

“We Are at Risk Too”: The Disparate Mental Health Impacts of the Pandemic on Younger Generations


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Nous Sommes Aussi à Risque: Les Effets Disparates de la Pandémie Sur la Santé Mentale des Générations Plus Jeunes

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Abstract

Objectives: The coronavirus 2019 (COVID-19) pandemic has resulted in profound global impact, with older adults at greater risk of serious physical health outcomes. It is essential to also understand generational differences in psychosocial impacts to identify appropriate prevention and intervention targets. Across generational groups, this study examined: (1) rates of precautions and adaptive and maladaptive health behaviors, (2) differences in levels of anxiety, and (3) rates of COVID-related concerns during Wave 1 of COVID-19 in Canada.

Participants: We analyzed data from 2 Canadian population-based data sets: the Canadian Perspective Survey Series: Impact of COVID-19 survey ($N = 4,627$; March 29 to April 3, 2020), and Crowdsourcing: Impacts of COVID-19 on Canadians—Your Mental Health ($N = 45,989$; April 24 to May 11, 2020).

Measures: We categorized generational age group. Participants self-reported changes in behaviors and COVID-related concerns, and a validated measure assessed anxiety symptoms.

Results: There are generational differences in behavioral responses to the pandemic. Adaptive health habits (e.g., exercise) were comparable across groups, while changes in maladaptive health habits (e.g., substance use) were highest among younger age groups, particularly Millennials (15 to 34 years old). COVID-related precautions were also highest among the younger generations, with Generation X (35 to 54 years old) exhibiting the highest rate of precautionary behavior. Results also revealed that the highest rate of clinically significant anxiety is among Millennials (36.0%; severe anxiety = 15.7%), and the younger generations have the highest rates of COVID-related concerns.

Conclusion: These early data are essential in understanding at-risk groups given the unpredictable nature of the pandemic and its potential long-term implications.

Abrégé

Objectifs : La pandémie de la COVID-19 a entraîné un effet mondial profond, qui laisse les adultes âgés à risque accru de sérieux résultats de santé physique. Il est essentiel de comprendre également les différences générationnelles des effets psychosociaux afin d'identifier les cibles d'intervention et de prévention appropriées. Dans tous les groupes générationnels, la présente étude a examiné: (1) les taux des précautions et des comportements de santé adaptés et inadaptés, (2) les différences

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des taux d'anxiété, et (3) les taux de préoccupations liées à la COVID durant la Première vague de la COVID-19 au Canada.

Participants : Nous avons analysé les données de deux ensembles dans la population canadienne: la Série de sondages sur les perspectives canadiennes 1: les impacts de la COVID-19 ($N = 4\ 627$; du 29 mars au 3 avril 2020), et Approche participative: Répercussions de la COVID-19 sur la santé mentale des Canadiens ($N = 45\ 989$; du 24 avril au 11 mai, 2020).

Mesures : Nous avons réparti en catégories le groupe d'âge générationnel. Les participants auto-déclaraient les changements de comportement et les préoccupations liées à la COVID, et une mesure validée évaluait les symptômes d'anxiété.

Résultats : Il y a des différences générationnelles dans les réponses comportementales à la pandémie. Les habitudes sanitaires adaptées (p. ex., l'exercice) étaient comparables entre les groupes, tandis que les changements d'habitudes sanitaires inadaptées (p. ex., l'utilisation de substances) étaient les plus élevés chez les groupes de jeune âge, particulièrement les Milléniaux (15-34 ans). Les précautions liées à la COVID étaient également les plus élevées parmi les jeunes générations, la Génération X (35-54 ans) affichant le taux le plus élevé de comportement de précaution. Les résultats ont aussi révélé que le taux le plus élevé d'anxiété cliniquement significative se trouve chez les Milléniaux (36,0%; anxiété grave = 15,7%) et les générations les plus jeunes ont les taux les plus élevés des préoccupations liées à la COVID.

Conclusion : Ces premières données sont essentielles pour comprendre les groupes à risque étant donné la nature imprévisible de la pandémie et ses implications potentielles à long terme.

Keywords

COVID-19, pandemic, generational impacts, mental health, health behavior, anxiety, precautionary behavior, epidemiology

Introduction

The coronavirus 2019 (COVID-19) pandemic has resulted in profound global impact. In Canada, the first case of the novel coronavirus was reported on January 25, 2020. It was not until early March, however, that cases began to climb, Canada reported its first death (March 9), and the Canadian government implemented restrictions on entering Canada from abroad (March 16). The Quarantine Act was instilled on March 25, indicating that returning travelers must self-isolate for 14 days.¹ Over the course of a month, several provinces closed businesses and implemented physical distancing mandates and by late April to May the provinces began reopening and easing restrictions. Beyond those acquiring the disease, Canadians have also been affected by physical distancing mandates and additional unprecedented stresses related to financial loss, child care challenges, and limited health care access, among others. It is recognized that aging populations are at elevated risk of adverse physical health outcomes if COVID-19 is contracted including critical illness and death.²⁻⁴ Less well understood are the psychosocial impacts that will undoubtedly outlive the pandemic. Understanding at-risk groups is essential.^{5,6} This study provides preliminary insight into COVID-related psychosocial (psychological, cognitive, and behavioral) impacts across generational groups during Wave 1 of COVID-19 in Canada.

Rates of stress and worry are higher among younger generations including "Millennials" and "Generation Xers" compared to older groups including "Baby Boomers" and the "Greatest/Silent Generations."⁷⁻⁹ This transcends to age-related differences in rates of mental disorders, which are elevated in younger compared to older generations.¹⁰ Charles' Strength and Vulnerability Integration theory¹¹ proposes that older adults have elevated strengths in coping with

life stressors and consequently exhibit greater emotional well-being.^{7,12} However, when faced with unavoidable or inescapable negative events, these age-related strengths are compromised. There are also unique challenges inherent to older adults with multimorbidity during the pandemic, including isolation¹² and loneliness, which may be exacerbated by the "digital divide" (i.e., less virtual access to social supports)⁶, and may elevate risk of mental health challenges in this context. Also unclear are the behavioral generational differences during COVID-19. Generally, engagement in preventative health behaviors improves with increasing age, and younger generations are at highest risk of engaging in fewer health-promoting behaviors.^{13,14} This may translate to engagement in poor health behaviors during the pandemic. Stress and anxiety during COVID-19 may also impact behavioral responses. Research suggests elevated concern is associated with adherence to behavioral recommendations and adaptive health behaviors.¹⁵⁻¹⁷ However, significantly elevated distress can result in counterintuitive behavioral practices, including maladaptive health behaviors (e.g., increased smoking) or avoidance.¹⁵ This may suggest that younger generations, who are at potentially higher risk of compromised mental health, may exhibit poorer behavioral responses compared to older adults. In support, research on the severe acute respiratory syndrome outbreak revealed that older adults were better able to adapt their coping strategies to the changing environmental context and engaged in more precautionary health behaviors.^{18,19}

The current study aims to describe behavioral changes, levels of anxiety, and COVID-related concerns across generational groups using 2 Canadian population-based surveys conducted between March and May 2020. Preliminary research from Canadian convenience samples during the first wave of the pandemic outlined that younger adults reported greater levels of negative affect, mental health symptoms,

and COVID-related concerns. However, these nonrepresentative studies did not examine age-related differences in behavioral responses to the pandemic.^{20,21} A small sample of adults from the United States revealed that older males endorsed the fewest number of behavioral changes in response to COVID-19 compared to females and younger participants.²² This preliminary study, however, was limited in its sample size. Additionally, the early Canadian outbreak differed in many respects to the outbreak in the United States and subsequent governmental responses. Across generational groups in Canada, we aim to: (1) report rates of precautions and adaptive and maladaptive health behaviors during the pandemic, (2) assess differences in levels of anxiety, and (3) examine rates of COVID-related concerns.

Methods

Data

We analyzed Statistics Canada Public Use Microdata from 2 surveys: Canadian Perspective Survey Series 1: Impacts of COVID-19 ($N = 4,627$; collection response rate = 63.9%), and Crowdsourcing: Impacts of COVID-19 on Canadians—Your Mental Health ($N = 45,989$; response rate is unavailable due to the use of crowdsourcing as a sampling method). Survey content was derived from previous Statistics Canada surveys, and Statistics Canada's Questionnaire Resource Centre qualitatively evaluated the newly developed questions. Data from Survey 1 were collected online during Wave 1 of the COVID-19 pandemic in Canada between March 29 and April 3, 2020. The sample is comprised of Canadians aged 15 years and older who live in the 10 provinces. Those living in households in extremely remote areas, institutionalized individuals, and those living on reserves were excluded from participating. This survey utilized Statistics Canada's pilot probability panel as a sampling frame, which was created using a subset of Labour Force Survey (LFS) respondents. The LFS utilizes stratified multi-stage probability sampling. Statistical weights were derived to ensure accurate representation of the Canadian population. Additional details are published elsewhere.²³

Data from Survey 2 were collected online between April 24 and May 11, 2020. Open advertising recruited participants, and the sample was self-selected. The target population included Canadians, aged 15 years and older, living in any of the 13 provinces and territories. Benchmarking techniques were applied to correct for unbalanced responding across sociodemographics compared to the Canadian population. Additional details are published elsewhere.²⁴

Measures

Sociodemographics. We derived generation groups from pre-categorizations by Statistics Canada that approximate definitions from prior research²⁵⁻²⁸: "Millennials" (aged 15 to 34 years), "Generation X" (ages 35 to 54 years), "Baby Boomers" (ages 55 to 74 years), and the "Greatest/Silent

Generations" (ages 75+). Within the Survey 2 sample, Baby Boomers were collapsed with the Greatest/Silent Generations due to the highest predetermined age category being 55+. Additional sociodemographics are shown in Table 1.

Behavioural impacts of COVID-19 (Survey 1). Within Survey 1, participants were asked, "Which of the following precautions have you taken to reduce your risk of exposure to COVID-19?" (Yes/No for each precaution). Participants were also asked, "Are you doing any of the following activities for your health?" (Yes, for my mental health; Yes, for my physical health; Yes, for both my mental and physical health; No for each activity). We collapsed all "Yes" options to create dichotomized variables for each activity (yes, no). Finally, participants were asked, "Have your weekly habits changed for any of the following activities?" (Increased, Decreased, No change for each activity). We report on habits that have increased only. We also computed a continuous variable, representing the number of behavioral impacts of each kind. See Table 2 for additional behavioral impacts.

Mental health impacts of COVID-19 (Survey 2). Within Survey 2, the 7-item Generalized Anxiety Disorder Scale (GAD-7)²⁹ assessed symptoms of anxiety over the past 2 weeks. The GAD-7 is a valid and reliable self-report measure of generalized anxiety symptoms.^{29,30} A score of ≥ 10 indicates clinically significant anxiety,³¹ and severity of symptoms was categorized as follows: 0 = no symptoms, 1 to 4 = minimal symptoms, 5 to 9 = mild symptoms, 10 to 14 = moderate symptoms, and 15 to 21 = severe symptoms.³²

COVID-19-related concerns (Surveys 1 and 2). Participants from both surveys were asked "How concerned are you about each of the following impacts of COVID-19?" (Not at all, Somewhat, Very, Extremely for each concern). Only concerns rated "Very" or "Extremely" are reported. We also computed continuous variables within each survey, representing the number of COVID-related concerns. See Table 2 for the list of concerns.

Analytic Strategy

First, we assessed the prevalence of each generation, and cross-tabulations with chi-square analyses assessed sample characteristics according to generation, within each sample. Next, cross-tabulations assessed the prevalence of behavioral impacts of COVID-19 according to generation (Survey 1), and analyses of variance (ANOVAs) assessed mean differences in the number of behavioral impacts within each domain (i.e., precautions taken, adaptive health habits, maladaptive health habits) according to generation. A chi-square analysis then assessed differences in the prevalence of clinically significant anxiety according to generation (Survey 2). Finally, cross-tabulations assessed rates of COVID-related concerns according to generation among both samples, and ANOVAs examined whether there were mean differences in

Table 1. Sample Characteristics According to Generation.

	“Millennials” (ages 15 to 34)	“Generation X” (ages 35 to 54)	“Baby Boomers” (ages 55 to 74)	“Greatest/Silent Generations” (ages 75+)
Survey 1 (<i>N</i> = 4,627; March 29 to April 3, 2020)	890 (31.0)	1,532 (31.3)	1,889 (31.6)	316 (6.1)
Sex				
Male	356 (47.4)	721 (49.7)	911 (48.7)	167 (43.5)
Female	534 (52.6)	811 (50.3)	978 (51.3)	149 (56.5)
Marital status				
Married/common-law	364 (33.8)	1,068 (79.4)	1,217 (73.8)	194 (71.7)
Widowed/separated/divorced	19 (1.2)	169 (7.3)	457 (17.2)	106 (26.1)
Single/never married	507 (65.0)	295 (13.2)	215 (9.0)	16 (2.2)
Education				
High school/equivalent or less	287 (54.8)	271 (26.6)	517 (38.5)	105 (51.7)
Certificate or diploma (below bachelor’s level)	252 (20.9)	602 (37.3)	743 (36.0)	97 (27.1)
Bachelor’s degree or higher	351 (24.3)	659 (36.1)	629 (25.4)	114 (21.2)
	“Millennials” (ages 15 to 34)	“Generation X” (ages 35 to 54)	“Baby Boomers + Greatest/Silent Generations” (ages 55+)	
Survey 2 (<i>N</i> = 45,989; April 24 to May 11, 2020)	(31.0)	(32.0)	(37.0)	
Sex				
Male	(50.6)	(50.6)	(47.1)	
Female	(49.4)	(49.4)	(52.9)	

Note. Values reported for Survey 1 represent *n*(weighted %) of each characteristic, among each generation group; Values reported for Survey 2 represent % (with benchmarking applied) of each characteristic, among each generation group. As recommended by Statistics Canada, *n*'s are not reported for Survey 2. All sociodemographic characteristics significantly differed according to generation at $P < 0.001$.

the number of COVID-related concerns according to generation. For each set of ANOVAs where the omnibus test was significant, a post-hoc Tukey’s Honest significant difference test assessed pairwise comparisons.

For Survey 1 data, we employed statistical weighting for all reported proportions and applied the adjustment factor (derived by Statistics Canada) to measures of precision to ensure representativeness of the Canadian population. Significance tests were unweighted. For Survey 2, we employed benchmarking for all analyses to correct for unbalanced responding across sex, age group, and province/territory compared to the Canadian population. In line with Statistics Canada’s recommendations, no count totals were reported for these data.²⁴

Results

Sample Characteristics

Among the Survey 1 sample (*N* = 4,627), 31.0% of participants were Millennials, 31.3% were Generation Xers, 31.6% were Baby Boomers, and 6.1% were members of the Greatest/Silent Generations. Among the Survey 2 sample (*N* = 45,989), 31.0% of participants were Millennials, 32.0% were Generation Xers, and 37.0% were Baby Boomers/Greatest/Silent Generations. See Table 1 for additional sample characteristics.

Behavioural Impacts of COVID-19 (Survey 1)

Table 2 outlines behavioral impacts according to generation. Across generations, over 3/4 reported that they avoided leaving the house, avoided large crowds/gatherings, and washed their hands more regularly to reduce the risk of exposure. Approximately 2/3 of Millennials, Generation Xers, and Baby Boomers reported stocking up on essentials to reduce risk compared to half of members of the Greatest/Silent Generations. Generation Xers more commonly made a plan to care for household members who are ill, compared to other generations (13.4% vs. 3.6% to 9.1%). There were significant differences in the mean number of precautions taken according to generation, $F(3) = 7.02$, $P < 0.001$. Generation Xers engaged in the most precautions.

There was similar engagement in all adaptive health habits across generations. Over 90% of participants were communicating with their friends and family, and nearly 60% or more reported exercising. No group differences emerged in the mean number of adaptive health habits.

With respect to maladaptive health habits, Millennials and Generation Xers endorsed the highest rates of increased consumption of alcohol, tobacco, cannabis, and junk food compared to other generations. There were significant differences in the mean number of maladaptive health habits according to generation, $F(3) = 168.42$, $P < 0.001$, with a linear trend of fewer maladaptive habits with increasing age.

Table 2. Behavioral Impacts of COVID-19 According to Generation (Survey 1 Only).

	“Millennials” (ages 15 to 34)	“Generation X” (ages 35 to 54)	“Baby Boomers” (ages 55 to 74)	“Greatest/Silent Generations” (ages 75+)	F-statistic
Survey 1 (N = 4,627; March 29 to April 3, 2020)	890 (31.0)	1,532 (31.3)	1,889 (31.6)	316 (6.1)	
Precautions taken to reduce risk					
Stocked up on essentials	570 (62.2)	1,030 (65.8)	1,218 (62.4)	199 (54.9)	
Filled prescriptions	198 (19.2)	472 (30.1)	840 (43.4)	172 (46.6)	
Made plan to care for household members who are ill	88 (8.1)	201 (13.4)	160 (9.1)	15 (3.6)	
Made plan for non-household members	139 (17.7)	331 (20.5)	307 (17.0)	15 (4.5)	
Made plan to communicate with family/friends/ neighbors	390 (43.3)	648 (41.4)	877 (45.9)	144 (44.5)	
Avoided leaving the house for nonessential reasons	805 (90.1)	1,402 (91.8)	1,718 (90.1)	292 (85.3)	
Social distancing in public	798 (88.9)	1,370 (89.0)	1,685 (85.9)	251 (70.4)	
Avoided crowds/large gatherings	803 (89.2)	1,340 (88.0)	1,671 (86.5)	270 (76.4)	
Washed hands more regularly	819 (91.0)	1,416 (92.7)	1,768 (92.6)	295 (90.9)	
Avoided touching your face	603 (64.8)	1,085 (72.9)	1,337 (73.4)	199 (61.5)	
Cancelled travel	347 (40.3)	581 (37.4)	739 (36.2)	109 (28.7)	
Worked from home	342 (35.1)	646 (38.9)	370 (18.1)	18 (4.1)	
Mean number of precautions taken (SE)	6.63 (0.00) ^{a,b}	6.87 (0.00) ^{b,c}	6.73 (0.00) ^b	6.28 (0.00) ^{a,d}	7.02 ^{***}
Adaptive health habits					
Engaged in communication with friends and family	824 (93.5)	1,406 (91.6)	1,706 (91.7)	290 (92.4)	
Engaged in meditation	224 (25.7)	393 (26.4)	449 (26.9)	84 (26.4)	
Engaged in exercise outdoors	542 (59.8)	1,021 (60.5)	1,340 (69.4)	199 (62.8)	
Engaged in exercise indoors	522 (64.1)	882 (58.7)	1,018 (57.0)	200 (68.7)	
Changed my food choices	363 (41.4)	585 (39.2)	577 (33.1)	82 (32.1)	
Mean number of current activities for health (SE)	2.78 (0.00)	2.81 (0.00)	2.75 (0.00)	2.79 (0.00)	0.66
Maladaptive health habits					
Increased alcohol consumption	196 (18.7)	265 (18.5)	114 (6.5)	9 (2.9)	
Increased use of tobacco	41 (3.5)	55 (4.8)	39 (2.0)	–	
Increased cannabis consumption	96 (11.6)	72 (6.5)	33 (1.9)	–	
Increased junk food consumption	377 (43.3)	436 (30.0)	277 (14.0)	14 (2.2)	
Watched more television	581 (68.6)	904 (65.0)	1,114 (59.8)	171 (56.0)	
Spent more time on the internet	688 (80.3)	1,037 (68.6)	1,121 (60.1)	170 (48.9)	
Played more video games	353 (47.1)	272 (18.4)	138 (7.5)	19 (5.5)	
Played more board games	290 (34.5)	520 (34.3)	179 (10.2)	30 (11.9)	
Mean number of weekly habits that have increased (SE)	2.53 (0.00) ^{a,b,d}	2.07 (0.00) ^{b,c,d}	1.47 (0.00) ^{a,c}	1.27 (0.00) ^{a,c}	168.42 ^{***}

Note. Values represent n(weighted %) of each behavioral impact, among each generation group. – = cell < 5; SE = standard error.

^aSignificantly differs from Generation X, $P < 0.05$.

^bSignificantly differs from Greatest/Silent Generations, $P < 0.05$.

^cSignificantly differs from Millennials, $P < 0.05$.

^dSignificantly differs from Baby Boomers, $P < 0.05$.

*** $P < 0.001$.

Mental Health Impacts of COVID-19 (Survey 2)

Clinically significant anxiety symptoms were most common among Millennials (36.0%), followed by Generation Xers (27.1%) and Baby Boomers/Greatest/Silent Generations

(14.5%). There was a difference in clinically significant anxiety according to generation, $\chi^2(2) = 1,902.25$, $P < 0.001$. As shown in Figure 1, 15.7% of Millennials had severe anxiety, compared to 11.4% of Generation Xers and 5.3% of Baby Boomers/Greatest/Silent Generations.

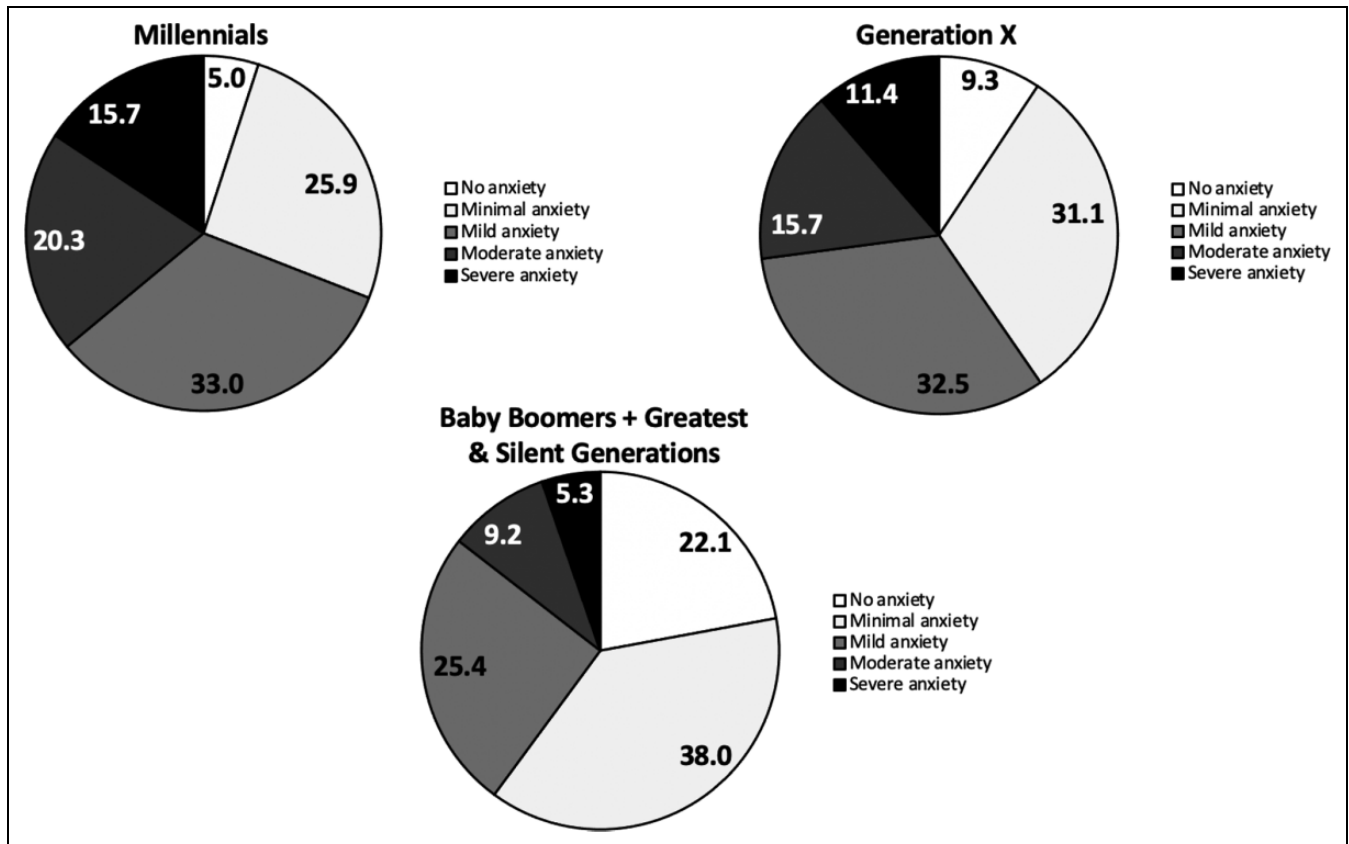


Figure 1. Severity of anxiety symptoms according to generation (Survey 2: N = 45,989; April 24 to May 11, 2020).

COVID-19-Related Concerns (Surveys 1 and 2)

Within Survey 1, members of the Greatest/Silent Generations expressed greater concerns about their own health (51.5%), the health of their household (61.1%), and the health of Canadians (78.8%) compared to other generations (Table 3). Baby Boomers expressed greater concerns about violence in the home (9.3%) compared to other generations, and Millennials expressed greater concerns about vulnerable peoples’ health (87.5%) and civil disorder (49.1%). There were significant differences in the mean number of concerns according to generation, $F(3) = 4.88, P < 0.01$. Post hoc analyses revealed that Generation Xers (5.83) reported a greater number of concerns compared to Baby Boomers (5.44).

Within Survey 2, similar generational variations in types of concerns emerged, but concerns were less common across the majority of domains for each generation, with a few exceptions. For example, concern about maintaining social ties was more common for Millennials and remained similar for Generation Xers and Baby Boomers/Greatest/Silent Generation. There were significant differences in the mean number of concerns according to generation, $F(2) = 577.54, P < 0.001$. Results demonstrated a linear trend with a decreasing number of concerns according to increasing age.

Discussion

Given the unprecedented nature of the COVID-19 pandemic, limited information exists on disparities in psychosocial impacts across the life span. Popular media has referenced differential responses across generations but empirical evidence is lacking. To our knowledge, this study represents the first population-based examination of behavioral, cognitive, and emotional responses to COVID-19 across generational groups, using population-based Canadian survey data. Three primary results emerged: (1) rates of anxiety differ according to generational group with the highest rates among younger groups; (2) COVID-19-related concerns are highest among younger groups, but types of concerns differ across generational groups; and (3) there are generational differences in behavioral responses. Although COVID-related worries and anxiety are greatest for younger generations, adaptive health habits were comparable across groups, while maladaptive health habits were highest among younger groups. Despite this, COVID-19-related precautions were also highest among younger and middle-aged generations, with Generation X (35 to 54 years old) exhibiting the highest rate of precautionary behavior.

Consistent with prior research,³³ results revealed the youngest generation had the highest rate of clinically significant anxiety (36.0%; severe anxiety = 15.7%), followed by

Table 3. COVID-19-Related Concerns According to Generation.

	“Millennials” (ages 15 to 34)	“Generation X” (ages 35 to 54)	“Baby Boomers” (ages 55 to 74)	“Greatest/Silent Gen- erations” (ages 75+)	F-statistic
Survey 1 (N = 4,627; March 29 to April 3, 2020)	890 (31.0)	1,532 (31.3)	1,889 (31.6)	316 (6.1)	
<i>Very or extremely concerned about COVID-19’s impact on . . .</i>					
My own health	220 (26.1)	531 (38.4)	743 (41.6)	146 (51.5)	
Health of members of my household	431 (55.5)	799 (58.5)	833 (50.4)	147 (61.1)	
Vulnerable people’s health	758 (87.5)	1,251 (83.2)	1,342 (74.3)	166 (64.8)	
Canadian population’s health	569 (64.6)	1,049 (71.3)	1,327 (72.4)	229 (78.8)	
World population’s health	561 (67.0)	1,021 (69.0)	1,339 (72.7)	228 (72.7)	
Overloading the health system	758 (86.5)	1,291 (84.7)	1,560 (82.5)	260 (81.6)	
Civil disorder	402 (49.1)	633 (46.1)	553 (31.1)	87 (29.9)	
Maintaining social ties	294 (35.9)	465 (35.1)	563 (30.7)	99 (32.5)	
Ability to cooperate/support one another <i>during</i> the crisis	372 (42.3)	627 (45.5)	651 (37.9)	121 (44.6)	
Ability to cooperate/support one another <i>after</i> the crisis	346 (40.5)	600 (43.8)	594 (35.1)	102 (32.6)	
Family stress from confinement	308 (36.8)	517 (37.7)	454 (24.3)	61 (23.4)	
Violence in the home	76 (8.1)	117 (7.5)	138 (9.3)	14 (5.4)	
Mean number of COVID-19-related concerns (SE)	5.73 (0.00)	5.83 (0.00) ^a	5.44 (0.00) ^b	5.47 (0.00)	4.88**
	“Millennials” (ages 15 to 34)	“Generation X” (ages 35 to 54)	“Baby Boomers + Greatest/Silent Generations” (ages 55+)		F-statistic
Survey 2 (N = 45,989; April 24 to May 11, 2020)	(31.0)	(32.0)	(37.0)		
<i>Very or extremely concerned about COVID-19’s impact on . . .</i>					
My own health	(21.0)	(25.7)	(27.3)		
Health of members of my household	(44.4)	(42.0)	(35.0)		
Vulnerable people’s health	(78.1)	(75.4)	(61.1)		
Canadian population’s health	(50.9)	(46.5)	(45.5)		
World population’s health	(51.0)	(45.8)	(49.6)		
Overloading the health system	(63.2)	(58.4)	(53.4)		
Civil disorder	(34.0)	(27.8)	(21.2)		
Maintaining social ties	(39.0)	(33.5)	(29.5)		
Ability to cooperate/support one another <i>during</i> the crisis	(38.1)	(32.4)	(25.1)		
Ability to cooperate/support one another <i>after</i> the crisis	(41.0)	(34.2)	(23.4)		
Family stress from confinement	(35.6)	(32.7)	(18.2)		
Violence in the home	(2.7)	(1.3)	(0.6)		
Mean number of COVID-19-related concerns (SE)	4.99 (0.02) ^{a,b}	4.55 (0.02) ^{a,c}	3.88 (0.02) ^{b,c}		577.54***

Note. Values reported for Survey 1 represent *n*(weighted %) of each COVID-19-related concern, among each generation group; Values reported for Survey 2 represent % (with benchmarking applied) of each COVID-19-related concern, among each generation group. COVID-19 = coronavirus 2019; SE = standard error.

^aSignificantly differs from Baby Boomers (and Greatest/Silent Generations for Survey 2), $P < 0.05$.

^bSignificantly differs from Generation X, $P < 0.05$.

^cSignificantly differs from Millennials, $P < 0.05$.

** $p < 0.01$. *** $p < 0.001$.

Generation X (27.1%; severe anxiety = 11.4%) and Baby Boomers/Greatest/Silent Generations (14.5%; severe anxiety = 5.3%). Comparably, in prior Canadian research using the GAD-7, only 6.1% of older adults,³⁴ 18.6% of public

safety personnel,³⁵ and 15.5% of Quebecois adults³⁶ had clinically significant symptoms. This suggests that current rates of anxiety may be substantially higher than the norm. Disparate findings emerged for specific COVID-19-related

worries. Younger generations endorsed more worries relative to older generations and the *types* of worries differed across groups. While older generations were more concerned about health and well-being of themselves, their household, and Canadians in general, younger generations were concerned about secondary implications of COVID-19 such as civil disorder, maintaining social ties, family stress, and the ability to cooperate. The reduced impact of COVID-19 on older generations' mental health relative to younger generations is consistent with prior trauma research.³⁷ This is also partially consistent with recent COVID-19 research which found that older adults (males in particular) reported less worry related to COVID-19 compared to their younger counterparts.^{20,22} The reduced mental health impact may be related to adaptive coping and emotional regulation strategies established in late life.¹¹

Results demonstrate primarily lower prevalence estimates of COVID-19-related worries across generational groups from Survey 1 to Survey 2, particularly among older generations. However, the surveys were administered to different samples, and thus, results may not reflect a true decrease in worries over time. However, it is possible a significant proportion of people may habituate and adjust to the changes and emotional responses which would have been exacerbated early in the pandemic, which has been previously described.³⁸ However, rates of habituation may vary according to age. For example, research has shown that older adults tend to exhibit greater responsiveness and flexibility in coping strategies over the course of pandemics,¹⁸ which may be reflected by larger declines in worries among older groups.

There were also pandemic-related generational differences in behavioral responses. Overall younger and middle-aged generations engaged in a greater number of precautionary behaviors, with Generation X (35 to 54 years old) exhibiting the highest level of precautions. Elevated precautions among this group may relate to elevated levels of worry and anxiety,³⁹ associated with greater reactivity to stressors,⁴⁰ and compounded by increased responsibilities in caring for both children and older adults. This is exemplified by the elevated rate of "making a plan to care for household members who are ill" (13.4%) and "concern about family stress from confinement" (37.7%) among Generation X compared to other groups. This is also consistent with Barber and Kim²² who found lower rates of engagement in precautions among older adults. Of note, this may also be influenced by age-related differences in lifestyle and differences in the relevance of specific precautions according to age (e.g., worked from home). This finding may also be impacted by differences in levels of education obtained according to generation. Generation X had the highest proportion of participants with a bachelor's degree or higher, and recent research outlined that those with a higher level of education are more likely to take precautions against COVID-19.⁴¹ Understanding how these precautionary behaviors translate to objective reductions in risk over time should be examined in future research.

Despite these differences, all groups demonstrated similar levels of adaptive health habits. Conversely, a significant proportion of individuals reported changing weekly habits, many of which would be considered maladaptive, and rates differed across groups. Millennials and Generation X reported increased rates of cannabis and alcohol consumption. This may relate to elevated anxiety symptoms among these younger groups, which is recognized to elicit maladaptive health behaviors in general¹⁵ and in the context of trauma.^{42,43} It is also possible that differences in demographic features across groups impacted these findings. Specifically, the oldest generation had the highest proportion of females, and females are less likely to engage in maladaptive health behaviors such as substance misuse compared to males and alternatively use adaptive coping strategies.^{44,45} Regardless, these behaviors should be closely monitored, particularly in younger age groups, as they may increase the risk for substance use disorders or other health sequelae.⁴⁶

Despite the strengths of this study including a large population-based sample of contemporary and timely data, there are limitations. First, results are based on self-report as opposed to clinical assessments/semistructured interviews and are specific to a relatively brief temporal period. Findings may differ alongside changes in the pandemic. Second, given time constraints, Statistics Canada was unable to employ rigorous sampling procedures (for Survey 2) which may limit generalizability. Third, both surveys were cross-sectional and therefore longitudinal trends could not be examined. Fourth, this study utilized public access data and therefore groups were aggregated to protect the identity of participants, which limited how we defined generational groups. Fifth, although certain questions were asked in reference to COVID-19 (e.g., precautions, concerns) or regarding recent changes (e.g., maladaptive health habits), others were not asked in reference to a specific time period or event (e.g., adaptive health habits) and thus we are unable to identify whether and how they are impacted by the pandemic. Sixth, although statistical significance was identified for cumulative count variables (e.g., maladaptive health behaviors), in many cases differences were small and it is unclear how these findings might translate to meaningful behavioral differences. Results should be interpreted with caution. Finally, findings were based on Canadian data and may not be representative of other countries.

The COVID-19 pandemic has resulted in widespread anxiety, with Millennials exhibiting the highest levels of both clinically significant anxiety and COVID-19-related concerns. Trends in both precautions and maladaptive behaviors varied according to generation. While members of the Greatest/Silent Generations engaged in the fewest precautionary behaviors, Millennials endorsed the highest number of maladaptive behaviors. Interestingly, all generations engaged in similar rates of adaptive health behaviors. In combination, it is necessary to develop targeted interventions to support the mental health of Canadians. In a nationally representative sample of Canadians, over 50% indicated

that they believe the Federal Government should be doing more to support Canadians' mental health during the pandemic.⁴⁷ This may be particularly important for younger age groups who are not only at risk of elevated anxiety but also display maladaptive coping such as elevations in substance misuse. Increasingly, there has been interest in virtual care including online interventions, such as internet-based cognitive behavioral therapy (e.g., AbilitiCBT, Wellness Together Canada), to address COVID-19-related mental health challenges and promotion of adaptive coping. This may be one important component in a stepped care approach to meet increasing mental health needs of Canadians and ensuring mental health professionals such as psychiatrists and clinical psychologists have the capacity to meet the needs of the more complex and severe cases. Additionally, recent media has focused on younger generations as "super spreaders" and several initiatives including targeted advertising have been developed to promote precautionary behavior such as wearing masks in these age groups.⁴⁸ Our findings suggest that individuals in later life, the most vulnerable to contracting COVID-19, may also not be exercising high levels of precautionary behavior and it is important to also promote targeted initiatives for these age groups. Universally, mental health should be carefully monitored across the life span, as early acute stress responses are predictors for adverse health sequelae.⁴⁹

Authors' Note

Data analyzed for this study are Statistics Canada Public Use Microdata and are publicly available.

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