Depression, Anxiety, and Suicidal Ideation in a Population-Based Cohort of Young Adults Before and During the First 12 Months of the Covid-19 Pandemic in Canada

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Abstract

Objectives: Findings from a birth cohort study indicated that the mental health of young adults had not worsened during the first wave of the COVID-19 pandemic, compared to 2018. This study examined longitudinal changes in mental health between March 2018 and June 2021, in the context of protracted public health mitigation measures about 12 months after the onset of the pandemic.

Methods: Participants from the Quebec Longitudinal Study of Child Development (n = 2120 at inception; n = 1461 during the COVID-19 pandemic), a population-based cohort of individuals born in 1997/98, reported on their depression and anxiety symptoms as well as suicidal ideation prior to the pandemic in 2018 (Age 20), and during the pandemic in the Summer of 2020 (Age 22) and Spring of 2021 (Age 23).

Results: Depressive (Cohen's d=.15 [95% CI: .09 to .20]) and anxiety (Cohen's d=.33 [95% CI: .27 to .39]) symptoms increased between 2018 to 2021 for both males and females, but suicidal ideation did not change. There was also a significant increase in moderate to severe depressive (31.7% to 36.3%) and anxiety (14.7% to 24.8%) symptoms from 2018 to 2021. Youth who were students, those who were experiencing financial stress, food insecurity, and loneliness, as well as those without pre-existing poor mental health experienced the largest increase in depressive and anxiety symptoms over time.

Conclusion: These findings highlight the mental health burden experienced by young adults during the COVID-19 pandemic, highlighting the need for preventive services and continued longitudinal follow-ups of these youths.

Keywords: depression, anxiety, suicide, young adult, COVID-19

Résumé

Objectifs : Les résultats d'une étude de cohorte de naissance ont indiqué que la santé mentale des jeunes adultes ne s'était pas détériorée au cours de la première vague de la pandémie de la COVID-19, en comparaison à 2018. La présente étude examine maintenant les changements longitudinaux de la santé mentale entre mars 2018 et juin 2021, dans le contexte de mesures prolongées de santé publique, environ 12 mois après le début de la pandémie.

Méthodes : Les participants de l'Étude longitudinale du développement des enfants du Québec (n=2120 à la création ; n=1461 pendant la pandémie de COVID-19), une cohorte basée sur la population de personnes nées en 1997-98, ont rapporté leurs symptômes de dépression et d'anxiété ainsi que leurs idéations suicidaires avant la pandémie en 2018 (20 ans), pendant la pandémie à l'été 2020 (22 ans) ainsi qu'au printemps 2021 (23 ans).

Résultats : Les symptômes de dépression (d de Cohen = 0,15 [95 % IC: 0,09 à 0,20]) et d'anxiété (d de Cohen = 0,33 [95 % IC: 0,27 à 0,39]) ont augmenté entre 2018 et 2021 chez les hommes et les femmes, mais les idéations suicidaires n'ont pas changé. Une augmentation significative des symptômes dépressifs modérés à sévères (31,7 % à 36,3 %) et des symptômes d'anxiété (14,7 % à 24,8 %) a également été observée entre 2018 et 2021. Les jeunes qui étaient étudiants, ceux qui rapportaient un stress financier, de l'insécurité alimentaire et de la solitude, ainsi que ceux qui avaient une bonne santé mentale en prépandémie, ont connu la plus forte augmentation des symptômes de dépression et d'anxiété au fil du temps.

Conclusion : Ces résultats mettent en évidence l'impact de la pandémie de la COVID-19 sur la santé mentale des jeunes adultes, et soulignent la nécessité de mettre en place des services de prévention et de poursuivre le suivi longitudinal de ces jeunes.

Mots-clés : dépression, anxiété, jeunes adultes, COVID-19

Introduction

In response to the coronavirus disease 2019 (COVID-19) pandemic, public health measures imposed to curb SARS-CoV-2 transmission led to significant disruptions in daily occupational, educational, and social activities. Young adults have been particularly exposed to pandemic-related stressors, including restricted access to social and leisure activities, online schooling, and unstable job markets limiting professional opportunities (Lee et al., 2021). In addition to SARS-CoV-2 potential health threat, public health measures and their associated economic impact may have had greater consequences on youth mental health, compared to other age groups (WHO, 2022). However, findings the Quebec Longitudinal Study of Children Development suggested that overall depressive and anxiety symptoms among young adults did not change between 2018 and the summer 2020 (Watkins-Martin et al., 2021). These results are in line with a meta-analysis of longitudinal studies with pre-pandemic data that found no overall change in mental health from before to during the first wave of the COVID-19 pandemic within the general population (Dal Santo et al., 2022).

While the most stringent public health measures were generally put in place during the first wave of the pandemic, protracted, yet fluctuating mitigation measures were maintained in most countries as SARS-CoV-2 virus continued to circulate and spread worldwide. The few longitudinal studies tracking mental health after the first 6 months of the pandemic report small increases in psychological distress in adults, particularly when more stringent public health measures were in effect (Aknin et al., 2022). Compared to other G10 countries, Canada was ranked second on the severity of the public health measures imposed based on the Oxford Stringency Index, and was only country that maintained moderate or to severe degrees of

restrictions from Spring 2020 to Spring 2022 (Razak et al., 2022), highlighting the need to examine changes in mental health after the first wave of the COVID-19 pandemic.

Using a population-based cohort of young adults from the province of Quebec, this study documented trajectories of depression, anxiety and suicidal ideation before the pandemic in 2018, as well as at 4 and 12 months into the COVID-19 pandemic. We additionally examined the role of various risk factors for poor mental health, including females, visible minority, students, individuals from a lower socioeconomic background, those experiencing financial and food insecurity, loneliness, and those with pre-existing poor mental health.

Methods

Participants & Procedures

Participants were part of the Quebec Longitudinal Study of Child Development (QLSCD; Orri et al., 2021), an ongoing population-based birth cohort study conducted by the Institut de la Statistique du Québec, following 2,120 children born between October 1997 and July 1998 to mothers residing in the Canadian province of Quebec. This study included participants (n = 1461) who completed at least one assessment at the following three time points: 1) March to June 2018, before the COVID-19 pandemic, when cohort members were 20 years of age (n = 1237), 2) at the end of the first wave of the pandemic, June to August 2020, about 4 months into the pandemic, when cohort members were 22 years of age (n = 1182), and 3) during the third wave of the pandemic, from March to June 2021, about 12 months into the pandemic, when cohort members were 23 years of age (n = 1325). Participants completed online, self-reported surveys at all timepoints. The QLSCD protocol was approved by the Institut de la Statistique du Québec ethics committee. Informed consent was obtained from participants and/or their parents

at each data collection. The 2021 data collection was also approved by the Douglas Research Center and Ste-Justine University Hospital Centre research ethics committees.

Measures

Mental health symptoms

Depressive symptoms in the past week were self-reported using the Centre for Epidemiological Studies-Depression Scale, short form, (CES-D) including 12 items; (e.g., "I felt depressed") rated from 0= rarely/never to 3= most/all of the time (Radloff, 1977). Anxiety symptoms in the past 2 weeks were self-reported using the Generalized Anxiety Disorder 7-item scale (GAD-7) including 7 items (e.g., "Feeling nervous, anxious or on edge") rated from 0= not at all to 3=nearly every day (Spitzer et al., 2006). Scores of 12 to 20 and 10 to 14 to indicate moderate levels of depressive and anxiety symptoms, respectively, and scores of 21 to 36 and of 15 to 21 indicate severe levels of depression and anxiety. We measured severe suicidal ideation in 2018 and 2021 based on the occurrence of serious thoughts of wanting to die (i.e., "Did you ever seriously think of attempting suicide in the past 12 months?").

Putative risk factors

Biological sex was coded as males or females. *Ethnicity* was measured by ancestral ethnic group and coded into White or Non-White.

Pre-pandemic risk factors

Parental low socioeconomic status (SES) aggregated information on annual gross income, education level, and occupational prestige when participants were 15-17 years of age (Willms & Shields, 1996); *Pre-pandemic low parental SES* was defined as a score ≤ 1 standard deviation (SD) of the overall SES score. Social support was assessed at age 18 using the 10-item Social Provision Scale (SPS-10;Orpana et al., 2019), which measures attachment, social integration, reassurance and worth, reliable alliance and guidance based on statements (e.g.,

"there is someone I can talk to about important decisions in my life") rated on a 5-point Likert scale (range, 0 = strongly disagree to 4 = strongly agree). *Pre-pandemic low social support* was defined as a score ≤ 1 SD below the mean. *Pre-pandemic poor mental health* was defined as having severe depression and/or anxiety at age 20 in 2018 as assessed by the CES-D and GAD-7.

Pandemic-related risk factors assessed during the first wave of COVD-19 (Age 22)

Perceived financial stress in youth was assessed using the following 4-point Likert-type question: "how concern are you about not having enough money to meet basic needs?", ranging from not at all to extremely concerned. *High financial stress* was defined as being very or extremely concerned. Food insecurity was assessed using the following dichotomous items: Since the beginning of the COVID-19 crisis, have you (1) worried that there would not be enough to eat because of a lack of money? (2) not had enough food to eat because of a lack of money? (3) not eaten the quality or variety of foods that you wanted to eat because of a lack of money? *Food insecurity* was defined as an affirmative answer to any of these 3 items. Loneliness was measured with the UCLA Loneliness scale-3, with items assessing lack of companionship, feeling left out and feeling isolated from others, using a 3-point Likert scale, ranging from hardly ever to often (Hughes et al., 2004). *High loneliness* was defined as ≥ 1 SD above the mean. Perceived health threat of COVID-19 was assessed using 3 Likert-scale type questions about the severity of COVID-19 health concerns for oneself, for loved ones at risk, and for loved ones not at risk, ranging from not at all to extremely concerned. *High perceived health threat* was defined as ≥ 1 SD above the mean. *Student status* was assessed at 23 years and defined as being a student as the main occupation from 2020 to 2021.

Statistical Analyses

To assess changes in depressive and anxiety symptoms from prior to the pandemic to during the pandemic, we used growth curve modeling (Duncan & Duncan, 2009). Both linear and curvilinear time trajectories were tested. Full Information Maximum Likelihood estimation was used to handle CES-D or GAD-7 missing data when estimating trajectories. The time variable (i.e., 2018, 2020, 2021) was centered at 2020 such that the intercept values represented depressive and anxiety symptoms during the first wave of the COVID-19 pandemic. The slope values assessed the magnitude of changes in symptoms from 2018-2021. Random effects for both the intercept and the slope were included in the model. Putative risk factors were included as predictors of the intercept and the slope, with the latter testing potential moderators of changes in depressive and anxiety symptoms over time. Predictors were entered simultaneously in a multivariate model. T-tests examined changes in the percentage of participants exceeding the clinical threshold for moderate or severe depression and anxiety symptoms as well as in the prevalence of severe suicidal ideation before and during the COVID-19 pandemic. Logistic regression evaluated factors associated with the presence of severe suicidal ideation during the pandemic.

The maximum available sample of 1461 was derived from the original sample of 2120 (69% of the original sample). To adjust for selective attrition, we conducted analyses with and without inverse probability weights, representing participants' probabilities of being included in the study sample conditional on sex, born in Canada, SES, single parent, and maternal depressive symptoms when cohort members were five months of age. The general pattern of results with and without weights were similar; only weighted analyses are presented here. Missing data on risk factors ranged from 0 (sex) to 23.2 % (financial stress). We imputed missing information on risk factors using multiple imputations by the chained equations method, and we conducted

analyses across the 200 imputed datasets. Analyses were conducted with MPlus v. 8.8 and SPSS v. 28.0.

Results

This study included 1461 participants who completed at least one mental health assessment at 20, 22 or 23 years of age. Frequencies of putative risk factors are presented in (eTable 1 in Supplement). Among included participants, 55.4% were females, 7.7% identified as a visible minority, 44.0% identified education as their main occupation, 16.3% came from low SES families, and 9.5% reported pre-pandemic poor mental health at age 20 years in 2018. Compared to included participants (n=1461), participants (n=659) who were not included in our sample were more likely to be male, to be born outside Canada, to have a mother with depressive symptoms, to come from a nonintact family, and to have parents with a low SES at 5 months of age (eTable 2 in Supplement).

Table 1 presents the descriptive statistics of mental health outcomes. There was a linear increase in depressive symptoms over time, B (SE) = .51 (.10), t =5.27 p < .0001 (Figure 1a). The standardized mean difference in depressive symptoms from 2018 to 2021 was Cohen's d =.15 [95% CI: .09 to .20]. Similarly, the percentage of participants exceeding the clinical cut-off for severe depressive symptoms increased from 6.2% in 2018 to 9.7% in 2021, t = 2.64, p = .008, indicating a 56.45% increase in the proportion of participants reporting clinically meaningful depressive symptoms (Table 1).-Table 2 presents the associations of putative risk factors with depressive symptoms during the first wave of the pandemic (i.e., intercept), and the rate of change in depressive symptoms over time (i.e., slope). Higher depressive symptoms during the first wave of the pandemic were associated with being female, being a student, low pre-pandemic social support, poor pre-pandemic mental health, as well as high loneliness, high financial stress,

and food insecurity during the pandemic, when all putative risk factors were mutually adjusted. Larger increases in depressive symptoms over time were associated with being a student, high loneliness and food insecurity. Pre-pandemic mental health moderated the change in depressive symptoms over time. Individuals with better pre-pandemic mental health symptoms exhibited a larger increase in depressive symptoms over time, while those with poor pre-pandemic mental health experienced a decrease in depressive symptoms over time, albeit their overall levels of depressive symptoms remained higher than those of participants with better pre-pandemic mental health (Figure 2a).

For anxiety symptoms, there was a curvilinear trajectory of changes in anxiety symptoms over time, B (SE) = .98 (.11), t = 8.72, p < .0001, such that there was initial stability in anxiety symptoms from 2018 to the first wave of the pandemic, followed by an increase in anxiety symptoms 12 months after the onset of the COVID-19 pandemic (Figure 1b). The standardized mean difference in anxiety symptoms between 2018 and 2021 was Cohen's d = .33 [95% CI: .27 to .39]. Similarly, the percentage of participants exceeding the clinical cut-off for severe anxiety symptoms increased from 5.3% in 2018 to 9.5% in 2021, t = 7.51, p = .008, indicating a 79.25% increase in the proportion of participants reporting clinically meaningful anxiety symptoms (Table 1).-Table 2 presents the associations of putative risk factors with anxiety symptoms during the first wave of the pandemic (i.e., intercept), and the rate of change in anxiety symptoms over time (i.e., slope). Higher anxiety symptoms during the first wave of the pandemic were associated with being a female, being a student, poor pre-pandemic mental health, high perceived health threat of COVID-19, high loneliness, high financial stress, and food insecurity during the pandemic, when all putative risk factors were mutually adjusted. Larger increases in anxiety symptoms over time were associated with being a student and high loneliness. Pre-

pandemic mental health moderated the change in anxiety symptoms over time, such that the increase in anxiety symptoms was larger among participants with better pre-pandemic mental health, while those with poor pre-pandemic mental health experienced a decrease in anxiety symptoms over time, albeit their overall levels of anxiety symptoms remained higher than those of participants with better pre-pandemic mental health (Figure 2b).

In terms of suicidal ideation, the prevalence of severe suicidal ideation from the pre-pandemic period to the first year of the COVID-19 pandemic did not increase, $t = -1.90$, $p = .06$. Factors associated with the presence of severe suicidal ideation during the COVID-19 pandemic were pre-pandemic severe suicidal ideation, pre-pandemic poor mental health, as well as high loneliness, high financial stress, and food insecurity during the pandemic (Table 3). In sensitivity analyses including only participants with data at all time points, the pattern of results for changes in anxiety, depression, and suicidal ideation remains the same as in the full dataset (data not shown).

Discussion

Although no significant changes in anxiety and depressive symptoms were observed after the first 4 months of the COVID-19 pandemic among young adults (Watkins-Martin et al., 2021), a small, but significant raise in anxiety and depressive symptoms were noted 12 months later in the context of ongoing public health measures. Compared to the pre-pandemic period, there were increases of 56.45% and 79.25% in the proportion of participants exceeding the clinical threshold for severe depressive and anxiety symptoms, respectively. In contrast, no significant change in severe suicidal ideation was noted.

Prior work indicated no change or small increase in psychological distress during the first wave of the pandemic in this cohort (Watkins-Martin et al., 2021). However, 12 months later,

anxiety and depressive symptoms increased, with greater changes in anxiety compared to depressive symptoms. Although some meta-analyses indicate that the COVID-19 pandemic has had a larger impact on depressive rather than anxiety symptoms, our data suggests that this may change in the context of prolonged public health measures (Robinson et al., 2022). Furthermore, 12 months into the pandemic, there were significant increases in the proportion of participants exceeding the clinical threshold for depressive and anxiety symptoms. These results parallel changes in mental health-related emergency room visits among older adolescents during the COVID-19 pandemic, with an initial decrease during the first wave followed by an increase in subsequent months (Beaudry et al., 2022). These results contrast with the typical decrease in depressive symptoms that has been observed from age 20-23 in a representative, longitudinal sample prior to the COVID-19 pandemic (Hargrove et al., 2020).

Change in depressive and anxiety symptoms was larger among participants who had better pre-pandemic mental health. Among those with poorer pre-pandemic mental health, there was a slight decrease in depressive and anxiety symptoms, albeit their overall levels of psychological distress remained higher compared to those with better pre-pandemic mental health. This is consistent with other longitudinal studies that reported a slight reduction in symptoms among those with severe pre-pandemic depression and anxiety (Bouter et al., 2022). The diminution of in-person interactions during confinement likely led to a reduction in social stress that may have been beneficial for this group. Furthermore, it is also important to note that, no increase in severe suicidal ideation was observed during the first year of the pandemic, compared to pre-pandemic period. This is consistent with a meta-analysis indicating no change in suicidal ideation among adolescents from before to during the COVID-19 pandemic (Bersia et

al., 2022), although another meta-analysis reported an increase in emergency visits for suicidal ideation/attempts among adolescent girls (Madigan et al., 2023).

In many countries, access to mental health services has been curtailed during the COVID-19 pandemic (Gunnell et al., 2020). Given the increased prevalence of severe depressive and anxiety symptoms during the pandemic, an upcoming rise in solicitation of mental health services may be expected. In Québec, mental health-related emergency room visits increased for female adolescents during the pandemic, but not for males (Beaudry et al., 2022). Indeed, females reported more depressive and anxiety symptoms than males throughout the pandemic and males may be less likely to access mental health services despite increased psychological distress (Sagar-Ouriaghli et al., 2020). Scalable and accessible prevention programs may be key to reducing a surge in outpatient mental health service requests and psychiatric emergency visits (Schleider et al., 2022).

Loss of income or fear of loss of income and the associated food insecurity were among the most prevalent COVID-19-related stressors, particularly among those in lower income categories (Jenkins et al., 2021). Consistent with prior work (Joshi et al., 2021), financial stress and food insecurity were independent predictors of severe anxiety and depressive symptoms in this cohort. It is notable that financial stress remained a predictor of depressive and anxiety symptoms despite rapid and generous financial support from the Canadian government (Béland et al., 2021). It is possible that some individuals experienced enduring uncertainty regarding their income sources following the end of the governmental support period, leading to persistent financial stress (Lorant et al., 2007). Food insecurity was associated with depressive and anxiety symptoms, above and beyond the contribution of financial stress. Policies providing financial support for basic needs may be needed to reduce the mental health burden of the pandemic.

From a developmental perspective, young adulthood is characterized by transitional changes in different life domains and roles, including education, employment, social network, marriage, cohabitation, and parenthood (Scales et al., 2016). Pandemic-related restrictions led to constrained opportunities in several of these key life domains, highlighting the unique developmental challenges experienced by young adults during the COVID-19 pandemic. Furthermore, in addition to generating unique stressors, the pandemic may have limited access to protective factors, such as usual coping strategies and social support resources (Gariépy et al., 2016), leading to increased depressive and anxiety symptoms, especially among those with pre-existing risk factors. Notably, individuals exhibiting high levels of loneliness or those with poorer social support prior to the pandemic may have faced additional barriers in seeking and maintaining social support given the public health measures in place. This corroborates findings from other longitudinal cohorts highlighting that loneliness was the strongest predictor of depressive symptoms during the COVID-19 pandemic (Rosa et al., 2022). Furthermore, students reported more depressive and anxiety throughout the pandemic than non-students, highlighting the unique challenges experienced by this subgroup of young adults and the profound impacts that the pandemic has had on educational systems (e.g., prolonged in-person school closures, shift to virtual learning, etc.).

A key strength of this study is that participants from this study are part of an ongoing population-based, birth cohort study. In contrast to most prior studies of young adults comprising mostly used university samples, our sample included participants from a broad range of educational and vocational backgrounds. Participants completed standardized self-reported scales assessing depressive and anxiety symptoms using the same administration format at each time point, allowing us to better quantify changes in psychological distress during the pandemic

(Robinson et al., 2022). However, no interviews were conducted to examine the clinical relevance of these changes. In addition, our sample consisted of young adults from a single Canadian province, where public health measures were maintained throughout the study period, limiting the possibility of generalizing our findings to other young adults from other provinces or countries. Moreover, given the observational study design, it is impossible to disentangle the contributions of developmental changes, cohort effects, and pandemic-related stress to the observed change in psychological distress. This is important to consider given that approximately one-third of depressive disorders and two-thirds of anxiety disorders have an age of onset under 25 (Solmi et al., 2022). A longer follow-up period will be needed to evaluate whether rates of severe anxiety and depressive symptoms drop as pandemic-related stressors and public health measures are reduced.

In conclusion, although studies conducted in the early stages of the pandemic suggest little change in depression and anxiety symptoms, findings from this Canadian population-based study highlight that significant increases in severe anxiety and depressive symptoms were observed 12 months into the pandemic in the context of ongoing pandemic-related public health measures among young adults. These findings underscore the need for mental health preventive services and continued longitudinal follow-ups of young adults in the (post-)pandemic era.

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Contributions to knowledge

What does this study add to existing knowledge?

- Although no change in psychological distress was noted after the first wave of the COVID-19 pandemic in this birth cohort study, a small raise in depressive and anxiety symptoms was observed 12 months into the COVID-19 pandemic.
- The prevalence of severe depression and anxiety increased by 56.45% and 79.25%, compared to the pre-pandemic period.
- No significant change in severe suicidal ideation was noted during the first year of the COVID-19 pandemic, compared to the pre-pandemic period.

What are the key implications for public health interventions, practice or policy?

- These findings underscore the need for mental health preventive services for young adults
- Continued longitudinal follow-ups will be needed to evaluate whether rates of severe anxiety and depressive symptoms among young adults drop as pandemic-related stressors are reduced.

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Table 1. Mean and frequencies of mental health outcomes, before and during the COVID-19 pandemic, based on maximum n available[a]

	Before COVID-19 pandemic (Age 20)	4 months within COVID-19 pandemic (Age 22)	12 months within COVID-19 pandemic (Age 23)
Depressive symptoms (M; SD)	9.3 (6.4)	9.7 (6.8)	10.3 (6.9)
Moderate symptoms (%; n)[b]	25.5 (1237)	24.4 (1180)	26.6 (1325)
Severe symptoms (%; n)[c]	6.2 (1237)	8.5 (1180)	9.7 (1325)
Anxiety symptoms (M; SD)	4.7 (4.6)	4.6 (4.8)	6.3 (5.3)
Moderate symptoms (%; n)[b]	9.6 (1236)	9.7 (1182)	15.3 (1330)
Severe symptoms (%; n)[c]	5.3 (1236)	5.2 (1182)	9.5 (1330)
Severe suicidal ideation (%; n)	10.2 (1235)	-	8.7 (1325)

Note: [a]Data were compiled from the final master file of the Québec Longitudinal Study of Child Development (1998–2021), ©Gouvernement du Québec, Institut de la statistique du Québec; [a] Moderate symptoms were defined by a CES-D scores between 12 to 20, and a GAD-7 scores between 10 to 14. [b] Severe symptoms were defined by Centre for Epidemiological Studies-Depression scale scores ≥ 21 and Generalized Anxiety Disorder 7-item scale scores ≥ 15. - indicate that data on this variable were not collected at that time point. Maximum *n* available varies between 1182 and 1330.

Table 2. Growth curve modeling of change in depressive and anxiety symptoms from before the pandemic in 2018 to 12 months into the pandemic in 2021, n=1461, weighted analyses[a]

	Depressive Symptoms (CESD-10)		Anxiety Symptoms (GAD-7)	
	Intercept[b]	Slope[c]	Intercept[b]	Slope[c]
	B (SE)	*B* (SE)	*B* (SE)	*B* (SE)
Sex (male)	-1.29 (.25)*	-.11 (.19)	-1.54 (.18)*	-.09 (.14)
Ethnicity (non white)	.17 (.44)	-.32 (.34)	0.04 (.32)	-.41 (.28)
Pre-pandemic socioeconomic status	-.39 (.37)	-.19 (.28)	.05 (.28)	-.12 (.22)
Pre-pandemic low social support	2.21 (.37)*	-.27 (.28)	.57 (.30)	.43 (.22)
Pre-pandemic poor mental health	7.69 (.51)*	-2.93 (.39)*	5.92 (.40)*	-2.29 (.31)*
High financial stress	1.83 (.43)*	.51 (.33)	.83 (.33)*	.48 (.25)
Food insecurity	2.45 (.43)*	.73 (.32)*	1.67 (.33)*	.41 (.26)
High loneliness	4.41 (.38)*	1.13 (.28)*	2.29 (.29)*	.67 (.22)*
High perceived COVID-19 health threat	-.03 (.35)	-.13 (.27)	1.08 (.28)*	.19 (.21)
Student status	.59 (.25)*	1.12 (.28)*	2.29 (.29)*	.28 (.14)*

Note. [a]Data were compiled from the final master file of the Québec Longitudinal Study of Child Development (1998–2021), ©Gouvernement du Québec, Institut de la statistique du Québec; [b]Intercept represents values during the first wave of the pandemic; [c]Slope represents the rate of change over time; Predictors were entered simultaneously in this multivariate model; * $p < .05$.

Table 3. Logistic regression on the presence of severe suicidal ideation during the first year of the COVID-19 pandemic, weighted, n = 855[a]

	OR	*95% CI*
Sex (male)	.82	0.51-1.30
Ethnicity (non white)	1.03	0.46-2.28
Pre-pandemic low socioeconomic status	.57	0.29-1.14
Pre-pandemic low social support	.95	0.50-1.80
Pre-pandemic poor mental health	1.90*	1.02-3.55
High financial stress	2.72*	1.54-4.81
Food insecurity	1.89*	1.03-3.47
High loneliness	1.83*	1.06-3.14
High perceived COVID-19 health threat	1.15	0.64-2.07
Pre-pandemic severe suicidal ideation	6.16*	3.37-11.25
Student status	0.71	0.45-1.12

Note: [a]Data were compiled from the final master file of the Québec Longitudinal Study of Child Development (1998–2021), ©Gouvernement du Québec, Institut de la statistique du Québec; * $p < .05$

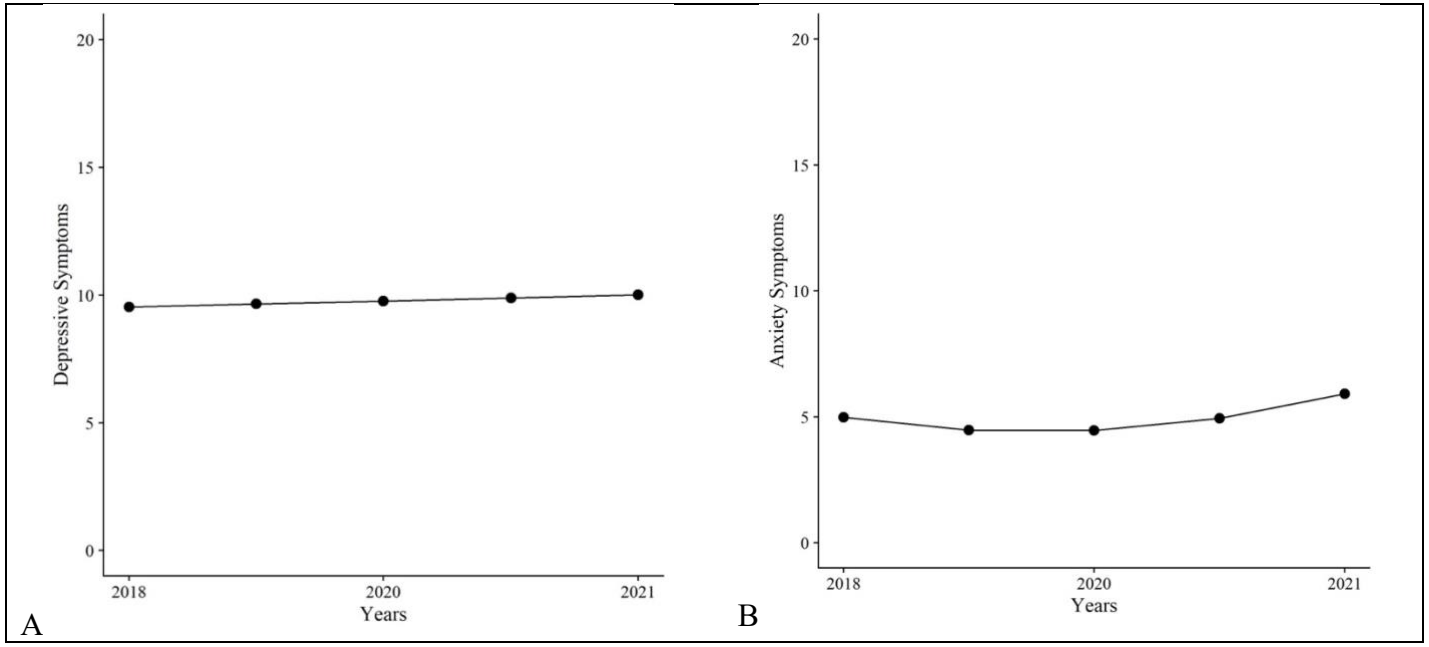

Figure 1. Note: Data were compiled from the final master file of the Québec Longitudinal Study of Child Development (1998–2021), ©Gouvernement du Québec, Institut de la statistique du Québec. Change in depression (Panel A) and anxiety (Panel B) symptoms from 2018 to 2021 among young adults.

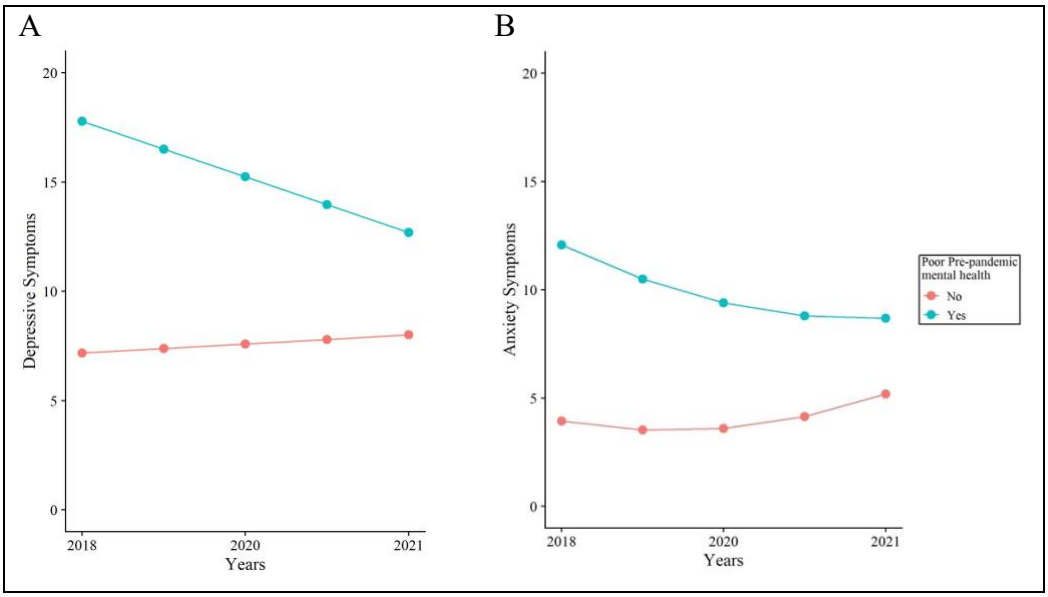

Figure 2. Data were compiled from the final master file of the Québec Longitudinal Study of Child Development (1998–2021), ©Gouvernement du Québec, Institut de la statistique du Québec. Change in depression (Panel A) and anxiety (Panel B) symptoms from 2018 to 2021 among young adults as a function of pre-pandemic poor mental health.

eTable 1. Frequencies of putative risk factors, based on maximum *n* available[a]

Putative risk factors	% (*n*)
Biological sex (male)	44.6 (1461)
Ethnicity (non-white)	7.7 (1453)
Pre-pandemic low socioeconomic status	16.3 (1314)
Pre-pandemic low social support	14.1 (1322)
Pre-pandemic poor mental health	9.5 (1236)
High financial stress	14.7 (1122)
Food insecurity	14.7 (1182)
High loneliness	18.7 (1392)
High perceived COVID-19 health threat	17.6 (1182)
Student status (student)	44.0 (1350)

Note: [a]Data were compiled from the final master file of the Québec Longitudinal Study of Child Development (1998–2021), ©Gouvernement du Québec, Institut de la statistique du Québec; Maximum *n* available varies between 1122 and 1461.

eTable 2. Early Life Characteristics of Participants According to Attrition at Age 20, 22 or 23[a]

	Included ***N=1461***	**Excluded** ***N=659***	**p-value**
Child Characteristics			
Sex, N (%):			<.001
Female	809 (55.4%)	231 (35.1%)	
Male	652 (44.6%)	428 (64.9%)	
Born in Canada, N (%)			<.001
Yes	1325 (90.8%)	540 (81.9%)	
No	134 (9.2%)	119 (18.1%)	
Internalizing behaviors at 29 months[b], Mean (SD)	0.90 (1.20)	0.91 (1.27)	.90
Externalizing behaviors at 29 months[c], Mean (SD)	5.03 (2.94)	5.11 (3.05	.55
Family Characteristics			
Socioeconomic status[d], Mean (SD)	0.10 (0.98)	-0.22 (1.01)	<.001
Single parent, N (%):			<.001
No	1361 (93.4%)	580 (88.5%)	
Yes	96 (6.6%)	75 (11.5%)	
Maternal age in years, Mean (SD	29.44 (5.11)	28.97 (5.47)	.06
Maternal depressive symptoms[e], Mean (SD)	1.34 (1.30)	1.55 (1.42)	.001

[a]Data were compiled from the final master file of the Québec Longitudinal Study of Child Development (1998–2021), ©Gouvernement du Québec, Institut de la statistique du Québec; Variables were measured when the child was 5 months of age, unless otherwise indicated; Assessed at 29 months; missing values were replaced with 17 months; 6 items from the Behavior Questionnaire (e.g., is too fearful or anxious); score range: 0–8; [c]Assessed at 29 months; missing values were replaced with 17 months; 10 items from the Behavior Questionnaire (e.g., cannot sit still, is agitated); score range: 0–18; [d]Standardized index based on annual gross

income, parental education level and occupational prestige; [e]Assessed when cohort members were 5 months of age using a shortened version (12 items) of the Center for Epidemiologic Studies-Depression; scores rescaled to 0–10.