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Access to anesthesiologists in Ontario: a cross-sectional analysis

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INTRODUCTION

Access to anesthesiology services is a critical component of equitable health care delivery, enabling essential surgical, obstetric, pain management, and critical care services. Across the country, disparities in access to anesthesiologists are pronounced, particularly in rural and underserved areas.[1] These communities face workforce shortages and resource limitations which greatly hinder anesthesia care provision. These factors in combination with the geographic isolation from necessary care, result in individuals in these communities delaying or, in extreme cases, forgoing care due to lack of access. While anecdotal evidence highlights this issue, quantitative data detailing the extent of this gap remains limited. Accordingly, this abstract aims to quantitatively discuss the anesthesia human resource disparities faced by rural communities in Ontario and explore strategies to address this shortage.

METHODS

Using publicly available data from the College of Physicians and Surgeons of Ontario (CPSO) physician register, all active Anesthesiologists in Ontario as of January 2025 were included for review. The primary and additional practice locations as listed on the register were used to determine a Rurality Index for Ontario (RIO) score. The RIO score was developed as a continuous and broad measure of rurality which has been applied to health policy development.[2] The RIO score is determined by factors including a community's population and density, travel time to the nearest basic referral centre, and travel time to the nearest advanced referral centre, with each factor contributing 28.6%, 47.6%, and 23.8% respectively to the overall score. The RIO score is categorized as 0 (urban), 1–39 (suburban), and > 39 (rural), with higher RIO scores associated with remote and rural regions.[2] Population data for each of the listed communities was obtained from the 2021 Canadian census database. Secondary characteristics collected for each anesthesiologist included reported gender, spoken language(s), location of medical school training, and year of graduation from medical school (Table). Physician characteristics were linked using unique, anonymized, encoded identifiers to ensure privacy and confidentiality.

RESULTS

Of the 1,448 active anesthesiologists listed on the CPSO register, 1,435 had primary practice locations in Ontario. Less than 0.5% (*n* = 6) of anesthesiologists have their primary location in rural communities (RIO > 39), with 33.1% (*n* = 475) and 66.5% (*n* = 954) having primary locations in suburban (RIO, 1–39) and urban (RIO, 0) communities, respectively. In rural, suburban, and urban communities there are 8.27, 10.24, and 14.49 anesthesiologists per 100,000 people respectively. Looking specifically at rural areas, there are 12 anesthesiologists who have a primary or alternate practice location in rural communities, with the median RIO score being 51. Furthermore 50% of anesthesiologists in rural communities were female, as compared to 33% in urban communities. The median years since graduation was also greatest in rural communities (29 years). Across all RIO scores, French (*n* = 180) was the most common language spoken after English.

DISCUSSION

Our findings provide evidence for the disparities in the geographic distribution of anesthesiologists across Ontario. In rural communities there are close to 40% and 20% fewer anesthesiologists per 100,000 people than in urban and suburban communities respectively. These results substantiate the need for strategies to address the anesthesia human resource shortage, such as those outlined by the Canadian Anesthesiologists' Society.[3,4] Furthermore, to facilitate rural anesthesia practice, unique barriers faced by anesthesiologists as independent specialized physicians must be addressed. This may include subsidization of equipment and anesthesia machines, and investment in infrastructure surrounding controlled substance supply, equipment maintenance, and waste management.

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Table Geographic and demographic summary of anesthesiologists in Ontario

Rural Communities (RIO >39)		**Suburban Communities (RIO 1-39)**		**Urban Communities (RIO = 0)**	
# of Primary locations (%)	6	# of Primary locations (%)	475	# of Primary locations (%)	954
# of Anesthesiologists	12	# of Anesthesiologists	567	# of Anesthesiologists	1008
Anesthesiologists per 100k people	8.27	Anesthesiologists per 100k people	10.24	Anesthesiologists per 100k people	14.49
% Female	0.50	% Female	0.31	% Female	0.33
Median RIO Score	51	Median RIO Score	5	Median RIO Score	0
% of CMGs	0.67	% of CMGs	0.63	% of CMGs	0.71
Median years since graduation	29	Median years since graduation	26	Median years since graduation	24
2nd Most common language	French (n = 2)	2nd Most common language	French (n = 55)	2nd Most common language	French (n = 139)
3rd Most common language	Norwegian (n = 1)	3rd Most common language	Arabic (n = 25)	3rd Most common language	Hindi (n = 37)

CMG = Canadian Medical Graduate; RIO = Rurality Index for Ontario score