

Prevalence of glaucoma in Canada: Results from the 2016-2019 Canadian Health Measures Survey

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Introduction: Canada lacks population-based eye-exam data on glaucoma, hindering our understanding of disease burden, distribution, risk factors, and policy development on disease management. Utilizing eye-exam data from the Canadian Health Measures Survey (CHMS), we estimated the prevalence of glaucoma in Canada to fill this knowledge gap.

Methods: Results from self-reports and valid eye-exams for glaucoma from 2,612 participants aged 40-79 in the CHMS 2016-2019 were analyzed using survey weights provided by Statistics Canada to represent the target survey population. Participants who failed Frequency Doubling Technology Perimetry (FDT) and had an optic-nerve vertical cup-to-disc ratio (CDR) \geq 0.7 were considered to have definite glaucoma. Those with only a failed FDT, or only a CDR \geq 0.7, or only intraocular pressure (IOP) $>$ 21 mmHg, or those with 'normal' values of FDT, CDR, and IOP but used glaucoma medications, were considered glaucoma suspects. Participants passing FDT, having CDR $<$ 0.7, IOP \leq 21 mmHg, and not using glaucoma medications were deemed as not having glaucoma.

Results: An estimated 421,800 Canadians aged 40-79 self-reported having glaucoma, representing a prevalence of 2.5% (95% confidence interval [CI] 1.7%-3.3%). Prevalence was higher in those aged 65-79 (5.0%) vs. 40-64 (1.6%), in individuals with less than secondary-school graduation (5.0%) compared to secondary-school graduates (2.0%) or higher (2.3%) and amongst those who visited an ophthalmologist in the last 12 months (10.0%) vs. those who visited an optometrist (1.4%). Less than half (44.0%) of self-reported glaucoma individuals used glaucoma medications. The mean age at first glaucoma diagnosis was 52.6 (95% CI 48.6-56.7) years. The mean duration of glaucoma was 12.0 (95% CI 8.2-15.9) years.

From eye-exams, an estimated 71,000 Canadians had definite glaucoma and an additional 1.7 million Canadians were labeled as glaucoma suspects. Corresponding prevalence was 0.7% (95% CI 0.3%-1.1%) and 16.3% (95% CI 13.2%-19.4%), respectively.

Among glaucoma suspects, 44.3% had ocular hypertension (OHT, mean IOP 22.8 mmHg). Only 6.8% of individuals with OHT used glaucoma medications. IOP \geq 28 mmHg was found in 2.4% of OHT individuals and none used glaucoma medications.

About 40% (37.5% or 26,625 individuals) of Canadians with exam-determined definite glaucoma were unaware they had glaucoma.

Conclusions: 2.5% of Canadians aged 40-79, self-reported having glaucoma. 0.7% were identified as having glaucoma based on clinical examination. Eye-exams identified 1/6 of Canadians as glaucoma suspects, necessitating further investigation. Few Canadians with OHT used glaucoma medications, including those with IOP \geq 28 mmHg. Nearly 40% of Canadians with exam-determined definite glaucoma were unaware they had glaucoma.