Adequacy of the ophthalmology workforce under Ontario's Local Health Integration Networks

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ABSTRACT • RÉSUMÉ

Objective: To determine the current distribution of ophthalmologists across Ontario's Local Health Integration Networks (LHINs) and the influence on LHIN-specific cataract surgery wait times.

Design: Cross-sectional study.

Participants: Ophthalmologists listed in the College of Physicians and Surgeons (CPSO) database and the Canadian population.

Methods: A list of ophthalmologists and their practice locations were obtained from the CPSO website. The total population count for Ontario was obtained from the Statistics Canada census. The population counts for the population aged 65 years and older were generated using the Canadian Socioeconomic Information Management System (CANSIM) table 109-5425. Cataract surgery wait times were obtained from the Ontario Ministry of Health. Statistical analysis was completed using Microsoft Excel using StatPlus software.

Results: There are currently 3.28 ophthalmologists per 100 000 total population in Ontario. LHIN-specific ratios ranged from 8.87 (Toronto Central) to 1.67 (Central West), with 3 out of 14 LHINs having met the previously recommended ratio of 3.37. Median cataract surgery wait times ranged from 30 to 72 days. Although the number of cataract surgeries performed was positively correlated with the population aged 65 years and older ($p < 0.001$), there was no statistically significant association between wait times and number of cataract cases per 1000 population ($p = 0.41$).

Conclusions: Although Ontario appears to have a sufficient number of ophthalmologists overall, there is significant variation in the distribution of the ophthalmology workforce at the LHIN level. This variation did not appear to significantly influence LHIN-specific cataract surgery wait times.

Objet : Déterminer la répartition actuelle des ophtalmologistes dans les Réseaux locaux d'intégration des services de santé (RLISS) de l'Ontario et son incidence sur les délais d'attente pour une chirurgie de la cataracte dans chaque RLISS.

Nature : Étude transversale

Participants : Les ophtalmologistes inscrits dans la base de données du College of Physicians and Surgeons of Ontario (CPSO) et la population canadienne.

Méthodes : On a dressé une liste des ophtalmologistes et de leur lieu de pratique à partir du site internet du CPSO. La population totale de l'Ontario a été tirée du recensement de Statistique Canada. Le nombre d'habitants de 65 ans et plus a été établi à partir du tableau 109-5425 du Système canadien d'information socioéconomique (CANSIM). Les délais d'attente pour une chirurgie de la cataracte ont été obtenus auprès du ministère de la Santé de l'Ontario (MSO). L'analyste statistique a été réalisée avec Microsoft Excel, au moyen du logiciel StatPlus.

Résultats : Il y a actuellement 3,28 ophtalmologistes par tranche de 100 000 habitants en Ontario. Les ratios individuels vont de 8,87 (RLISS de Centre-Toronto) à 1,67 (RLISS du Centre-Ouest), et 3 des 14 RLISS respectent le ratio précédemment recommandé de 3,37. Les délais d'attente médians pour une chirurgie de la cataracte vont de 30 à 72 jours. Malgré la corrélation positive entre le nombre de chirurgies de la cataracte réalisées et la population de 65 ans et plus ($p < 0{,}001$), il n'y avait pas de lien statistiquement significatif entre les délais d'attente et le nombre de cas de cataracte par tranche de 1 000 habitants ($p = 0{,}41$).

Conclusion : Bien que l'Ontario semble avoir un nombre suffisant d'ophtalmologistes dans l'ensemble, on constate des écarts significatifs dans la répartition de l'effectif ophtalmologique d'un RLISS à l'autre. Ces écarts ne semblent pas avoir une incidence significative sur les délais d'attente pour une chirurgie de la cataracte à l'échelle des RLISS.

In September 1988, the Royal College of Physicians and Surgeons of Canada published a National Specialty Physician Review (NSPR) in cooperation with the Canadian Medical Association (CMA) and the national specialty societies. They found the number of practicing ophthalmologists in Canada to be 860. The ophthalmologist-to-population ratio was determined to be 1:29 650, or 3.37 per 100 000 population. This was accepted as an appropriate minimum requirement to provide ophthalmologic care.[1] The basis for this assertion was the perceived adequacy of availability to provide routine and emergent care for the population at this time. Since then, several studies have evaluated the national, provincial, and territorial distribution of ophthalmologists.[2–5] This study seeks to determine the current ophthalmologist-to-population ratio in each of Ontario's Local Health Integration Networks (LHINs) in order to provide a clearer picture of the adequacy of ophthalmology coverage within each LHIN, along with any cross-LHIN disparity in cataract surgery wait times. This information is imperative to guide future provincial and LHIN endeavours in order to ensure optimal access and delivery of eye care to the aging population of Ontario.

http://dx.doi.org/10.1016/j.jcjo.2015.10.012
ISSN 0008-4182/16

Canadian Ophthalmological Society | Société canadienne d'ophtalmologie
EYE PHYSICIANS AND SURGEONS OF CANADA | MÉDECINS ET CHIRURGIENS OPHTALMOLOGISTES DU CANADA

Methods

Current population counts for each LHIN were obtained from the 2013 Statistics Canada Census.[6] The projected population for those aged 65 years and older was generated using the Canadian Socioeconomic Information Management System (CANSIM) table 109-5325 based on the 2006 census data, for the year 2012.[7] A database of registered ophthalmologists in Ontario and their primary practice location was retrieved directly from the College of Physicians and Surgeons of Ontario (CPSO) web site by navigating the "All Doctors Search" tool in August 2013.[8] Each ophthalmologist was subsequently allocated to a specific LHIN based on the postal code of his or her primary practice location.[9] Efforts were made to contact those with unlisted practice locations, if a phone number was available. Any ophthalmologists completing subspecialty fellowship programs were identified after contacting the 5 Ontario universities that offer fellowship programs. The median cataract surgery wait time (time between when surgery is planned after consultation and when it is actually performed) and number of cataract surgery cases performed per annum within each LHIN were obtained from the Ontario Ministry of Health (MOH) for the period of June 2012 to July 2013.[10] Statistical analysis using linear regression was completed in Microsoft Excel using StatPlus software.

Results

The 2011 census population of Ontario was 12 851 815. The 2012 projected population of Ontario is 13 505 900, with 1 975 764 (15%) over the age of 65 years. LHIN percentage of the population aged 65 years and older ranges from 11% (Central West) to 19% (South East) (Fig. 1).

There are currently 550 ophthalmologists registered with the CPSO. Of those, 70 (13%) do not have practice locations within Ontario and 15 (2.7%) had an unidentified practice location. Additionally, 43 ophthalmologists were completing subspecialty fellowship programs

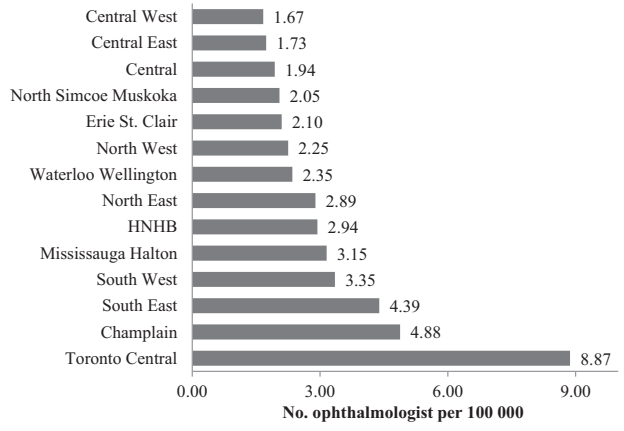

Fig. 1—Number of ophthalmologists per 100 000 population across Local Health Integration Networks.

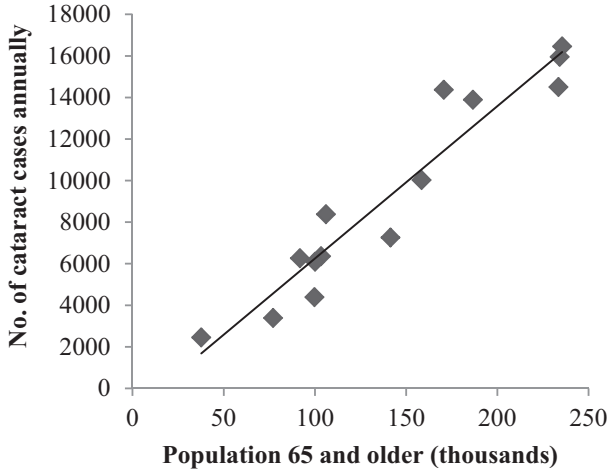

Fig. 2—Annual number of cataract surgery cases versus population older than 65 years. Plot points represent Local Health Integration Networks ($p < 0.001$).

during the relevant study period. With the remaining 422 ophthalmologists, Ontario's ophthalmologist-to-population ratio is 1:30 455 or 3.28 per 100 000 total population and 1:4682 or 21.36 per 100 000 for the 65+-year-old population. The ratios for ophthalmologists to total population for individual LHINs ranged from 1:11 275 (Toronto Central) to 1:60 004 (Central West), with only 3 out of 14 LHINs having greater than the previously recommended ratio of 1 ophthalmologist per 29 650 population. For the population aged above 65 years, the ratio ranged from 1:1673 (Toronto Central) to 1:9058 (Central East). Median cataract surgery wait times ranged from 30 to 72 days. Although the number of cataract surgeries performed was positively correlated with the population aged 65 years and older (Fig. 2, $p < 0.001$), there was no statistically significant association between wait times and number of cataract cases per 1000 for the 65+-year-old population (Fig. 3, $p = 0.41$) (Table 1).

Discussion

The ophthalmologist-to-population ratio has been reported in several studies since the recommendation of 3.37 per 100 000 population in 1988 (Table 2).[2–5,11] Although the national ratio appears to be keeping pace with this recommendation, significant variations exist between the territories, provinces, and metropolitan regions.[2,3] A recent study by Bellan et al.[3] found a Canada-wide ratio of 3.35; however, this ranged from 5.40 (Nova Scotia) to 0.89 (in the territories), with Ontario having 3.01 ophthalmologists per 100 000 population. If 3.37 is used as the target to determine the adequacy of ophthalmology coverage, it is apparent that some regions have a higher number of ophthalmologists per population, whereas other regions, especially the territories, have significantly lower. This may potentially