

Land Acknowledgement

The National Coordinating Centre of the Canadian Longitudinal Study on Aging (CLSA) is located on the traditional territories of the Mississauga and Haudenosaunee Nations, and within the lands protected by the Dish With One Spoon wampum agreement.

Our panelists are presenting from Dalhousie University, situated in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.

As attendees of this webinar, we want to acknowledge the original inhabitants of the land where we currently have the privilege to research, live and work, wherever that may be.

A silent epidemic of mental health among prostate cancer survivors: A secondary analysis of the Canadian Longitudinal Study on Aging

Presenters:



Louise Moodie

MD candidate, M.Sc.,
Community Health and Epidemiology,
Dalhousie University



Dr. Gabriela Ilie

PhD, Endowed Chair in Prostate Cancer
Quality of Life Research, Faculty of Medicine,
Dalhousie University

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**March 25, 2021
12-1 PM ET**



A silent epidemic of mental health among prostate cancer survivors: A Secondary Analysis of the Canadian Longitudinal Study on Aging

CLSA Webinar by Louise Moodie and Dr. Gabriela Ilie

March 25th, 2021

Our Research Story

- ▶ Our research journey began 5 years ago!
- ▶ Started by implementing a survey that assessed mental health issues in the Maritime population of men diagnosed with PCa.
 - ▶ Although our sample was too small and heterogenous the results showed that **1 in 3.5 screened positive** for clinical depression and anxiety. This raised a red flag for us!
- ▶ This prompted us to look at Atlantic PATH data and put in a request for CLSA data.
- ▶ In 2020, Drs. Ilie, Rutledge and Sweeney, published the results of their population-based study of 6,685 men residing in Atlantic Canada and found that survivors of PCa had **more than double the odds of screening positive for clinical depression and anxiety**, compared to men who had no history of cancer (control), while men with a history of any other form of cancer had comparable mental health outcomes with the control group.

Background

- ▶ Prostate cancer (PCa) is the **most commonly** diagnosed cancer among men in Canada, Europe, and the USA.
- ▶ Currently, research indicates that **1 in 7** Canadian men will develop prostate cancer during their lifetime.
- ▶ The majority of PCa patients become long-term survivors (>5 years), with **over 70% of patients expected to live 10 years or more** from the time of diagnosis
- ▶ **1 in 6 men** with a PCa diagnosis will experience clinically significant depression, which was shown to contribute to poorer oncological outcomes



PCa Survivorship and Mental Health

- ▶ Research shows that mental health disorders have long been associated with multimorbidity and unhealthy lifestyle coping mechanisms, such as alcohol use and smoking
- ▶ As 99% of patients diagnosed with PCa are over age 50, and about **65% are over 65 years of age**
- ▶ Read et al. found that **depression is two to three times** more likely to be experienced by people with multimorbidity than those who have no chronic physical conditions
- ▶ Alcohol use and smoking are known unhealthy coping mechanisms and risk factors associated with PCa.



Canadian Longitudinal Study on Aging

- ▶ The CLSA is a national, longitudinal research platform that collects comprehensive data and biological samples, which support a wide variety of aging-related research.
- ▶ The CLSA data is divided into two classifications based on type of participation: **Tracking** and **Comprehensive**
- ▶ The data used for this project is from the **first wave** (baseline) of the CLSA, which was collected between 2010 and 2015
- ▶ We used **pooled sample** of all men from both the Tracking and Comprehensive cohorts (**N= 25,183**)



Methods - Outcome Variable

- ▶ **Mental health** was our main outcome variable of interest
- ▶ We used three indicators of current mental health that measure different dimensions of the mental health construct
 - ▶ 1. Center for Epidemiological Studies Short Depression Scale (**CES-D10**)
 - ▶ The CES-D10 asks individuals about their depressive symptoms in the **past week**
 - ▶ 2. Kessler's Psychological Distress Scale (**K10**)
 - ▶ The K10 asks individuals about their anxiety and depression symptoms in the past **4 weeks**
 - ▶ 3. Self-rated mental health (**SRMH**)
 - ▶ Measure of **one's perception of their overall mental health**
 - ▶ "In general, would you say your mental health is excellent, very good, good, fair or poor?"



Methods - Exposure Variables

- ▶ **History of a Lifetime PCa Diagnosis**
 - ▶ CLSA participants were asked about their history of cancer via questionnaire
- ▶ **Multimorbidity**
 - ▶ We included the **26 chronic conditions** as they either meet the definition of a chronic condition or have been included in previous multimorbidity studies ¹²
- ▶ **Substance Use**
 - ▶ **Alcohol:** Frequency of alcohol consumption in **past 12 months**
 - ▶ **Tobacco:** Frequency of smoking in the **last 30 days**



Methods - Covariates

- ▶ **Age:** below 65; 65-74; 75+
- ▶ **Province:** AB, BC, MB, NB, NFLD, NS, ON, PEI, QC, SK
- ▶ **Education:** less than post-secondary degree/diploma; post-secondary degree/diploma
- ▶ **Household Income:** less than \$50 000/a year; equal to or more than \$50 000, less than \$100 000/per year; equal to or more than \$100 000, less than \$150 000/per year; \$150 000 or more a year
- ▶ **Marital Status:** married/common-law; not married/not common-law
- ▶ **Ethnicity:** white only; other



Methods - Statistical Analysis

- ▶ **Complex Sample Analysis** using IBM SPSS Version 25
 - ▶ Strata variable- **Geostrata**
 - ▶ Cluster variable - **Entity ID**
 - ▶ Sample Weights
 - ▶ For descriptive analyses - **trimmed (inflation) weights**
 - ▶ For regression analyses - **analytic weights**
 - ▶ All weights were calculated by CLSA and provided in the dataset

- ▶ For analyses with the outcome measure psychological distress (K10), we used the Comprehensive cohort (N=14 777)
 - ▶ **Multiple imputation** was performed based on 5.5% of the outcome missing
 - ▶ Analyses for psychological distress were reported for both original and multiple imputation pooled data

Results - Table 1

- ▶ An estimated **4% of adult men** (95% CI: 3.7, 4.4) reported a lifetime history of PCa diagnosis. This aligned with the prevalence of PCa demonstrated in the Atlantic PATH data.
 - ▶ Of the Canadian men who reported a lifetime history of a PCa diagnosis, **72.8%** were over the age of 65
 - ▶ The majority of men who reported a lifetime history of PCa diagnosis were married or common-law (**83.7%**).
 - ▶ Over **70%** of the men who reported a history of PCa had a household income of less than \$100 000 per year, of those **29%** reported a household income of less than \$50 000 per year.
 - ▶ Increased total household income and education were protective factors for lifetime history of PCa

Results – Table 2

TABLE 2 | Weighted estimates and logistic regression analyses examining the association between lifetime history of PCa and mental health assessed through psychological distress (K10), depression (CES-D 10), and poor self-rated mental health (SRMH) for Canadian men from the baseline cycle of the CLSA, 2010–2015.

	Screened positive for psychological distress (K10) (N = 13,960) ¹	
	No (n = 12,623)	Yes (n = 1,337)
	F (7, 12,689) = 39.29*** F (1, 12,695) = 6.24*	
Lifetime history of PCa diagnosis		
Yes (n)	(681)	(79)
aOR ^a (95% CI)	1.00 (Reference)	1.52 (1.09, 2.11)**
No (n) (Reference)	(11,942)	(1,258)
	Screened positive for depression (CES-D 10) (N = 25,060)	
	No	Yes
	(n = 21,750)	(n = 3,310)
	F (7, 22,777) = 94.98*** F (1, 22,783) = 4.51*	
Lifetime history of PCa diagnosis		
Yes (n)	(20,582)	(3,125)
aOR ^a (95% CI)	1.00 (Reference)	1.24 (1.02, 1.51)*
No (n) (Reference)	(1,168)	(185)
	Poor self-rated mental health (SRMH) (N = 25,159)	
	No	Yes
	(n = 22,564)	(n = 1,238)
	F (7, 22,860) = 53.87*** F (1, 22,866) = 0.11	
Lifetime history of PCa diagnosis		
Yes (n)	(1,302)	(1,302)
aOR ^a (95% CI)	1.00 (Reference)	0.95 (0.68, 1.32)
No (n) (Reference)	(22,564)	(1,238)

***Significant at $P < 0.001$. **Significant at $P < 0.01$. *Significant at $P < 0.05$ (two-tailed).

¹Comprehensive cohort only. ^aAnalyses were controlled for age, province, education, household income, marital status, ethnicity, and complexity of the design.

Results

Table 3

TABLE 3 | Multivariate logistic regression results predicting current psychological distress (K10), depression (CES-D 10), and self-rated poor mental health, by status of lifetime history of PCa, multimorbidity, alcohol use, and smoking for Canadian men from the baseline cycle of the CLSA, 2010–2015.

	Screening positive for psychological distress vs. screening negative ¹ % (95% CI) aOR ^a (95% CI) F (21, 8,989) = 15.42***	Screening positive for depression vs. screening negative % (95% CI) aOR ^a (95% CI) F (24, 16,477) = 28.98***	Poor self-rated mental health vs. good self-rated mental health % (95% CI) aOR ^a (95% CI) F (24, 16,542) = 19.97***
Lifetime history of PCa diagnosis	F (1,9,009) = 1.83	F (1, 16,500) = 6.03*	F (1, 16,565) = 0.002
Yes	10.2 (7.5, 13.7) 1.30 (0.89, 1.89)	15.1 (12.7, 17.8) 1.32 (1.06, 1.64)*	4.3 (3.1, 5.9) 1.01 (0.70, 1.45)
No	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Multimorbidity	F (1,9,009) = 31.29***	F (1, 16,500) = 75.29***	F (1, 16,565) = 62.19***
Yes	12.5 (11.4, 13.6) 1.64 (1.38, 1.95)***	16.7 (15.9, 17.6) 1.62 (1.45, 1.80)***	7.2 (6.6, 7.8) 1.97 (1.67, 2.33)***
No	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Alcohol use	F (3,9,007) = 6.14**	F (3, 16,498) = 13.79***	F (3, 16,563) = 8.76***
Daily drinker	13.6 (11.8, 15.5) 1.59 (1.20, 2.09)**	16.5 (15.2, 17.8) 1.47 (1.25, 1.73)**	6.3 (5.5, 7.2) 1.58 (1.25, 2.01)**
Weekly drinker	9.2 (8.0, 10.5) 1.52 (1.21, 1.91)*	12.0 (11.1, 12.9) 1.18 (1.02, 1.35)*	4.6 (4.0, 5.3) 1.06 (0.85, 1.32)
Occasional drinker	8.2 (7.2, 1.59) 1.12 (0.91, 1.39)	11.0 (10.1, 12.00) 0.88 (0.77, 1.01)	4.1 (3.5, 4.7) 0.84 (0.68, 1.05)
Non-drinker	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Smoking	F (2,9,008) = 12.97***	F (2, 16,499) = 18.23***	F (2, 16,564) = 9.36***
Daily smoker	20.4 (17.2, 24.0) 1.84 (1.435, 2.34)***	23.9 (21.7, 26.3) 1.57 (1.36, 1.82)***	10.5 (9.0, 12.3) 1.54 (1.25, 1.89)***
Occasional smoker	14.3 (9.5, 21.1) 1.41 (0.86, 2.32)	16.5 (13.0, 20.9) 1.21 (0.91, 1.64)	8.3 (5.8, 11.7) 1.50 (0.98, 2.29)
Non-smoker	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Age	F (2,9,008) = 35.97***	F (2, 16,499) = 51.79***	F (2, 16,564) = 8.76***
< 65	11.4 (10.5, 12.5) 2.31 (1.80, 2.95)***	14.6 (13.9, 15.4) 1.79 (1.55, 2.07)***	6.2 (5.7, 6.8) 2.40 (1.91, 3.00)***
65–74	7.5 % (6.5, 8.7) 1.14 (0.87, 1.47)	11.2 (10.2, 12.2) 1.01 (0.86, 1.17)	3.3 (2.8, 3.9) 0.88 (0.68, 1.14)
>74	1.0 (Reference)	1.0 (Reference)	1.0 (Reference)

Discussion

- ▶ To our knowledge, this is the first study to assess the prevalence of PCa survivorship in Canada.
- ▶ Results indicate that 4% of adult men in this Canadian population-based sample reported having had a lifetime history of PCa diagnosis between 2010 and 2015 when the baseline for CLSA was collected.
- ▶ This estimate is comparable to the 3.9% prevalence estimate of lifetime history of PCa in Atlantic Canada (2009-2015) characterized by similar demographic characteristics (Ilie, Rutledge, Sweeney 2020)
- ▶ Results indicate greater psychological distress and depressive symptoms among Canadian men who reported a lifetime history of PCa diagnosis, compared to men who had no history of a PCa diagnosis in demographics-controlled analyses.
- ▶ Our present findings caution us to be particularly attentive to symptoms of mental health among men when they are observed.



Limitations

- ▶ The nature of the data is **retrospective** and **self-reported**; thus, it is subject to challenges of accurate recall and also **survivor bias**, reflecting largely determinants of survival.
- ▶ Since the CLSA data *does not* capture the date of the PCa diagnosis, survivorship time could not be controlled for in the analyses and may have biased the results.
- ▶ The overall response proportion in the CLSA data was ~10% which (although adjusted for by the use of population-based weights) may have introduced nonresponse bias
- ▶ Since multimorbidity and substance use increase the risk of mortality, the proportion of cases with high multimorbidity and heavy substance use may be lower in our data and could have led to an underestimate of the odds ratios observed



Implications - Research and Clinicians

- ▶ They further emphasize the importance of including **validated questionnaires** in PCa survivorship plans to **assess mental health disorders** among PCa during their **survivorship journey**
- ▶ The implementation of innovative and integrative patient education and empowerment plans through **holistic interventions** that aim to ease the psychosocial and physical needs (e.g., loss of sexual function, urinary leakage, feeling disconnected from their intimate partner and close family and friends, lack of sleep, and fatigue) of these survivors is warranted.
 - ▶ Our lab is in the middle of a Phase 3 RCT addressing loneliness, disconnect and prehabilitation in this population to help alleviate mental health distress.



Acknowledgments

Data Access:

Canadian Longitudinal Study
on Aging



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