DISPARITIES IN SURGICAL OUTCOMES AMONG INDIGENOUS POPULATIONS IN CANADA: A SYSTEMATIC REVIEW

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BACKGROUND

The Indigenous population in Canada is known to face disparities in several health measures compared to non-Indigenous Canadians. A recent Health Inequalities Report by the Public Health Agency of Canada in 2018 found that infant mortality and life expectancy were consistently lower in areas with a high concentration of Indigenous individuals.[1] Indigenous adults also had higher prevalence of asthma, arthritis, diabetes and obesity compared non-Indigenous adults.

Though we have measures of disparity in chronic conditions and overall health outcomes in Indigenous populations, few studies have analyzed and synthesized surgical disparities in this population.

Our purpose was to conduct a systematic review of comparative studies to better characterize gaps in surgical care for Indigenous patients by analyzing postoperative outcomes.

METHODS

Medline and EMBASE were systematically searched from database inception to February 2021. We included all studies reporting surgical outcomes in both Indigenous and non-Indigenous populations in Canada. We excluded non-comparative studies, reviews, and case reports.

Data are reported in accordance with PRISMA standards.

RESULTS

No significant difference in Indigenous patients

Worse outcomes for Indigenous patients

Better outcomes for Indigenous patients

13/18
included studies reported at least 1 worse outcome in Indigenous patients

16/47
reported outcomes had at least 1 study showing worse outcome in Indigenous patients

2/47
reported outcomes were better in Indigenous patients

1/4
minor complication types (CD I or II) were worse in Indigenous patients

4/6
major complication types (CD III or IV) were worse in Indigenous patients

4/8
studies reporting on mortality showed worse outcomes In Indigenous patients

Author, Year	*Type of Surgery*	*Disparity*
Beres et al., *2010*	Appendectomy	
Cohen et al., *1989*	Cholecystectomy	
Hong et al., *2006*	Liver transplant	
Lovrics et al., *2019*	Bariatric surgery	
Zhang et al., *2011*	Liver transplant	
Matsuda-Abedini et al., *2009*	Kidney transplant	
Samuel et al., *2011*	Kidney transplant	
Soo et al., *2011*	Kidney transplant	
Storsley et al., *2010*	Kidney transplant	
Weber et al., *2006*	Kidney transplant	
Churchill et al., *1992*	Dialysis hemoaccess	
Davidson et al., *2003*	Dialysis hemoaccess	
Goulet et al., *2006*	Re-vascularization for peripheral vascular disease	
Molnar et al., *2018*	Dialysis hemoaccess	
Meatherall et al., *2005*	Lower extremity amputation	
Shah et al., *2019*	Lower extremity amputation	
Paine et al., *1964*	Pulmonary resection	
Sood et al., *2013*	Any cardiac surgery	

Complication Type	Clavien-Dindo Grade	No. of Studies Reporting Complication	Disparity
Post-op bleeding	I	2	
Post-op ileus	I	1	
Stump status following LE amputation	I	1	
All-cause infection (including pneumonia)	I/II	5	
Vascular graft occlusion	III	1	
Loss of limb after LE vascular bypass	III	1	
Steal syndrome	III	1	
Septicemia	IV	1	
CV event (MI, stroke)	IV	2	
Graft rejection/failure (renal and liver)	IV	4	
Mortality	V	8	

DISCUSSION

Our systematic review of comparative studies including surgical outcomes in Indigenous and non-Indigenous populations demonstrated that the majority of included studies reported a worse outcome in Indigenous patients in at least one postoperative measure.

Our descriptive findings were also demonstrated in a systematic review and metanalysis by McVicar et al. which found that indigenous populations had an adjusted 30% higher chance of mortality postoperatively than non-Indigenous patients based on raw data from 4 studies.[2] Other findings included higher rates of infectious complications in Indigenous patients, and higher rates of kidney transplant graft failure, as noted in our review.

The reasons for this disparity in outcomes are complex and likely rooted in a multitude of factors, including baseline metabolic risk factors, ease of access to medical and surgical care, quality of care, and sociopolitical considerations. Further studies are required to better characterize current gaps in surgical care across surgical disciplines and different Indigenous populations, and to identify opportunities for intervention across the multitude of contributing factors including access barriers, cultural sensitivity and implicit bias awareness, and awareness of the impact of multigenerational traumas on patient factors.

REFERENCES

1. Public Health Agency of Canada. Key Health Inequalities in Canada. (2018).
2. McVicar, J. A. et al. Postoperative outcomes for Indigenous Peoples in Canada: a systematic review. CMAJ 193, E713–E722 (2021).