

Original Research

Sexual Orientation and Risk for Elder Abuse: Findings from the Canadian Longitudinal Study on Aging

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Abstract

This study addresses knowledge gaps concerning prevalence and risk factors for elder abuse among sexual minority (SM) compared to heterosexual Canadians aged 65+. Data derive from the Canadian Longitudinal Study on Aging, a national cohort study. Outcome variables include self-reports of psychological, physical, or financial abuse in the 12 months before interview and overall. Main explanatory variables are sexual orientation and gender identity; covariates include other socio-demographic characteristics, general and mental health. Overall prevalence of elder abuse was 10.0% among heterosexual and 12.0% among SM participants, with highest prevalence (18.1%) among SM females. The most common subtype was psychological abuse (8.8%), with highest prevalence among SM females (15.5%) followed by financial (1.4%), also with highest prevalence among SM females (7.0%). Physical abuse was least common (1.3%), with highest prevalence (2.4%) among SM males. Bivariate associations showed higher odds of experiencing psychological, financial and overall abuse among SM compared to heterosexual individuals (Odds Ratio (OR) = 1.41, 3.33 and 1.53, respectively), however within multivariable logistic regression models, sexual orientation was a significant



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predictor only for financial abuse (OR = 2.62). Our study is among the first to determine prevalence of elder abuse among SM older adults, and examine the interplay of gender identity and sexual orientation with other risk factors. Findings suggest divergent risk across gender and sexual orientation groups and abuse subtypes. Implications include addressing gaps in reporting and need to build capacity and agency for prevention and action, especially among SM females.

Keywords

CLSA; sexual minority; gender; elder abuse; abuse subtypes

1. Introduction

The World Health Organization defined the abuse of older people as “a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust, which causes harm or distress to an older person” [1]. Originally recognized as a social problem, and later a public health problem, elder abuse is increasingly being recognized as a human rights issue around the world [2, 3]. Each year, an estimated 141 million older adults experience psychological, physical, sexual, or financial abuse or neglect, numbers likely underestimated due to fear and embarrassment of reporting mistreatment by a family member, caregiver or friend, or lack of cognitive or physical ability to do so [2]. In Canada, the one-year overall prevalence of mistreatment among community-dwelling, cognitively intact older adults aged 55 and above has been estimated at 8.2% [4, 5].

The impacts of elder abuse are substantial and diverse, particularly when linked to poly-victimization. Older adults may experience one type of abuse perpetrated by multiple others with whom they have relationships involving expectations of trust. More commonly, an older adult might experience multiple forms of abuse, simultaneously or sequentially, by one or more perpetrators [6].

Although risk factors for mistreatment have been investigated at the general population level [7], information on the prevalence and determinants of abuse among older adults who identify as a sexual minority (e.g. lesbian, gay, bisexual, or ‘other’) remains limited. Even when sexual orientation is addressed in elder abuse studies (e.g. [8]), other important determinants of health such as socio-economic deprivation and multi-marginality are not concurrently examined.

Some sexual minority (SM) older adults experience a lifetime of violence, abuse and hate crimes, including abuse during childhood and through to their end-of-life care [9]. SM older adults often have fewer social supports than their heterosexual age-mates. If their peers or supportive family members die or move away, grief may be compounded by the physical and emotional loss of those who also affirmed and supported their SM identity [10]. Lifetime stigma, discrimination, victimization, trauma and isolation place SM older adults at higher risk for traditional subtypes of abuse (psychological, physical, sexual and financial abuse as well as neglect) and they may also experience unique forms e.g. threats of “outing” or other involuntary unwanted disclosure of information related to their sexual orientation and/or gender identity [8, 11, 12]. When SM individuals experience abuse, they might feel reluctant to report it due to shame, fear of victim

blaming, or that they may not be treated equitably or fairly upon reporting their experience. The fear of unwanted disclosure of their SM status and of perceived or real homophobia may keep many from seeking help and reaching out for services [13]. These problems are exacerbated by the fact that elder abuse, along with most other aspects of aging, are insufficiently discussed in SM public forums or media. The reasons for this may include ageism in the SM community and a tendency for SM couples to conceal problems in their relationships, especially if they have faced societal or family criticism for being in same sex relationships [9].

This study aimed to address knowledge gaps about abuse of older Canadians, with particular emphasis on identifying differences in prevalence and risk factors among SM compared to heterosexual individuals age 65 and over. The study had three specific objectives: 1) To estimate and compare prevalence of three abuse subtypes - psychological, physical and financial; 2) To explore bivariate associations of potential risk factors; and 3) To determine the multivariate association of potential risk factors with overall elder abuse experience, and with each of the three abuse subtypes studied.

2. Methods

2.1 Data Source

Data derive from the Canadian Longitudinal Study on Aging (CLSA). The CLSA is a national cohort study of 51,338 Canadian residents aged 45-85 at enrollment (2012-2015), with follow-up testing and interviews conducted every 3 years for at least 20 years or until death or loss to follow-up. Eligible participants had to be physically and cognitively able to participate on their own at enrollment, able to communicate in English or French, not be full-time members of the Canadian Armed Forces, or residing in Canada's three territories, First Nation reserves, or in long-term care facilities. Following enrollment and completion of baseline data collection, accommodations are made for participants to continue in CLSA future cycles if or when diminished physical or mental capacity occurs.

The CLSA is composed of two complementary cohorts. The Comprehensive cohort (n = 30,097) includes participants randomly selected from within 25-50 km of 11 data collection sites in seven provinces. These individuals are interviewed in person, assessed physically and cognitively, and provide blood and urine samples. The Tracking cohort (n = 21,241) includes individuals randomly selected from 10 provinces, and all questionnaires are administered by computer-assisted telephone interviews.

Tracking cohort participants were recruited from persons expressing interest in the CLSA following participation in the Canadian Community Health Survey on Healthy Aging or receiving mail-outs from provincial health ministries or, by means of random-digit dialing. Upon enrollment, they were given the option of providing their health card number for future linkage to provincial administrative health databases [14].

Data from both CLSA cohorts includes psychological, medical, social, lifestyle, economic and biological variables. Overall, 48,893 participants completed the first follow-up (95% retention) in mid-2018, the second follow-up was completed in mid-2021, and follow-up 3 is in progress.

The CLSA is approved by McMaster University's Health Integrated Research Ethics Board (HiREB) and by research ethics boards at all collaborating institutions. The current study is a secondary analysis of CLSA data, approved by the Research Ethics Board of Simon Fraser University

(#30000518). CLSA design and methods are described in more detail elsewhere [15, 16] and all data collection tools and survey questionnaires are accessible on the CLSA website [17].

2.2 Sample and Measures

For this study, we analyzed data from participants aged 65 or above at follow-up 1 and who completed the CLSA elder abuse module ($n = 23,466$). The CLSA elder abuse module was not administered to participants younger than age 65. Outcome variables included self-reports of psychological, physical or financial elder abuse during the 12 months prior to participant interviews. The CLSA elder abuse module is adapted from work by the National Initiative for the Care of the Elderly [4]. The conceptual definitions were developed during the pilot study [18] and estimates for Canadian older adults were reported in the Canadian National Survey on the Mistreatment of Older Canadians [4].

The CLSA elder abuse module captured 4 forms of psychological abuse (being criticized; insulted; threatened or intimidated; excluded or ignored); 6 forms of physical abuse (pushed, shoved, or grabbed; had something thrown at; hit or slapped; hit with something; someone tried to choke; or someone threatened with a weapon) and 3 forms of financial abuse (someone made the participant give money, possessions, or property; money, possessions or property was taken; or access to money, possessions, or property was deliberately blocked). A positive response to any abuse question was followed by additional questions about the frequency of the abuse over the past year (once, a few times, many times, every day or almost every day).

Physical and financial abuse were deemed present if the participant reported at least one instance of abuse in the past year. Psychological abuse was deemed present if criticism, insulting, or exclusion/ignoring were experienced “many times” or “every day or almost every day” during the previous 12 months. The exception was for threats/intimidation, deemed present if occurring once or more during the previous 12 months [19]. Dichotomous variables (yes or no) were constructed for each abuse subtype and overall (i.e. experiencing at least one subtype).

Precautionary techniques were used by CLSA when administering the elder abuse module. The module includes a mandatory preamble script advising participants that questions about mistreatment and abuse might trigger emotional distress, that participation was voluntary, that their responses were confidential and only used for research purposes, and that they could opt out of answering any question or discontinue the module at any time. To ensure privacy, questions were specifically worded to elicit only yes/no responses about abuse experiences. If abuse was reported, subsequent questions probed for the perpetrator’s relationship to the respondent (partner, spouse, family member, friend or someone who takes care of you), the perpetrator’s sex (male or female), and whether the perpetrator lived with the respondent.

For the Tracking cohort, additional techniques were used to enhance participants’ safety and privacy. Participants were asked if there was anyone whom they would feel uncomfortable asking to leave if they entered the space where the interview was taking place. If yes, a code word was established to indicate that this person was present. Options were provided to continue or schedule a callback to complete the interview when privacy was possible.

The main explanatory variables in this study were sexual orientation (heterosexual, sexual minority) and current gender identity. The covariates include other socio-demographic characteristics, a set of mental health measures, and self-rated general health and mental health.

Follow-up 1 participants were asked “What is your current gender identity?”, with response options including male, female, transgender man/transman, transgender woman/transwoman, genderqueer, other, don’t know/no answer, and refused. The terms male and female were used by CLSA for both gender identity and sex at birth questions rather than the currently more commonly used terms man and woman. Regarding sexual orientation, all study participants were asked: “Do you consider yourself to be: heterosexual (sexual relations with people of the opposite sex), homosexual, that is lesbian or gay (sexual relations with people of your own sex), bisexual (sexual relations with people of both sexes)”, with additional response categories including does not identify as any of the above, don’t know/no answer, and refused.

Cross-tabulations were used to stratify study participants by gender and sexual orientation and as shown in Table 1, 192 respondents were found to have self-identified as homosexual males, 82 as bisexual males, while 24 who identified as male were recorded as ‘Does not identify as any of the above responses’. For analysis purposes, these individuals were grouped to form the variable Sexual Minority male (SM male). Similarly, the variable Sexual Minority female (SM female) was comprised of 88 respondents who identified as homosexual females, 52 who identified as bisexual females, and 42 who identified as female but responded ‘Does not identify as any of the above responses’ when asked for their sexual orientation. This group also included one respondent who self-identified as a transgender woman/homosexual and one as a transgender woman/does not identify as any of the above responses. Excluded from analyses were: 44 who identified as male and 47 who identified as female but whose response to the CLSA sexual orientation question was recorded as don’t know/no answer or refused; one individual who identified as genderqueer and heterosexual; and one who identified as genderqueer and homosexual the latter two because there were too few to form a group.

Table 1 Cross tabulation of current gender identity and sexual orientation (age ≥ 65, unweighted).

		Sexual orientation					Total
		Heterosexual	Homosexual	Bisexual	Does not identify as any of the above responses	Don't know/No answer/Refused	
Current gender identity	Male	11337	192	82	24	44	11679
	Female	11526	88	52	42	47	11755
	Transgender	1	1	0	1	0	3
	Woman/Transwoman	1	1	0	0	0	2
	Genderqueer	10	1	1	1	14	27
	Don't know/No answer/Refused						
Total		22875	283	135	68	105	23466

Socio-demographic variables included age group (65-74; 75+), race/ethnicity (white; non-white), educational attainment (below Bachelor's degree; Bachelor's or above), marital status (single; married or living with a partner in a common-law relationship; widowed/divorced/separated), household income (less than \$50,000; \$50,000 to \$99,999; \$100,000 or more), current work status (working; not working), living arrangement (alone; living with one or more persons), and perceived social support availability (SSA). SSA was assessed using the Medical Outcomes Study-Social Support Survey (MOS-SSS) with higher scores representing higher support. Mean total MOS-SSS scores were dichotomized as low (<4) or high (≥ 4) [20, 21].

Mental health variables included loneliness, depressive symptoms, and adverse childhood experiences (ACEs). Loneliness was measured using the 3-item University of California Los Angeles loneliness scale, asking participants how often they "lacked companionship" and "felt left out" or "isolated from others" [22]. Responses ranged from 1 (hardly ever) to 3 (often), with higher scores indicating greater feelings of loneliness. Cumulative scores of 5 or more (out of 9) were categorized as feeling lonely [23, 24].

Depressive symptoms were measured using the Center for Epidemiologic Studies Short Depression Scale (CESD-10) with higher scores representing higher levels of depression (range: 0-30) [25]. Exposure to ACEs was measured using the short form of the Childhood Experiences of Violence Questionnaire (CEVQ) and the National Longitudinal Study of Adolescent to Adult Health Wave III questionnaire. Cumulative ACEs scores were created by summing the number of individual ACEs that participants had experienced, ranging from 0 to 8 [26-28]. Self-rated health was comprised of two variables, self-rated general health and self-rated mental health, both scored as excellent, very good, good or fair, poor, and recoded to dichotomous variables excellent/very good/good or fair/poor.

2.3 Analytic Approach

The complex survey design was accounted for by using inflation and analytic weights, as recommended by CLSA. The inflation weights are proportional to the reciprocals of the individual inclusion probabilities, while the analytic weights have been rescaled to sum to the sample size within each province. Weights were calculated by CLSA, provided with data released for analyses, and used so that results and estimates are generalizable to the Canadian population [29].

Chi square testing was used to compare prevalence across gender and sexual orientation groups (Objective 1). We conducted logistic regression analyses to explore the bivariate association of different types of abuse with each independent variable (Objective 2). Multiple logistic regression models using the enter method (i.e., including all variables in a single step) were then used to determine odds ratios (ORs) and 95% confidence intervals (CIs) for the predictors of abuse (Objective 3). At this stage, we included all covariates, regardless of their statistical significance at the bivariate level, as they were deemed important according to existing literature [30]. All analyses were performed using IBM SPSS 22 and statistical significance was set at 2-tailed $\alpha = 0.05$.

3. Results

SM older adults comprised 2% of the unweighted and 1.8% ($n = 85,095$) of the weighted sample. In terms of socio-demographic characteristics, a significantly higher proportion of SM than heterosexual older adults had Bachelor's degrees or higher education (38.7% vs. 29.9%, $P < 0.001$),

had never married (30.1% vs. 4.0%, $P < 0.001$), lived alone (46.3% vs. 25.4%, $P < 0.001$), and had a household income less than \$50,000 (54.1% vs. 46.1%, $P = 0.001$). It is noteworthy that only 33.3% of SM females were married or in common-law relationships (vs. 56.6% of SM males), 4.4% were currently working (vs. 15.3% of SM males), 57.6% lived alone (vs. 38.6% of SM males), and 68.8% reported that their household income was less than \$50,000 (vs. 43.7% of SM males).

Regarding mental health variables, significantly more SM than heterosexual older adults reported that they felt lonely (37.5% vs. 24.6%, $P < 0.001$), had higher mean scores for CESD-10 and ACEs ($P < 0.001$), and a higher percentage reported fair or poor self-rated mental health (8.4% vs 6%, $P < 0.001$) again, with the highest proportion among SM females (11.5%). Further details on the distribution of the study variables according to gender and sexual orientation appear in Tables S1 and S2.

The overall prevalence of experiencing at least one subtype of elder abuse by Canadians aged 65 and over was 10.0% (10.0% among heterosexual and 12.0% among SM individuals), with the highest prevalence among SM females (18.1%). Psychological abuse was the most common type of abuse experienced, with a weighted prevalence of 8.8% (8.8% among heterosexual and 10.5% among SM individuals), and with highest prevalence among SM females (15.5%). Financial abuse was the second most common with a prevalence of 1.4% (1.3% among heterosexual and 5.2% among SM individuals), again with highest prevalence among SM females (7.0%). Physical abuse was least common with a prevalence of 1.3% (1.3% among heterosexual and 1.9% among SM individuals), and with highest prevalence among SM males (2.4%) (see Table 2).

Table 2 Prevalence of psychological, physical, financial and any type of elder abuse according to gender and sexual orientation (% , weighted estimates).

	Gender						Sexual Orientation		
	Males			Females			Heterosexual	SM	Total
Abuse Subtype	Heterosexual =	SM =	Total males	Heterosexual =	SM	Total females	Heterosexual	SM	Total
	2,160,109	49,639	n = 2,219,632	= 2,398,218	n = 35,062	n = 2,451,908	n = 4,562,567	n = 85,095	n = 4,681,075
Psychological	8.6	7.0	8.6	9.0	15.5*	9.0	8.8	10.5*	8.8
Physical	1.3	2.4	1.3	1.2	1.1	1.2	1.3	1.9	1.3
Financial	1.3	4.1***	1.4	1.3	7.0*	1.4	1.3	5.2***	1.4
Overall	10.2	7.8	10.1	9.9	18.1**	9.9	10.0	12.0*	10.0

SM: sexual minority. * p value < 0.05, ** p value < 0.005, *** p value < 0.001.

Bivariate association using logistic regression models (i.e., before inclusion of other co-variables) showed odds of experiencing psychological, financial or any abuse to be higher among SM individuals compared to heterosexual individuals (OR_{psychological abuse} = 1.41, 0.95CI = 1.01-1.97; OR_{financial abuse} = 3.33, 0.95CI = 1.86-5.93 and OR_{overall abuse} = 1.53, 0.95CI = 1.12-2.09, P < 0.05). For physical abuse, the difference was not statistically significant (OR = 1.69, 0.95CI = 0.80-3.56, P = 0.166) (Table 3). Other socio-demographic variables showing significant bivariate associations (Table 4) were age group (psychological, any type), household income (all types), current work status (psychological, any type), and social support availability (all types). All mental health variables (depressive symptoms, loneliness, and ACEs) as well as self-rated general and mental health variables showed significant associations with all abuse types in unadjusted models (Table 5).

Table 3 Bivariate associations between psychological, physical, financial and any type of elder abuse with gender and sexual orientation (weighted estimates).

Variable	Psychological Abuse		Physical Abuse		Financial Abuse		Overall Abuse	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Gender								
Male								
Female	1.11	1.00-1.23	0.86	0.67-1.11	1.00	0.77-1.31	1.03	0.94-1.14
Sexual Orientation								
Heterosexual								
Sexual minority (SM)	1.41	1.01-1.97*	1.69	0.80-3.56	3.33	1.86-5.93**	1.53	1.12-2.09**
Gender-Sexual orientation								
Heterosexual females								
SM females	1.68	1.05-2.70*	2.31	0.83-6.44	2.95	1.17-7.46*	1.95	1.26-3.02**
Heterosexual males	0.90	0.82-1.00	1.18	0.91-1.53	0.97	0.73-1.27	0.97	0.88-1.07
SM males	1.12	0.70-1.80	1.51	0.51-4.47	3.57	1.69-7.52**	1.22	0.78-1.91

OR: Odds Ratio, The first category of each variable is considered as the reference category. CI: Confidence Interval. * p < 0.05; ** p < 0.005.

Table 4 Bivariate associations between psychological, physical, financial and any type of elder abuse with socio-demographic variables (weighted estimates).

Variable	Psychological Abuse		Physical Abuse		Financial Abuse		Overall Abuse	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age group								
65-74								
+75	0.66	0.59-0.74**	0.89	0.68-1.16	0.99	0.75-1.30	0.74	0.66-0.82**
Race								
White								
Non-White	0.85	0.62-1.16	1.06	0.52-2.15	1.56	0.84-2.91	0.94	0.71-1.25
Education								

Below bachelor's degree								
Bachelor's or above	1.08	0.95-1.23	0.97	0.70-1.34	1.11	0.80-1.54	1.09	0.97-1.23
Marital status								
Never married								
Married or in common-law	0.93	0.74-1.18	0.72	0.42-1.21	0.58	0.33-1.01	0.92	0.74-1.16
Widowed/divorced/separated	0.82	0.63-1.06	0.73	0.41-1.31	1.04	0.59-1.85	0.87	0.68-1.11
Household income								
Less than \$50,000								
\$50,000 or more, but less than \$100,000	0.87	0.77-0.98*	0.66	0.48-0.90*	0.54	0.39-0.75**	0.83	0.74-0.93**
\$100,000 or more	1.03	0.89-1.20	0.92	0.64-1.34	0.79	0.47-1.05	1.00	0.86-1.15
Current working status								
Working								
Not working	0.84	0.74-0.97*	1.14	0.79-1.66	0.87	0.61-1.23	0.87	0.76-0.99*
Living arrangement								
Alone								
With others	1.13	1.00-1.27	0.80	0.61-1.06	0.60	0.45-0.79	1.08	0.96-1.21
Social support availability								
Low								
High	0.50	0.45-0.55**	0.56	0.45-0.75**	0.45	0.34-0.59**	0.52	0.47-0.57**

OR: Odds Ratio, The first category of each variable is considered as the reference category; * p < 0.05; ** p < 0.005.

Table 5 Bivariate associations between psychological, physical, financial and any type of elder abuse with mental health and self-rated health variables (weighted estimates).

Variable	Psychological Abuse		Physical Abuse		Financial Abuse		Overall Abuse	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
CESD-10	1.21	1.11-1.13**	1.11	1.09-1.13**	1.12	1.10-1.14**	1.12	1.11-1.13**
Feeling lonely								
No								
Yes	2.34	2.13-2.64**	2.38	1.83-3.09**	2.23	1.70-2.93**	2.28	2.06-2.52**
ACEs score	1.34	1.30-1.39**	1.38	1.28-1.49**	1.42	1.32-1.54**	1.34	1.30-1.39**

Self-rated general health

Excellent, very good or good

Fair or poor	2.06	1.82-2.33**	1.94	1.43-2.62**	2.84	2.13-3.79**	2.03	1.80-2.29**
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Self-rated mental health

Excellent, very good or good

Fair or poor	2.89	2.46-3.39**	3.02	2.12-4.32**	2.26	1.50-3.40**	2.79	2.39-3.25**
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OR: Odds Ratio, The first category of each variable is considered as the reference category; * p < 0.05; ** p < 0.005. CESD-10: Center for Epidemiologic Studies Short Depression Scale. ACEs score: Adverse Childhood Experiences score.

Predictors of abuse in multivariable regression models were gender (physical abuse, any type), sexual orientation (financial), age group (psychological), education (any type), household income (psychological, any type), current work status (psychological, any type), living arrangement (psychological, any type), social support availability (psychological, any type), ACEs score (all types), feeling lonely (all types) and self-rated general health (psychological, financial, any type) (Table 6).

Table 6 Multivariable associations between psychological, physical, financial and any type of elder abuse with all study variables (weighted estimates).

Variable	Psychological Abuse		Physical Abuse		Financial Abuse		Overall Abuse	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Gender								
Male								
Female	0.95	0.84-1.07	0.63	0.46-0.85**	0.75	0.54-1.03	0.87	0.78-0.98*
Sexual Orientation								
Heterosexual								
Sexual minority	1.18	0.79-1.77	0.65	0.22-1.93	2.62	1.33-5.17*	1.33	0.92-1.93
Age group								
65-74								
+75	0.77	0.67-0.88**	0.86	0.62-1.19	0.97	0.70-1.35	0.82	0.59-1.14
Race								
White								
Non-White	0.71	0.49-1.02	0.912	0.39-2.11	1.53	0.78-1.03	0.82	0.59-1.14
Education								
Below bachelor's degree								
Bachelor's or above	1.16	0.99-1.35	1.09	0.74-1.59	1.23	0.83-1.84	1.19	1.03-1.37*
Marital status								
Never married								
Married or in common-law	1.12	0.82-1.54	0.77	0.39-1.53	0.98	0.46-2.09	1.10	0.81-1.48
Widowed/divorced/separated	0.93	0.68-1.27	0.70	0.37-1.34	1.37	0.68-2.78	1.00	0.75-1.34
Household income								
Less than \$50,000								
\$50,000 or more, but less than \$100,000	1.02	0.89-1.17	0.82	0.57-1.17	0.80	0.56-1.16	0.96	0.84-1.10
\$100,000 or more	1.28	1.06-1.53**	1.24	0.79-1.94	0.98	0.60-1.61	1.19	1.01-1.42*

Current working status								
Working								
Not working	0.80	0.68-0.93**	1.15	0.75-1.76	0.81	0.53-1.23	0.81	0.70-0.94*
Living arrangement								
Alone								
With others	1.37	1.12-1.68**	0.80	0.57-1.42	1.19	0.74-1.90	1.38	1.14-1.66**
Social support availability								
Low								
High	0.68	0.59-0.77**	1.05	0.75-1.47	0.80	0.57-1.13	0.73	0.64-0.82**
CESD-10	1.09	1.08-1.11**	1.08	1.05-1.11**	1.09	1.06-1.12**	1.09	1.08-1.10**
Feeling lonely								
No								
Yes	1.34	1.21-1.61**	1.65	1.17-2.32*	1.08	0.75-1.56	1.36	1.19-1.56**
ACEs score	1.25	1.20-1.30**	1.08	1.05-1.11**	1.31	1.20-1.44**	1.09	1.08-1.10**
Self-rated general health								
Excellent, very good or good								
Fair or poor	1.20	1.01-1.42*	1.09	0.73-1.62	2.13	1.48-3.08**	1.19	1.02-1.40*
Self-rated mental health								
Excellent, very good or good								
Fair or poor	1.15	0.92-1.44	1.21	0.74-1.98	0.68	0.40-1.15	1.15	0.93-1.43

OR: Odds Ratio, The first category of each variable is considered as the reference category; * p < 0.05; ** p < 0.005. CESD-10: Center for Epidemiologic Studies Short Depression Scale. ACEs score: Adverse Childhood Experiences score.

4. Discussion

Our finding of a 10% past-year prevalence rate for any type of abuse among Canadians age 65 and over replicates findings reported by Burnes *et al* who also examined CLSA data [31]. They also mirror previous studies which have demonstrated a higher prevalence of Intimate Partner Violence among LGB compared to heterosexual older adults [32], Specifically, a significantly higher proportion of SM compared to heterosexual individuals reported experiencing at least one type of abuse (12%), with SM females experiencing the highest prevalence of psychological (15.5%), financial (7%) and any abuse type (18.1%). SM males more commonly experienced financial abuse in comparison to their heterosexual counterparts (4.1% vs. 1.3%, P value < 0.001).

Studies of the prevalence of elder abuse among non-heterosexual individuals are scarce, in part due to challenges related to privacy and risk of unintended, unwanted disclosure of minority sexual identities [33]. However, it is not surprising to find higher overall rates of abuse among SM older adults, since compared to their heterosexual age mates they are more likely to be socially isolated and experience mental and physical health challenges, well known risk factors for elder abuse [34]. What was unexpected was the extent of difference between SM females and the other groups. In our study, a higher proportion of SM females reported low income. They were more likely to live alone, feel lonely, and rate their mental health as fair or poor, all well known risk factors for elder abuse. A lower proportion of SM females were married or in common-law relationships compared to SM males (33.3 vs. 56.6%). This may in part explain the different prevalences and patterns of abuse observed for SM females compared to SM males and heterosexual females. Other explanatory factors, beyond the scope of analyses reported here, may include differences in perpetrator-victim relationships, a topic we are currently exploring, along with other unique vulnerabilities for SM females.

Bloemen *et al.* [11] suggested further risk factors for higher abuse rates and reduced access to services among LGB individuals, including increased victimization due to the intersection of LGBT identity and aging, prior violence cycles in the family, vulnerability due to HIV-related impairment, lack of spousal benefits, discomfort in interaction with medical providers and law enforcement services, and lack of advocates. In our study, identifying as SM (vs heterosexual) was significantly associated with experiencing psychological, financial and any type of abuse in bivariate models, however it only remained a significant predictor of financial abuse within multivariable logistic regression models (OR = 2.62, 0.95CI = 1.33-5.17, $P = 0.006$).

There is scant published research examining elder financial abuse within the SM population. We found the prevalence of financial abuse to be highest among older adult SM females. As Cook-Daniels describes, LGBT couples may have all their assets under one name in order to avoid “questions” about having the names of two women or two men on a bank account [35]. When financial abuse by a partner occurs, victims are left in an arduous position to reclaim their belongings and may feel that they have no choice, except to stay with their perpetrating partner. The lack of significant association of sexual orientation with other subtypes of abuse (i.e., psychological and physical) in multivariable models might be attributed to inclusion of stronger predictors into these models (feeling lonely, depression scale score, ACEs) which have been shown to be strongly associated with elder abuse in previous research, combined with the relatively small numbers of SM individuals in the CLSA sample.

One of the unexpected findings of our study was lower odds of experiencing physical and any type of abuse among females compared to males (OR = 0.63 and 0.87, respectively). This might be attributed to an increase in the rate of violence against older men in general, and/or an increased reporting rate by men. This explanation is consistent with law enforcement reports of violence against older men and women. The rate of violent victimization of older adults increased overall by 22% between 2010 and 2020 in Canada, with a 25% increase for men and an 18% increase for women [14]. In the US, non-fatal assault rates among older adults increased 53.1% from 2008 to 2016, a 75.4% increase for men and a 35.4% increase for women [14]. In a cross-sectional study of older adults who underwent forensic examination in Brazil, there were 1.4 male victims of physical abuse for each female [36]. In contrast, studies from Korea [37], Poland [38], Ireland [39] and Portugal [40] have documented lower rates of older adult mistreatment among males. These global differences could reflect differences in definition of mistreatment and/or cohort effects.

Historically, abused men have struggled to recognize, accept and report their victimization. They may feel shame in reporting their experience as a “victim”, fear not being believed, and jeopardizing their masculinity. Conceptualizations of men within society as strong and self-reliant, along with rigid gender role expectations placed upon men, might hinder them from reporting abuse, or from seeking help or support [14, 41, 42].

Other recent studies from the US and Canada have identified equal or higher odds of experiencing elder abuse among males compared to females, similar to our finding. A population-based cohort study on the incidence of elder mistreatment in New York State revealed lower odds of experiencing emotional, physical and financial abuse among females, although there were no statistically significant differences [31]. A recent CLSA COVID-19 Survey study of ours, like the current study, demonstrated that males experienced higher rates of verbal or physical conflict - a proxy for abuse - in comparison to females [43]. Other predictors of increased verbal or physical conflict during the COVID-19 pandemic were identifying as SM, being in the 55-64 age group, living with others, low social support, poor social cohesion, low self-rated health, poor mental health, and a past history of psychological or physical abuse [43].

Unlike some previous studies [44, 45], the present study revealed higher odds of experiencing psychological abuse for the highest income group (OR = 1.28) as well as for older adults who are still working (OR = 1.25). It is noteworthy that the National Elder Mistreatment Study in the United States had previously revealed that relatively younger age (60-69 years vs 70+) and being employed were significant predictors of emotional abuse [46].

Other significant risk factors of elder abuse in our multivariable models include living with others, low social support, depression score, ACEs score, feeling lonely, and poor to fair self-rated general health. These findings are in line with previous research which have consistently linked poor mental health, low self-rated health and lack of social support with different subtypes of abuse [31, 45].

4.1 Limitations

The main limitation of this study is that SM participants comprised only 1.8% of the CLSA cohort. This impeded stratified analyses by subgroups heterosexual, homosexual, bisexual and ‘other’. Similarly, gender identity could not be stratified for analyses beyond males and females (ie. by transman, transwoman, genderqueer, other) due to the overall small number of these gender minority individuals in the CLSA who were 65 years old or more, and eligible for the elder abuse

module. We therefore recoded sexual orientation groups homosexual, bisexual and 'other', as SM individuals, to increase sub-sample size and facilitate statistical comparisons between groups. We also recoded transmen as male, and transwomen as female. We do fully recognize that the sexual orientation sub-groups we had to recode and combine might have unique predisposing factors for abuse, and that their abuse and related experiences may differ. We also recognize and respect that the risk of elder abuse will not be identical among cisgender and transgender individuals, and that recoding of these data may be interpreted as "silencing" these important minority voices. What we can say with absolute certainty is that the unique risk and resilience factors embodied and experienced by SM cisgender and transgender individuals must be an important focus of future research on elder abuse. There may be limited potential for such research using the CLSA data, given the small number of gender and sexual minorities participating overall, including those eligible and willing to answer the elder abuse module questions. That said, future cycles of the CLSA will include more and more individuals who meet the age 65 threshold for eligibility to answer the elder abuse questions, and this may include more SM and gender minority participants as well. There were only three participants identifying as transgender in the sample eligible for the elder abuse module at follow-up 1. There were also some participants ($n = 26$) whose sex at birth did not align with their current gender identity who did not identify as transgender but who may do so in future CLSA cycles. Although the implementation of survey weights enabled representative estimates for the nation, findings from the small SM male and SM female groups should be interpreted with caution. On the other hand, the value of repeat administration of an elder abuse module in CLSA follow-up 3, currently in progress, should not be underestimated. It represents an opportunity to fill knowledge gaps concerning incidence of elder abuse among minority sexual orientation and gender identity groups who have historically been marginalized, but who now form an important and strong community within the Canadian population.

5. Conclusion

Our study is among the first to quantitatively demonstrate within elder abuse subtypes higher prevalence of elder abuse among SM compared to heterosexual individuals, with SM females experiencing the highest prevalence of psychological and financial abuse. Identifying as SM (vs heterosexual) was significantly associated with experiencing psychological and financial abuse in bivariate models, and it remained a significant predictor of financial abuse within multivariable logistic regression. Our study highlights the need for increasing awareness of abuse in sexual and gender minorities, especially of SM females, to address gaps in reporting, and to build capacity and agency for prevention and action. In-depth studies to investigate drivers of financial abuse are needed, including as others have noted, active engagement of the SM population, followed by awareness raising and public education [47, 48]. Trauma-informed and culturally safe training is required for all levels of practitioners and care providers to older adults -especially SM older adults - to promote timely detection of abuse and appropriate interventions. There is also a need for further research, both quantitative and qualitative, to capture stories and the impact of historical experiences that may increase or decrease risk for abuse in gender diverse groups in older age.

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Author Contributions

All authors contributed to conceptualization, interpretation of findings, writing, and editing. M.K. conducted the statistical analyses. All authors reviewed and approved the article before submission, and provided final approval of the article.

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Competing Interests

The authors have declared that no competing interests exist.

Additional Materials

1. Table S1: Socio-demographic characteristics of the sample by gender identification and sexual orientation (age ≥ 65 , weighted estimates).
2. Table S2: Mental health and self-rated health of the sample by gender identification and sexual orientation (age ≥ 65 , weighted estimates).

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