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Demographic trends of patients undergoing ophthalmic surgery in Ontario, Canada: a population-based study

Michael Balas ,[1] Diana Vasiliu,[2] Gener Austria,[2] Tina Felfeli [3,4]

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[1]Temerty Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada
[2]Health System Intelligence Team, Health System Performance & Support Portfolio, Ontario Health, Toronto, Ontario, Canada
[3]Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Ontario, Canada
[4]The Institute of Health Policy Management and Evaluation (IHPME), University of Toronto, Ontario, Canada, Canada

Correspondence to
Dr Tina Felfeli; tina.felfeli@mail.utoronto.ca

ABSTRACT

Objective In this study, we investigated the demographic trends of patients undergoing ophthalmic surgeries based on geographic region, priority level, and sex.

Methods and analysis This population-based retrospective cohort study used the Ontario Health Wait Times Information System (WTIS) database from 2010 to 2021. The WTIS contains non-emergent surgical case volume and wait time data for 14 different regions, three priority levels (high, medium and low) and six ophthalmic subspecialty procedures.

Results Over the study period, on average 83 783 women and 65 555 men underwent ophthalmic surgery annually in Ontario. Overall, women waited an aggregate mean of 4.9 days longer than men to undergo surgery, and this disparity persisted across all geographic and priority stratifications. The average age at the time of surgery has been increasing slowly at a rate of 0.02 years/year (95% CI 0.00 to 0.05), with women being 0.6 years older than men overall.

Conclusion These findings indicate that women have consistently longer wait times than men. The results of this study may be a sign of systemic sex-based differences that could be affecting women who need to be further explored for health equity.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Ophthalmic surgery case volumes and wait times have been rapidly growing in recent years in Ontario, Canada as well as many other regions in North America. Wait times are important surrogate measures of the quality of health system delivery. However, there is currently limited research investigating the demographic variations in patients on the ophthalmic surgery wait list.

WHAT THIS STUDY ADDS

⇒ This study found that women have consistently longer wait times compared with men across all ophthalmic procedure types, priority levels and geographic regions. This study also shows that the average age at the time of ophthalmic surgery has been steadily rising over the last decade, although at a slower rate compared with the general Ontario population. Women were found to be slightly older than men, on average.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The results of this study indicate the presence of systematic sex-based differences that could be affecting the timeliness of ophthalmic surgery for women. This work provides the first step towards reaching health equity in ophthalmic surgery, and further research should be conducted to measure the potential magnitude of this effect on outcomes, in addition to other possible inequities that could be faced by women and other groups.

INTRODUCTION

Ophthalmic surgeries are among the most cost-effective interventions, and with the increasing demand, there is significant pressure being placed on the healthcare system.[1–5] Case volumes and wait times for ophthalmic surgeries have been growing by more than 50% over the last decade in Ontario.[6] Wait times are important and increasingly popular metrics of healthcare delivery that have important implications for both individual patients and health systems as a whole.[7] Long waits for surgeries may burden patients with significant emotional distress and physical harm from prolonging untreated conditions, which may also result in worse outcomes.[6 8–11] Furthermore, there are broad socioeconomic consequences of inappropriately long wait times, such as absenteeism, disability, reduced productivity and requiring assistance from others to perform basic activities.[12] This universal healthcare coverage in Canada, which is managed at the provincial level, has been shown to have persisting inequities in health delivery for both patients and providers.[13–17]

To date, there is limited research and data investigating demographic variations in these patient populations. As the first step to achieving healthcare equity, it is necessary to first detect disparities and measure their

magnitude as well as understand their causes. Herein, we present the demographic trends of ophthalmic case volumes and wait-times in Ontario, Canada.

METHODS

This was a population-based retrospective cohort study based on the Ontario Health Wait Times Information System (WTIS) database from January 2010 to December 2021.[18–20] This study adhered to the Reporting of studies Conducted using Observational Routinely collected Data guidelines.[21] Ethics approval for the conduction of this study was obtained from University of Toronto Research Ethics Board (RIS protocol number: 41582).

Data source

The Ontario Health Insurance Plan is the publicly-funded healthcare service in Ontario, Canada for residents who meet eligibility criteria.[22] In order to track and address the issues with healthcare access in a centralised system, the WTIS was fully deployed in 2008.[20 23 24] The WTIS collects and stores wait time information from non-emergent surgeries performed in publicly funded hospitals in Ontario, Canada. Each case is assigned a priority level by the surgeon according to WTIS guidelines, ranging from level 1 emergent cases (not included in this database) to high priority (level 2, severe symptoms which are likely getting worse), medium priority (level 3, some pain or other symptoms which do not dramatically impact the quality of life) and low priority (level 4, the patient's condition may be worsening and medical management may be failing to help).[25]

The WTIS defines wait time as the number of days from the surgeon and patient's joint decision to operate to the time of surgery. Wait list queues with only 1–5 cases per month are coded as low volume in the WTIS database and were excluded from this study. Annual wait time data are captured for the following non-emergent ophthalmic subspecialty surgeries: cataract, cornea, glaucoma, oculoplastic, vitreoretinal and adult strabismus surgery. This data set is further stratified into geographical regions, referred to as Local Health Integration Networks (effective April 2021, the 14 local health integration networks (LHINs) were consolidated into 5 regions), which constitute the subdivision of healthcare delivery across Ontario. The original geographical regions (LHINs) encompassed the following: Erie St. Clair, South West, Waterloo Wellington, Hamilton Niagara Haldimand Brant, Central West, Mississauga Halton, Toronto Central, Central, Central East, South East, Champlain, North Simcoe Muskoka, North East, and North West.

Study objectives

We aimed to summarise demographic shifts over the past decade while stratifying by geographic region, priority level and procedure type. We also sought to examine whether there were any notable differences in patient demographics across strata, with particular focus on sex-based differences in wait-times.

Statistical analysis

Cohort characteristics were stratified by ophthalmic procedure type, priority level, geographic region, year, age and sex (self-identified gender is not collected) and reported descriptively. To assess whether there was a monotonic upward or downward trend in the data over time, the Mann-Kendall test was chosen as it does not require that the data be linear or normally distributed.[26 27] Other methods such as simple regression would not have been appropriate given that the underlying assumptions required (eg, normal distribution) are not met in this data set. Wait time rates of change were calculated using the Theil-Sen estimator along with corresponding 95% CIs.[28 29] This estimator, also referred to as Sen's Slope, is a well-established, non-parametric method for measuring linear trends while remaining robust to values that do not fit a linear trend and insensitive to outliers. It fits the data by efficiently computing the median slope of all lines through all pairs of points. An independent-samples t-test was used to analyse the aggregate data for continuous outcomes (mean with SD and sample number volumes) for the two groups. The χ^2 test was performed for comparison of categorical variables.

All analyses were conducted using R V.3.5.0 (R Foundation for Statistical Computing, Vienna, Austria). Since multiple statistical tests are performed, a conservative significance level of $p<0.001$ was chosen a priori to reduce the probability of type I errors. Patients and the public were not involved in the design, conduct, reporting or dissemination of this study.

RESULTS

From 2010–2021, there were on average 1.49 adults/year/100 000 scheduled for non-emergency ophthalmic surgery in Ontario, Canada. The mean wait time over the study period for all procedure types and priority levels was 82 days (SD 85). The mean age was 71 years (SD 11) and 44% of all patients were men.

Surgical volumes

Over the last decade, an average of 83 783 women/year (SD 7297) underwent ophthalmic surgery annually in Ontario compared with 65 555 (SD 5266) men/year. Women underwent more eye surgeries than men across all ophthalmic specialties, with the exception of retinal procedures (3119 women/year vs 3819 men/year). The greatest difference in volume occurred with cataracts, where 76 177 women/year (SD 6791) had cataract surgery compared with 57 763 men/year (SD 4837). Table 1 summarises the sex-stratified volume of surgery for each procedure and year. There were significantly higher proportions of men compared with women with high priority (level 2) eye surgery on the wait list. Specifically, 1739 men (SD 573, 2.7% of all men on the wait list) and 1482 women (SD 605, 1.8% of all women on the wait list) received high priority (level 2) surgery annually, 7594 men (SD 1869, 11.6% of all men on the wait list) and 8769 women (SD 2434, 10.5% of all women on

Table 1 Surgical volume (in thousands) people for each ophthalmic procedure and year

Year	Sex	Overall	Cataract	Cornea	Glaucoma	Oculoplastic	Vitreoretinal	Strabismus
2010	M	65.4	57.9	0.9	0.9	1.6	3.5	0.6
	F	86.2	78.8	0.9	0.9	2.1	2.9	0.6
2011	M	67.1	59.5	0.9	0.9	1.5	3.5	0.6
	F	88.3	81.0	1.0	0.9	1.8	2.9	0.7
2012	M	66.9	59.4	1.0	0.9	1.4	3.6	0.6
	F	86.6	79.3	1.0	1.0	1.7	2.9	0.7
2013	M	65.7	58.0	1.1	1.0	1.2	3.7	0.6
	F	83.9	76.3	1.1	1.1	1.7	3.1	0.7
2014	M	64.4	56.7	1.1	1.0	1.3	3.7	0.6
	F	82.9	75.3	1.2	1.0	1.7	3.1	0.6
2015	M	64.2	56.2	1.1	1.1	1.3	3.8	0.6
	F	81.9	74.0	1.1	1.1	1.8	3.1	0.7
2016	M	67.5	59.2	1.0	1.4	1.4	3.9	0.6
	F	85.4	77.5	1.1	1.2	1.9	3.1	0.7
2017	M	68.4	60.0	1.1	1.3	1.4	4.0	0.6
	F	87.1	78.8	1.0	1.4	1.8	3.4	0.7
2018	M	70.2	62.0	1.1	1.3	1.4	3.9	0.6
	F	89.3	80.9	1.0	1.4	1.8	3.4	0.7
2019	M	71.9	63.5	1.0	1.3	1.3	4.1	0.6
	F	90.5	82.4	1.0	1.3	1.6	3.4	0.7
2020	M	50.6	44.0	0.7	1.0	0.9	3.7	0.4
	F	62.6	56.5	0.7	1.0	1.0	2.9	0.4
2021	M	64.4	56.7	0.8	1.3	0.8	4.3	0.3
	F	80.6	73.5	0.8	1.3	1.0	3.4	0.5

M, male; F, female.

the wait list) received medium priority (level 3) surgery annually and 56 222 men (SD 6141, 85.8% of all men on the wait list) compared with 73 532 women (SD 7861, 87.8% of all women on the wait list) received low priority (level 4) surgery annually (χ^2 p<0.001). Cataract surgery was the only procedure that still had a higher volume of women than men (82 more individual cases annually) for high priority (level 2) operations.

Patient sex trends

Men had consistently shorter wait times compared with women across all surgeries, with an average of 4.9 days shorter wait in the province over the last decade (p<0.001) (figure 1). Oculoplastic (6.8 days longer wait for females, p=0.013) and corneal (5.1 days longer wait for women, p=0.38) surgeries had the greatest difference in wait times between men and women from 2010 to 2021, while glaucoma (0.6 days longer wait for women, p=0.77) and cataract surgery (3.6 days longer wait for women, p<0.001)) had the smallest difference (table 2). When stratifying by priority level, women continued to have longer wait times (online supplemental table 1). Across all ophthalmic subspecialties in Ontario, women waited 6.1 days longer than men for high priority surgery (p<0.001), 7.2 days longer for medium priority surgery (p<0.001) and 3.7 days longer for low priority surgery (p<0.001). When stratified by geography over all priority levels and procedure types, again women waited longer than men in every region (online supplemental figure 1). The wait time difference between men and females was greatest in the Toronto Central, North West and North Simcoe Muskoka LHINs, where women waited 9.3 (p<0.001), 7.2 (p=0.034) and 6.7 (p=0.01) days longer than men, respectively. The North East, Central and Hamilton Niagara Haldimand Brant LHINs had the smallest difference with women waiting 2.0 (p=0.27), 2.4 (p=0.01) and 3.1 (p=0.01) days longer than men, respectively.

Patient age trends

Across Ontario, average age at the time of eye surgery has been increasing (+0.02 years/year; 95% CI (0.00 to 0.05)) over the past decade for all ophthalmic specialties (figure 2). Cornea, glaucoma, strabismus and oculoplastic procedures all had statistically significant increases in age over time (online supplemental figure 2). Cornea

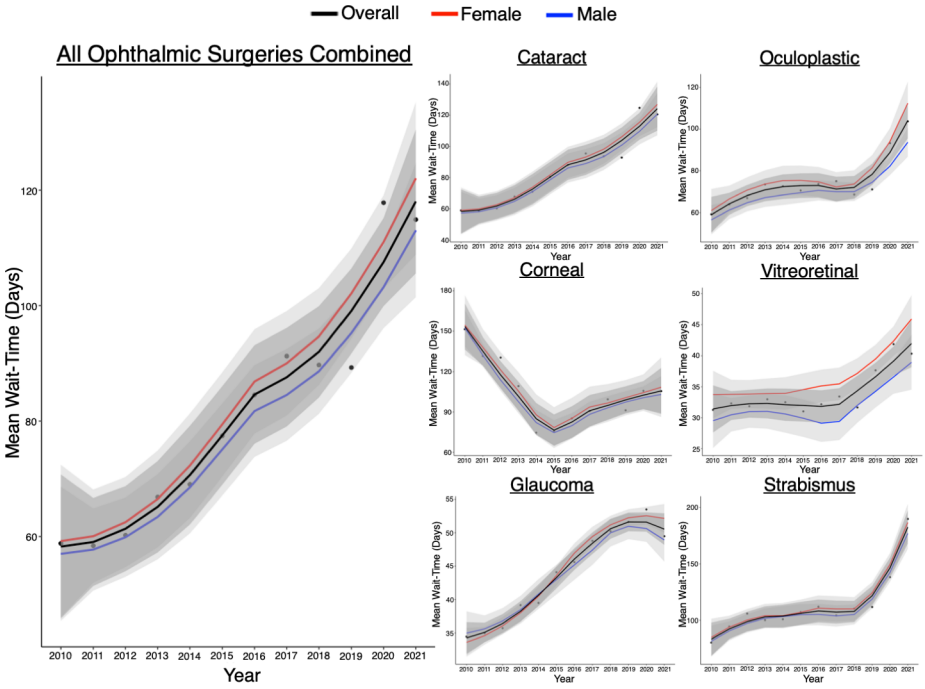

Figure 1 Scatterplots of trends in annual wait-times (in days) for all ophthalmic surgical subspecialties stratified by sex (red—female; blue—male; black—overall) in Ontario, Canada between 2010 and 2021, using the locally estimated scatterplot smoothing (LOESS) regression with associated 95% CIs

procedures had the greatest increase in mean age in Ontario over the past decade (+0.62 years/year; 95% CI (0.49 to 0.71)). Glaucoma (+0.28 years/year; 95% CI (0.23 to 0.37)), strabismus (+0.24 years/year; 95% CI (0.10 to 0.40)) and oculoplastic surgery (+0.24 years/year; 95% CI (0.11 to 0.20)) all had similar increases in age. These patterns were consistent across different levels of surgical priority as well. For these four specialties, when reviewing the change in age across different geographies, there were no LHINs with statistically significant increases in age for oculoplastic surgery, while both adult strabismus and glaucoma surgery had significant increases in age in the Toronto Central region. Cornea procedures had significant increases in age in each of the following LHINs: Central West, Champlain, Erie St. Clair, Hamilton Niagara Haldimand Brant, South West, Toronto Central and Waterloo Wellington.

Combined age and sex trends

Overall, Ontario women on the wait list for eye surgery were 0.6 years older than men from 2010 to 2021 (p<0.001). The only ophthalmic specialty where women were younger (by 1.1 years on average) was oculoplastic surgery (p=0.08). The greatest differences were in corneal (women were 4.0 years older on average, p<0.001) and glaucoma surgery (women were 3.6 years older on average, p<0.001). The difference in age between men and women over the last decade has been decreasing slightly for most procedures (figure 2). However, it increased with increasing levels of surgical priority, with women being 2.6 years older than men for high priority surgery (p<0.001) and 0.4 years older for low priority surgery (p<0.001).

DISCUSSION

This retrospective population-based study highlighted the demographic trends of ophthalmic surgical wait times from 2010 to 2021 in Ontario, Canada. Consistent with previous reports and epidemiological data, more women undergo ophthalmic surgery (56%).[30] While men represent a higher proportion of high-priority cases in our data set, it is important to note that women experienced longer wait times across all priority levels when compared with their male counterparts within the same priority category. The proportion of women undergoing ophthalmic surgery is slightly higher than the general Ontario population, which has 50% women overall and 54% women in the 65-or-older age group.[31] Our study also shows that the average age at the time of ophthalmic surgery has been rising slowly over the last decade, and women are slightly older than men. The most striking finding of this study is that there are sex-based differences in surgical wait times, where men have shorter wait times compared with women across ophthalmic subspecialties, geographic regions and levels of priority. Although the difference in wait time might seem modest in terms of absolute difference when compared with the mean wait times, it is important to consider the cumulative impact of these differences on patients and the healthcare system as a whole.

It is important to note that our study included data from the COVID-19 pandemic period (2020–2021),

Table 2 Mean (SD) wait-times (days) in ophthalmic surgery stratified by sex

Year	Sex	Overall	Cataract	Cornea	Glaucoma	Oculoplastic	Vitreoretinal	Strabismus
2010	M	57.4 (58.7)	57.8 (52.4)	149.6 (214.2)	35.5 (52.0)	56.3 (52.1)	29.3 (40.1)	78.8 (64.5)
	F	59.9 (58.8)	59.9 (54.5)	153.2 (205.8)	33.5 (41.5)	61.6 (59.8)	33.7 (40.8)	81.9 (62.7)
2011	M	57.4 (65.9)	57.7 (61.7)	132.6 (205.3)	35.0 (45.4)	61.6 (56.4)	31.2 (45.8)	94.3 (86.4)
	F	59.2 (61.1)	59.1 (57.2)	130.9 (199.3)	35.0 (36.3)	65.9 (58.5)	33.6 (45.5)	94.9 (78.0)
2012	M	58.8 (61.8)	59.3 (55.5)	121.8 (198.6)	36.0 (37.3)	64.4 (68.2)	30.1 (61.7)	101.5 (98.2)
	F	61.4 (62.6)	61.1 (56.6)	138.7 (233.0)	35.4 (32.8)	69.0 (65.8)	34.1 (43.3)	110.0 (95.2)
2013	M	65.0 (66.5)	66.6 (64.2)	103.2 (143.2)	39.6 (37.7)	69.6 (76.6)	31.7 (49.4)	97.6 (86.7)
	F	68.2 (67.7)	68.9 (65.4)	115.4 (161.5)	38.7 (38.3)	76.3 (73.2)	34.5 (50.6)	102.5 (89.7)
2014	M	67.0 (68.3)	69.2 (68.0)	76.5 (81.5)	39.4 (36.8)	68.0 (63.0)	31.2 (57.6)	102.8 (99.3)
	F	70.6 (72.1)	72.1 (72.1)	72.9 (74.0)	39.6 (42.5)	76.2 (72.7)	34.0 (59.2)	99.2 (96.4)
2015	M	74.8 (71.2)	78.4 (72.0)	71.6 (69.6)	44.0 (37.5)	67.2 (64.1)	29.4 (39.4)	106.6 (97.2)
	F	79.5 (74.4)	81.9 (74.8)	80.4 (82.1)	44.1 (38.3)	73.1 (67.8)	33.0 (42.2)	107.7 (105.8)
2016	M	82.1 (80.8)	86.4 (81.8)	83.1 (76.8)	45.1 (44.6)	72.4 (81.5)	28.7 (39.2)	107.4 (101.2)
	F	86.5 (84.4)	89.1 (85.3)	87.2 (83.4)	46.2 (50.5)	74.7 (73.2)	36.6 (44.7)	115.9 (106.1)
2017	M	87.7 (91.7)	92.7 (93.4)	87.1 (95.4)	46.8 (45.9)	71.9 (65.2)	31.0 (52.4)	99.9 (93.7)
	F	94.0 (96.3)	97.5 (97.7)	94.8 (92.1)	50.7 (60.2)	77.4 (73.5)	36.3 (50.0)	108.0 (100.4)
2018	M	86.4 (90.7)	90.7 (92.3)	99.2 (95.1)	49.9 (53.0)	68.5 (73.4)	29.1 (42.0)	109.7 (99.5)
	F	92.4 (95.9)	95.8 (96.8)	99.8 (98.0)	50.6 (52.2)	68.9 (61.1)	34.6 (75.5)	110.8 (97.4)
2019	M	86.2 (93.9)	90.3 (95.3)	89.3 (88.3)	51.8 (61.8)	67.8 (57.9)	36.4 (71.3)	109.9 (99.6)
	F	91.8 (98.1)	94.7 (99.9)	93.4 (89.4)	51.4 (57.5)	73.8 (67.0)	39.2 (48.1)	113.3 (104.8)
2020	M	112.9 (118.9)	121.0 (120.9)	105.4 (126.7)	53.2 (78.4)	84.9 (94.4)	39.3 (65.5)	134.5 (114.2)
	F	121.9 (124.1)	127.5 (125.6)	106.1 (111.9)	53.8 (74.9)	100.2 (111.2)	45.2 (67.1)	141.3 (135.6)
2021	M	110.1 (127.7)	117.1 (130.0)	102.0 (132.5)	47.2 (68.0)	94.1 (117.8)	37.0 (58.9)	183.7 (186.0)
	F	118.8 (136.6)	123.1 (138.2)	109.3 (132.9)	51.7 (76.0)	111.3 (131.6)	44.5 (67.4)	194.4 (170.2)

.F, female; M, male.

which has had a significant impact on healthcare systems and patient care. The disparities in wait times between sexes observed in our study existed prior to the pandemic, and recent work highlights that these disparities have been gradually worsening with time, especially during the pandemic.[32] In fact, the COVID-19 pandemic exacerbated pre-existing wait time disparities between sexes, with women waiting 4.1 days longer than men overall to receive surgery in 2010–2019 compared with waiting 8.8 days longer in 2020–2021 (117% increase) in Ontario, Canada.[32] This suggests that the pandemic has further intensified the systemic sex-based biases that may be affecting the care of women.

Overall, men waited 5 days less for surgery than women in our study, with oculoplastic and corneal procedures having the greatest difference. Women experienced longer wait times across all priority levels and geographic regions, with medium-to-high priority levels and Toronto Central, North West and North Simcoe Muskoka LHINs having the greatest disparities from 2010 to 2021. Previous studies have also investigated sex-based differences in surgical wait times with varying results depending on the medical specialty, region and data availability. A study based in the USA found that women had a 2.95-day delay in receiving retinal detachment repair surgery compared with men along with 34% reduced odds of receiving surgery.[33] Similarly, a study based in Japan found that men had 83% higher odds of early (within 1 week) retinal detachment surgery compared with women.[34] In our study, women waited 4.6 days longer than men on average for retinal surgeries.

Aligned with our study findings, an analysis of data from the Swedish National Cataract Register found longer waiting times for women that persisted across priority levels. Women waited 6 days longer than men, and this difference increased proportionally with increasing overall waiting times.[35] Another study in Sweden found that longer waiting times were associated with good visual acuity, older age, low income, low level of education and being women.[36] They found that even when adjusting for factors unrelated to wait time in addition to month of operation and surgical centre, women persistently waited 3.7 days longer than men for cataract surgery.[36] When intersecting multiple inequalities together, such as a low-income female patient with no education, the authors found that wait times additively increased.[36] Similarly, in

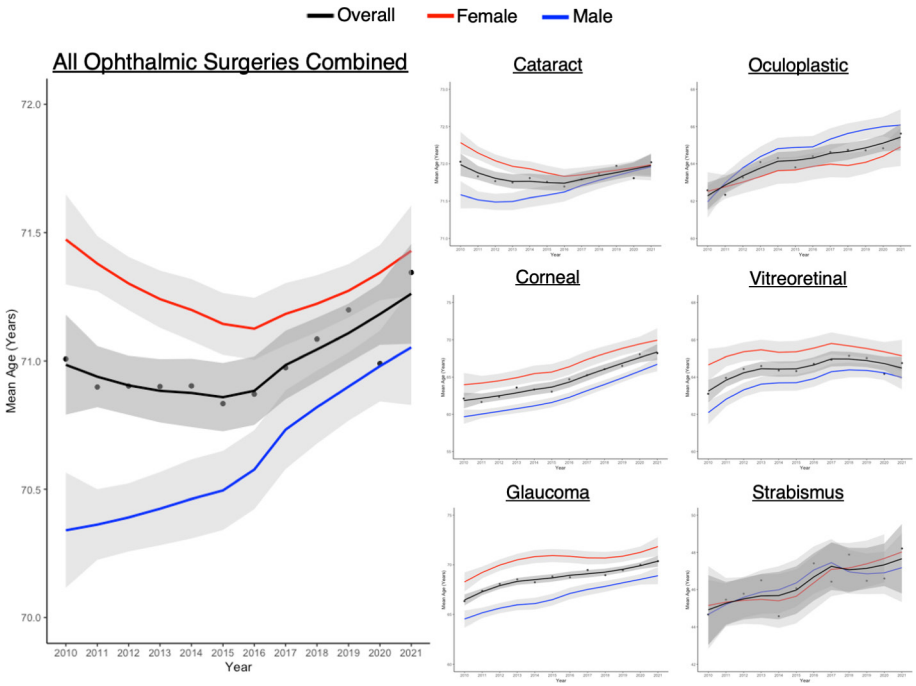

Figure 2 Scatterplots of trends in annual mean age (in years) for all aggregated ophthalmic procedures versus the general population in Ontario, using LOESS regression with associated 95% CIs, stratified by sex (red—female; blue—male; black—overall). LOESS, locally estimated scatterplot smoothing.

our study, women waited 3.6 days longer than men for cataract surgery and this difference persisted across all priority levels and geographic regions.

Beyond ophthalmology, the differences in wait time between men and women are more variable. For example, a longitudinal analysis of bariatric surgery wait times in Ontario found that men had significantly increased odds of longer wait times, with an effect size of 34 additional days compared with women.[37] Conversely, another Ontario-based study that used the full WTIS database found that women waited 3.1 days longer than men across all surgical specialties.[38] Other studies outside of Ontario have also demonstrated significant sex-based differences in wait times, such as in female Medicare beneficiaries waiting 13% longer to undergo pancreatectomy,[39] female trauma patients experiencing longer delays in trauma care[40] or women with shoulder injury waiting 18 days longer than men to receive surgery.[41] Some reports have also shown differences in specialist referral wait times, such as one in Southwestern Ontario that found female patients waiting 4 days longer than men to see a specialist.[42]

The wait time differences discovered in this study may be suggestive of systemic sex-based biases. These biases may be affecting the care of women or other groups in other meaningful ways that are not currently measured. Previous studies have suggested that a complex interplay of sociopolitical and cultural factors, such as taking on the role of a caregiver and postponing appointments for the sake of other family members, has contributed to women having longer wait times.[41 43] While this may be true and contribute to the wait time disparity along with other patient factors, it will be equally as important to further investigate the practice patterns and surgical referrals of ophthalmologists or other physicians in Ontario and beyond. It should also be noted that currently less than a third of all Canadian and Ontario ophthalmologists are women, and despite this being the largest proportion of women in Canadian history, ophthalmology is still severely lagging behind most other medical specialties.[17 44]

The average patient age at the time of eye surgery has been gradually increasing at a rate of +0.02 years/year over the past decade across all ophthalmic specialties, though this is at a much lower rate compared with the general Ontario population over the same time period (+0.18 years/year; 95% CI (0.15 to 0.20)).[31] However, patient groups in the cornea, glaucoma, strabismus and oculoplastic subspecialties have been outpacing general population growth over the last 10 years, and have been doing so primarily in the Toronto Central region. This may be due to a variety of reasons, including greater accessibility to resources and availability of doctors and social supports, improvements in practice standards and enhanced screening which results in elderly patients having higher chances of receiving eye surgery. We also found that Ontario women on the wait list for eye surgery were slightly older than men across all ophthalmic subspecialties with the exception to oculoplastic surgery, and that this difference increased with increasing priority level. The general female population in Ontario is noted to be 1.8 years older than men on average.[31] As such, the difference in our study is likely attributable to the fact that women represent the majority of patients receiving

ophthalmic surgery and are older than men due to their higher life expectancy.[31 45]

Each of the 14 LHINs of Ontario had longer surgical wait times for women compared with men. The Toronto Central LHIN, which has the highest ratio of ophthalmologists per 100 000 in Ontario (8.87), also had the greatest overall difference in wait times at 9.3 days.[46] This pattern did not persist for most other LHINs. For example, the North Simcoe Muskoka region had the third highest wait-time disparity at 6.7 days, yet it has one of the lowest ratios of ophthalmologists per 100 000 at 2.05.

Limitations and future directions

The authors would like to acknowledge limitations to this study. First, this was a retrospective study using aggregated data limited to the province of Ontario. Due to the limitations of our retrospective study design and the aggregate data available in the WTIS database, we were unable to adjust for patient-level and hospital-level covariates in our analysis. We also did not have data on the time from primary care referral to diagnostic work-up, nor did we have data on the time between surgical consultation and the day of operation. Furthermore, the WTIS database only collects patient sex, not gender or other self-reported identities. Thus, the findings of this study may not represent the true wait-time differences between self-identifying men and women, and they also do not incorporate potential disparities that may be experienced by non-binary individuals.[47] Additionally, there may be some variability with respect to patient priority-level assignments in the WTIS database (eg, one high priority case being worse than another, or a high priority case which should have been classified as medium priority) that may have affected results. Finally, as we only have access to aggregated data, we cannot verify or account for any potential repeated measures. However, it is important to note that the waiting times reported in this study are not self-reported by patients, but rather are collected automatically through administrative information technology systems, which minimises the likelihood of reporting errors or biases. Future studies may explore the associations in the observed trends with important patient and provider characteristics.

CONCLUSION

This population-based retrospective cohort study summarised the demographic trends of Ontario patients undergoing ophthalmic surgery from 2010 to 2021. Our findings suggest that women have consistently longer wait times than men across all ophthalmic procedure types, priority levels and geographic regions. Further research should be conducted to investigate the institutional-level and patient-level covariates that may be contributing to the disparities discovered in this study, in addition to other possible inequities as well as the impact they may have on health outcomes.

Twitter Michael Balas @theMichaelBalas

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ORCID iDs

Michael Balas http://orcid.org/0000-0002-5948-0331
Tina Felfeli http://orcid.org/0000-0002-0927-3086

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