years. Each fiscal year starts on April 1 and ends on March 31.

The data compilation was conducted by the Analysis-Works group that is affiliated with AHS. The cataract procedures included only “cataract extraction by phacoemulsification with intraocular lens [IOL] implant (0000125),” “cataract extraction with IOL implant (10701416),” and “phacoemulsification, cataract, with IOL insertion (10701477).” The numbers in parentheses represent AHS procedure codes. All cases listed as urgent or combined with other procedures were excluded.

Wait time was measured and divided into in-target and out-target based on the Alberta coding access targets for surgery (ACATS).⁸ The ACATS’ suggested wait time for elective anterior-chamber cataract surgery (ACATS code K7L3) is within 16 weeks from the “ready to treat” date. Patients are declared ready to treat from the date at which they are medically, socially, and functionally ready to receive surgical treatment, as determined by the surgeon’s office.

Statistical analysis was carried out using paired *t* test (IBM SPSS Statistics version 28.0.1.0; IBM, Armonk, NY). Results are presented as mean \pm SD.

Results

The analyzed data included only scheduled cases completed in the data period. The average wait time for cataract surgery increased from 14.4 ± 1.4 weeks in 2019–2020 to 18.2 ± 2.7 weeks in 2020–2021 ($p = 0.005$). This decreased significantly in 2021–2022 to 11.5 ± 1.3 weeks ($p < 0.001$ compared with both 2019–2020 and 2020–2021). The number of total cataract surgeries performed declined from 13,103 in 2019–2020 (61% in-target) to 9,308 (56% in-target; $p = 0.09$) in 2020–2021 and then increased slightly to 10,365 (68% in-target; $p = 0.1$) in 2021–2022 (Table 1, Fig. 1).

The operation room (OR) hours for scheduled cataract surgeries decreased from 5541 hours in 2019–2020 to 4463 hours ($p = 0.42$) and 4552 hours in 2020–2021 and 2021–2022 ($p = 0.15$), respectively (Fig. 2). There was no significant change in unscheduled OR hours between

2019–2020 and 2020–2021 ($p = 0.62$) and 2021–2022 ($p = 0.75$). The unscheduled cases included emergent surgeries.

Net waitlist addition trends were calculated as *net waitlist addition* = (additions – removals – completions) (Fig. 3). Patients were removed from the waitlist if they had surgery outside the AHS sites (i.e., at the NHSF), declined surgery, or passed away. Average net waitlist changes in 2020–2021 decreased by 324 (+170 in 2019–2020 to –154 in 2020–2021; $p = 0.001$) and by 5 (down to –159) in 2021–2022.

Figure 4 represents the waitlist size trend as of the end of each month. The average waitlist size decreased from 6629 in 2019–2020 to 6122 in 2020–2021 ($p = 0.029$) and to 4011 in 2021–2022 ($p < 0.001$ compared with both 2019–2020 and 2020–2021). At the end of each fiscal year’s waitlist, 35% of the patients were still in-target in 2019–2020; this increased to 47% at the ends of both the 2020–2021 and 2021–2022 fiscal years.

Discussion

This study investigated the effects of the COVID-19 pandemic on cataract surgeries performed before and during the pandemic in AHS’s Edmonton zone. Our study shows that average wait times for cataract surgeries increased by about 4 weeks during the first year of the pandemic. The majority of this effect was observed following the first wave. While no elective cataract surgeries were performed during April 2020, the average wait time stayed above ACATS’ suggested wait time of 16 weeks throughout the next 6 months. There is a gap in the literature regarding the trends of elective ophthalmic surgeries following the first wave of the pandemic. Sanjay et al.⁵ surveyed 1207 ophthalmologists from different countries and found that ~46% of them ceased operating on their patients during the first wave of the pandemic (i.e., April 10 and April 30, 2020). They also showed that about 40% of ophthalmologists performed less than 25% of their original surgical volumes during the same period. However, our study shows that surgeons significantly increased the number of surgeries from June 2020 until the second wave caused another reduction in the number of operations in December and January of 2020–2021. This explains why, despite the temporary increase in OR times after the first wave, the total surgery volume for 2020–2021 was ~29% lower than in the pre-COVID fiscal year. The reduced OR time was a direct consequence of the provincial postponements of elective surgeries.

Surprisingly, the average wait time for cataract surgeries decreased to about 11.5 weeks during the 2021–2022 fiscal year. This could be interpreted as a positive finding for the health care system because it is >4 weeks below the suggested ACATS wait times. However, this might be, to some extent, because OR times did not decrease drastically during the third wave. Additionally, while it was expected that the

Table 1—Summary of results.

Factor	2019–2020	2020–2021	2021–2022
Average wait time (wk)	14.4 \pm 1.4	18.2 \pm 2.7	11.5 \pm 1.3
Total cataracts surgeries performed	13,103	9,308	10,365
Operation room hours	5541	4463	4552
Average net change	+170	–154	–159
Average waitlist size	6629	6122	4011
Year-end waitlist size	6325	4788	3260
Year-end percent in-target	35%	47%	47%

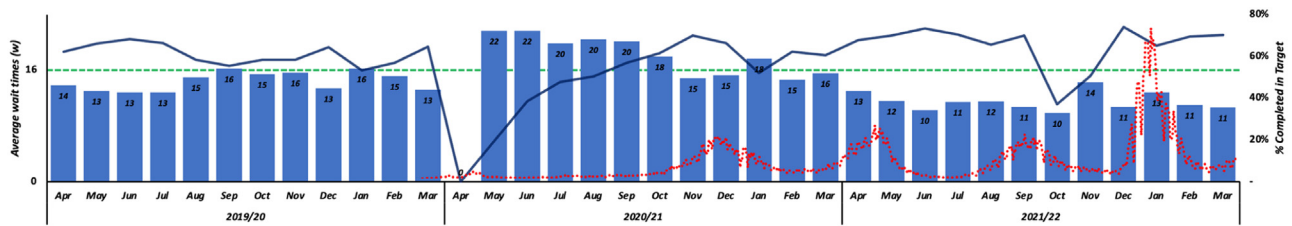


Fig. 1—Average wait times for scheduled completions of cataract surgeries.

Note: Blue columns: average wait time (weeks); blue line: cases completed in-target (%); green dotted line: suggested Alberta coding access targets for surgery wait time for cataract surgeries; red dashed line: active cases of COVID-19 over time in Alberta, Canada.

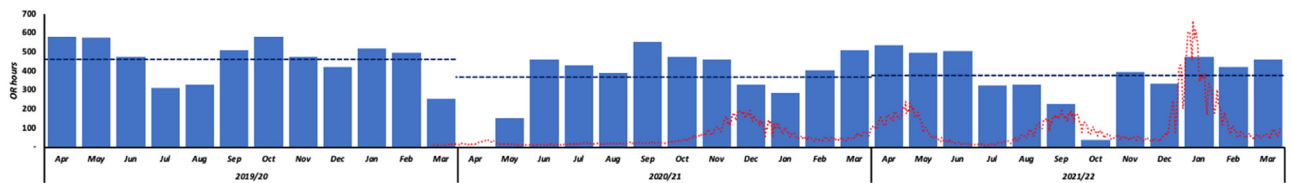


Fig. 2—Operation room hours for scheduled surgeries.

Note: Blue dotted lines: average OR hours for each fiscal year; red dashed line: active cases of COVID-19 over time in Alberta, Canada.

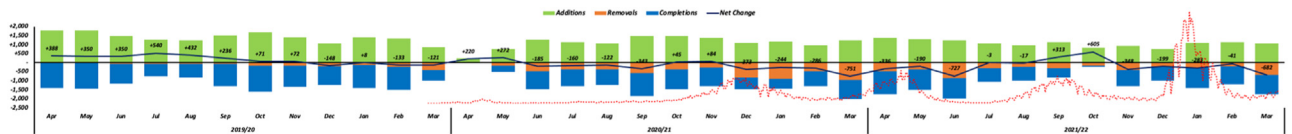


Fig. 3—Waitlist additions, removals, and completion trends.

Note: Net change = additions – removals – completions; red dashed line: active cases of COVID-19 over time in Alberta, Canada.

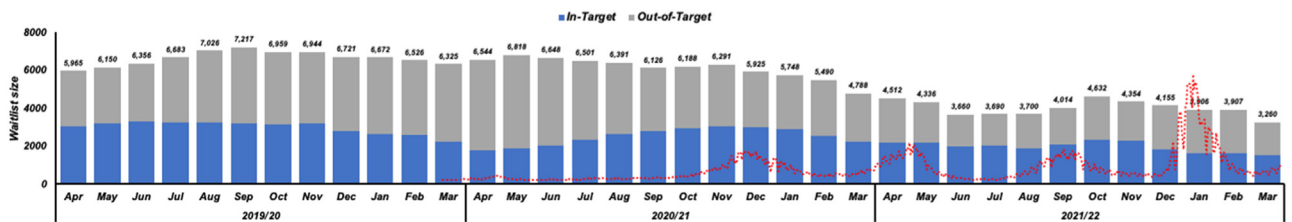


Fig. 4—Waitlist snapshot.

Note: Red dashed line: active cases of COVID-19 over time in Alberta, Canada.

pandemic also would increase waitlist sizes, they paradoxically decreased during this period compared with the pre-COVID fiscal year. This could potentially be explained by (i) an increased OR-to-clinic time ratio among surgeons, (ii) decreased additions to the waitlist, and (iii) increased permanent removals from the waitlist.

Because of COVID-19 restrictions, physicians may have seen a lower volume of patients in clinic. In addition, some patients may have been reluctant to undergo a nonurgent surgery during an ongoing pandemic and decided to postpone their cataract surgeries. This had a significant effect on net waitlist change during the first year of the pandemic, where it decreased by 324 compared with the year before, although a recent study conducted by Sii et al.⁹ found that the current pandemic did not significantly affect patients' decisions to attend hospital for cataract surgery. In the study by Sii et al.,⁹ ~83% of patients indicated their willingness to come for cataract surgery.

One of the limitations of this study is the lack of information regarding the details of permanent removals from the waitlist. Unfortunately, we were unable to access data regarding surgeries performed at the NHSF. Future studies also could further investigate the trends of the cataract surgery wait times after the pandemic.

Conclusion

Our study shows that the COVID-19 pandemic resulted in a significantly reduced volume of cataract surgeries performed in the Edmonton zone and increased the average wait times during the first year of the pandemic. However, waitlist size has been paradoxically decreasing throughout the pandemic likely related to fewer patients being added and (or) patients having surgery in nonhospital settings and being removed from the waitlist.

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Footnotes and Disclosure

The authors have no proprietary or commercial interest in any materials discussed in this article.

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