

# BMJ Open Depression, parenting and the COVID-19 pandemic in Canada: results from three nationally representative cross-sectional surveys

Margot Shields,<sup>1</sup> Lil Tonmyr ,<sup>1</sup> Andrea Gonzalez ,<sup>2</sup> Leslie Atkinson,<sup>3</sup> Dawn-Li Blair ,<sup>1</sup> Wendy Hovdestad,<sup>1</sup> Harriet MacMillan<sup>4</sup>

**To cite:** Shields M, Tonmyr L, Gonzalez A, *et al.* Depression, parenting and the COVID-19 pandemic in Canada: results from three nationally representative cross-sectional surveys. *BMJ Open* 2023;**13**:e063991. doi:10.1136/bmjopen-2022-063991

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-063991>).

Received 28 April 2022  
Accepted 03 July 2023



© Author(s) (or their employer(s)) 2023. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

<sup>1</sup>Public Health Agency of Canada, Ottawa, Ontario, Canada

<sup>2</sup>Department of Psychiatry & Behavioural Neurosciences, McMaster University, Hamilton, Ontario, Canada

<sup>3</sup>Department of Psychology, Toronto Metropolitan University, Toronto, Ontario, Canada

<sup>4</sup>Departments of Psychiatry & Behavioural Neurosciences, and of Pediatrics, McMaster University, Hamilton, Ontario, Canada

## Correspondence to

Dr Lil Tonmyr;  
lil.tonmyr@phac-aspc.gc.ca

## ABSTRACT

**Objectives** Depression is associated with problems in functioning in many aspects of life, including parenting. COVID-19 has increased risk factors for depression.

We investigated the prevalence of depression among parents during the pandemic and the association with dysfunctional parenting.

**Design** Canadian nationwide cross-sectional study.

**Setting and participants** The 2020 and 2021 Surveys on COVID-19 and Mental Health (SCMH) and the Canadian Community Health Survey (CCHS) (2015–2019). Responding sample sizes for parents were 3121 for the 2020-SCMH; 1574 for the 2021-SCMH and 6076 for the CCHS.

**Primary outcome measures** All three surveys collected information on symptoms of major depressive disorder (MDD). The SCMH measured harsh parenting.

**Results** Based on data from the 2021-SCMH collected during wave 3 of COVID-19, 14.4% of fathers and 21.2% of mothers screened positive for MDD. These prevalence estimates were similar to those from the 2020-SCMH during wave 2, but at least two times higher than pre-COVID-19 estimates from the CCHS. Multivariate analyses revealed a linear association between MDD and harsh parenting. COVID-19-related stressors were associated with harsh parenting. Among mothers, feeling lonely or isolated because of COVID-19 was a risk factor for harsh parenting; among fathers, being a front-line worker was a risk factor. Meditation was a protective factor for mothers.

**Conclusions** After years of stability, the prevalence of MDD increased substantially among Canadian parents during the pandemic. Ongoing monitoring is vital to determine if elevated levels of depression persist because chronic depression increases the likelihood of negative child outcomes. Programmes aimed at addressing depression and bolstering parenting skills are needed as families continue to face stressors associated with COVID-19.

## INTRODUCTION

The COVID-19 pandemic and public health measures imposed to contain it have had a profound impact on Canadian families. School and daycare closures and cancellation of extracurricular activities placed an

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The data are from large representative samples of the Canadian population.
- ⇒ The data collected during waves 2 and 3 of COVID-19 provide a unique opportunity to investigate the well-being of Canadian parents during the pandemic.
- ⇒ The scales used to measure depression and harsh parenting have good test–retest reliability and high validity.
- ⇒ However, depressive symptoms and harsh parenting are based on self-reported data.
- ⇒ The Surveys on COVID-19 and Mental Health measured only one aspect of dysfunctional parenting—harsh parenting. Links between depressive symptoms and parental behaviour have been found to be stronger if composite parenting measures covering both positive and negative aspects are employed.

unprecedented burden on families. Parents have had to assume roles, such as teacher, friend and coach, and at the same time, fulfil work responsibilities. This was in addition to financial strains and social isolation mandated by physical distancing.<sup>1</sup>

Since the onset of the pandemic, studies have examined adult mental health. Early published rapid literature reviews revealed increases in negative psychological outcomes, such as post-traumatic stress symptoms, anger, anxiety and depression.<sup>2–5</sup> However, many early studies were of low-to-moderate quality. They used convenience samples and mental health measures of low validity, which made it difficult to draw conclusions and generalise findings.<sup>2 4 5</sup> Nonetheless, a systematic review concluded that depressive and anxiety disorders increased globally during 2020.<sup>3</sup> Since then, two other large-scale systematic reviews based on data collected up to February 2021 reached similar conclusions about increases in mental health conditions.<sup>6 7</sup> Furthermore,



two systematic reviews based on longitudinal data observed a spike in mental health problems during the early months of the pandemic (April–May 2020).<sup>8,9</sup> This was followed by a stabilisation or decrease in mental health symptoms,<sup>8,9</sup> and then another spike coinciding with the second wave of COVID-19 in North America late in 2021.<sup>8</sup> Some analyses suggested that specific subpopulations, notably, women and parents, may be at increased risk of adverse mental health outcomes.<sup>4,5,10</sup> Longitudinal studies<sup>9</sup> found that changes in mental health symptoms varied considerably by subpopulation after the early months of the pandemic.

In Canada, the Surveys on COVID-19 and Mental Health (SCMH) collected information on symptoms of major depressive disorder (MDD) based on nationally representative samples—from September to December 2020 (during wave 2 of COVID-19) and from February to May 2021 (wave 3).<sup>11</sup>

Among Canadians aged 18 years or older, the prevalence of screening positive for MDD<sup>12–14</sup> was higher during wave 3 than wave 2 (19% vs 15%),<sup>15</sup> and during wave 2, prevalence was more than twice as high as in the pre-COVID-19 period.<sup>16</sup> Before the pandemic, the prevalence of depression in Canada had been stable for more than two decades.<sup>17</sup> Similar increases have been reported in the USA.<sup>18</sup>

Increases in the prevalence of depression among parents are particularly concerning, because depression is associated with dysfunctional parenting.<sup>19–24</sup> Even subclinical levels have been implicated, so it is important to consider the severity of depressive symptoms when examining associations with parenting behaviour.<sup>20,25</sup>

Pre-COVID-19 research on associations between depression and dysfunctional parenting often had limitations. Studies tended to focus on mothers; information about paternal depression is sparse.<sup>22</sup> Most analyses were based on observational studies with small samples rather than large population-based samples.<sup>19–24</sup> As well, the role of potentially protective factors was rarely examined. Evidence suggests that psychosocial resources, such as a sense of mastery (perception of being in control of one's life circumstances), coping mechanisms<sup>26</sup> and a sense of community belonging reduce the likelihood of depressive symptoms.<sup>16,27–32</sup> The same factors might be protective for dysfunctional parenting.

Both parental depression and dysfunctional parenting have been associated with negative outcomes for children, including impaired socioemotional and cognitive development and mental health disorders.<sup>20,25,33–43</sup>

We used data from the nationally representative 2020-SCMH and 2021-SCMH and the 2015–2019 Canadian Community Health Survey (CCHS)—Annual Component<sup>44</sup> to examine trends in depression among Canadian parents and relationships between depression and dysfunctional parenting. Dysfunctional parenting is a general term that covers various aspects of ineffective parenting. We focused on harsh parenting: overreacting in discipline situations (measured in the SCMH).

Our study examined the following research questions:

1. Did the prevalence of MDD among Canadian parents change from pre-COVID-19 times to waves 2 and 3 of the pandemic?
2. Was depression associated with harsh parenting?
3. What other risk and protective factors were associated with harsh parenting? Factors investigated were as follows:
  - Sociodemographic characteristics of the parent, age and gender of the child, and number of children in the household.
  - Risk factors related to COVID-19 (such as loss of job or income, financial strain, increased alcohol consumption).
  - Psychosocial protective factors, including mastery, coping mechanisms and sense of belonging to the local community.

## METHODS

### Data sources

Data from the SCMH<sup>11</sup> were used to obtain estimates of depression among Canadian parents during the COVID-19 pandemic and to examine harsh parenting in relation to depression and other risk and protective factors. The SCMH collected cross-sectional data from September to December 2020 and from February to May 2021. The target population was individuals aged 18 years or older living in the 10 provinces and the three territorial capital cities. Individuals living on reserves, in institutions or in the territories outside the capitals were excluded (fewer than 2% of the population). In each province and territorial capital, a simple random sample of dwellings was selected, and one person aged 18 or older from each occupied dwelling was randomly chosen to participate. Respondents completed the survey online or by telephone. Response rates were 53.3% for the 2020-SCMH (14 689 respondents) and 49.3% for the 2021-SCMH (8032 respondents). Respondents were asked for permission to share their information with the Public Health Agency of Canada—12 344 agreed to share in 2020; 6592 in 2021. This article is based on data for parents in the share files: 1960 fathers (1305 in 2020; 655 in 2021) and 2735 mothers (1816 in 2020; 919 in 2021). Gender-diverse parents were not included owing to insufficient sample sizes, and 28 records were dropped where parental status was unknown. A value for depression was missing for 22 fathers and 40 mothers in 2020, and 16 and 21, respectively, in 2021.

Data from the 2015–2019 CCHS—Annual Component<sup>44</sup> were used to obtain pre-COVID-19 baseline estimates of depression among parents, which were compared with estimates from the SCMH. The CCHS target population was individuals aged 12 or older living in the 10 provinces and the three territories. Residents of reserves and other Indigenous settlements in the provinces, full-time members of the Canadian Forces, the institutionalised population

and people in some remote regions were excluded (fewer than 3% of the population). The CCHS was completed by telephone or in person using computer-assisted interviewing. In the annual CCHS, the depression module is optional content; every year, each province/territory decides if this module will be administered. The most recent years in which the depression module was administered were: 2019 in Ontario and Manitoba; 2018 in Prince Edward Island; 2016 in Newfoundland and Labrador, Nova Scotia, New Brunswick, and Saskatchewan; and 2015 in British Columbia. The CCHS annual files exclude the territories because territorial data become representative of the population only after 2 years of data have been collected. Therefore, the comparison of results from the SCMH with the CCHS excluded the territories and two provinces (Quebec and Alberta). From 2015 to 2019, CCHS response rates ranged from a low of 54.4% (2019) to a high of 62.8% (2017). Respondents were asked for permission to share their information; each year, more than 90% agreed to share. For the eight provinces for which comparisons with the SCMH were made, the combined CCHS sample size of parents aged 18 or older on the share files was 2515 for fathers and 3738 for mothers; 44 records were dropped because of unknown parental status, and the value for depression was missing value for 79 fathers and 97 mothers.

## Measures

### MDD symptoms

Both the CCHS and SCMH measured MDD symptoms using the Patient Health Questionnaire-9 (PHQ-9).<sup>12–14</sup> **Table 1** provides details on PHQ-9 items and scoring.

### Harsh parenting

The Parenting Scale is a 30-item instrument that measures dysfunctional parenting in discipline situations.<sup>45–48</sup> The scale contains two subscales assessing two dimensions of dysfunctional parenting: lax and harsh (also referred to as ‘over-reactive’). The Parenting Scale has been shown to have adequate internal consistency, good test–retest reliability, and good discriminatory and predictive validity.<sup>45–48</sup> The SCMH included the 10-item harsh parenting subscale. It was administered to respondents who had at least one child aged 18 months to 17 years living with them full time or part time (many questions are not appropriate for children younger than 18 months). Parents with more than one child living in the household were asked about the child who had the most recent birthday. **Table 1** provides details on items and scoring for the harsh parenting scale.

### Covariates

Harsh parenting was examined in relation to sociodemographic variables, COVID-19-related risk factors and psychosocial protective factors.

The sociodemographic variables comprised characteristics of the parent, household and child. Parent characteristics were: age group (18–34, 35–44 and 45 or older); racialised group member (non-white, white); immigrant status (yes, no); educational attainment (high school or less; postsecondary certificate/degree/diploma; and university certificate, diploma or degree above bachelor’s level); and front-line worker (yes, no). Front-line worker was defined as ‘an individual who has the potential to come in direct contact with COVID-19 by assisting those who have been diagnosed with the virus’. Examples provided were ‘police officers, firefighters, paramedics, nurses or doctors’. Household characteristics were: two or more adults (18+) in household (yes, no); place of residence (urban centre, rural); household income quintile and number of children (<18) living in household (one, two or more). The child characteristics were: gender (female, male) and age group (18 months to 4 years, 5–11 years, 12–17 years). The age groupings for children and adults were based on sample size and a review of the literature.

Eight COVID-19-related risk factors were examined (**table 1**).

The psychosocial protective factors examined were: mastery, coping mechanisms and sense of belonging to the local community (**table 2**).

## Analysis

All analyses were stratified by gender of parent.

Changes in depression were assessed by comparing prevalence estimates of a positive screen for MDD in the 2020-SCMH, 2021-SCMH and CCHS. Comparisons of estimates between the 2020-SCMH and 2021-SCMH and the CCHS were based on the eight provinces for which CCHS depression data were available.

Research questions 2 and 3 (factors associated with harsh parenting) were addressed based on combined 2020-SCMH and 2021-SCMH data. Because harsh parenting scores were stable between the 2020-SCMH and 2021-SCMH, and interaction with time was not significant, the two cycles were combined to maximise sample size. This component of the analysis is based on parents with at least one child aged 18 months to 17 years, who responded to the harsh parenting items (n=1702 for fathers and 2502 for mothers). For parents with a missing value for 1–3 of the harsh parenting items (n=46 for fathers and 54 mothers), a score was derived based on the average score for items where a response was provided; records were dropped if there was non-response to four or more items (seven fathers & seven mothers).

Depression was examined in relation to harsh parenting by comparing mean scores (from the harsh parenting scale) for parents who screened positive for MDD with mean scores for those who did not screen positive. Scores were also compared across levels of depression severity to

**Table 1** Measures for depression, harsh parenting and COVID-19-related risk factors

Depression	<p>Respondents to the SCMH and the CCHS were asked the following questions from the Patient Health Questionnaire to measure symptoms of depression and to identify probable cases of major depressive disorder (MDD).<sup>8–10</sup> Over the last 2 weeks, how often have you been bothered by any of the following problems?</p> <ol style="list-style-type: none"> <li>1. Had little interest or pleasure in doing things.</li> <li>2. Felt down, depressed or hopeless.</li> <li>3. Had trouble falling or staying asleep or slept too much.</li> <li>4. Felt tired or had little energy.</li> <li>5. Had poor appetite or overate.</li> <li>6. Felt bad about yourself—or that you are a failure or have let yourself or your family down.</li> <li>7. Had trouble concentrating on things, such as reading the newspaper or watching television.</li> <li>8. Been moving or speaking so slowly that other people could have noticed. Or the opposite, being so fidgety or restless that you have been moving around a lot more than usual.</li> <li>9. Had thoughts that you would be better off dead or of hurting yourself in some way.</li> </ol> <p>The answer categories were: not at all, several days, more than half the days, nearly every day. A score was assigned to each item, from 0 (not at all) to 3 (nearly every day). An overall score was derived by summing the scores for the 9 items. Based on this overall score (0–27), individuals were assigned to the following categories to reflect depression severity<sup>8–10</sup>: no depression (0), minimal depression (1–4), mild depression, (5–9), moderate depression (10–14), moderately severe depression (15–19) and severe depression (20–27). A cut-off score of 10 identified probable cases of MDD.</p>
Harsh parenting	<p>In the SCMH, parents/legal guardians with at least one child aged 18 months to 17 years were read the following introduction: 'At one time or another, all children misbehave or do things that parents don't like. Parents have many ways or styles of dealing with these types of problems. Each item will have two statements associated with it that will describe differences in parenting style on a scale between 1 and 7. For each item, please indicate where you fit between the statements that best describes your style of parenting during the past 2 months.'</p> <ol style="list-style-type: none"> <li>1. When I'm upset or under stress: 1—I am not more picky than usual to 7—I am picky and on my child's back.</li> <li>2. When my child misbehaves: 1—I don't get into an argument to 7—I usually get into a long argument with my child.</li> <li>3. When my child misbehaves: 1—I keep my talks short and to the point to 7—I give my child a long lecture.</li> <li>4. When my child misbehaves: 1—I speak to my child calmly to 7—I raise my voice or yell.</li> <li>5. After there's been a problem with my child: 1—Things get back to normal quickly to 7—I often hold a grudge.</li> <li>6. When there is a problem with my child: 1—Things don't get out of hand to 7—Things build up and I do things I don't mean to do.</li> <li>7. When my child misbehaves, I spank, slap, grab, or hit my child: 1—never or rarely to 7—most of the time.</li> <li>8. When my child misbehaves: 1—I handle it without getting upset to 7—I get so frustrated or angry that my child can see I'm upset.</li> <li>9. When my child misbehaves: 1—I rarely use bad language or curse to 7—I almost always use bad language.</li> <li>10. When my child does something I don't like, I insult my child, say mean things, or call my child names: 1—never or rarely to 7—most of the time.</li> </ol>
COVID-19-related risk factors	<p>Eight COVID-19-related risk factors were examined. Five came from the following 'mark all that apply' checklist question: 'Have you experienced any of the following impacts due to the COVID-19 pandemic?'</p> <ul style="list-style-type: none"> <li>▶ Loss of job or income.</li> <li>▶ Difficulty meeting financial obligations or essential needs.</li> <li>▶ Death of a family member, friend or colleague.</li> <li>▶ Feelings of loneliness or isolation.</li> <li>▶ Physical health problems.</li> </ul> <p>The other three risk factors were derived from the following items: 'On average, over the course of the COVID-19 pandemic, how has your alcohol consumption changed when comparing to before the pandemic?'</p> <ul style="list-style-type: none"> <li>▶ Increased, decreased, no change</li> </ul> <p>'On average, over the course of the COVID-19 pandemic, how has your use of cannabis changed when comparing to before the pandemic?'</p> <ul style="list-style-type: none"> <li>▶ Increased, decreased, no change</li> </ul> <p>'The next questions concern violence in the home. Your responses are important whether or not you have had any of these experiences. Remember that all information provided is strictly confidential. How concerned are you about violence in your home?'</p> <ul style="list-style-type: none"> <li>▶ Not at all, somewhat, very, extremely</li> </ul> <p>Respondents who reported any concern were asked about the target of the violence: 'Whom in your household are you concerned about being a target of violence?' One of the response categories was 'yourself'. These last three risk factors were dichotomised: Increased use (yes/no) for alcohol and cannabis, and concerns about being the target of violence in the home as 'yes' (response='somewhat', 'very' or 'extremely') or 'no' (response='not at all').</p>

CCHS, Canadian Community Health Survey; SCMH, Surveys on COVID-19 and Mental Health.

determine if a gradient existed in associations with harsh parenting.

Ordinary least squares (OLS) regression was used to examine harsh parenting in relation to depression and other risk and protective factors. The regression

models simultaneously controlled for depressive symptoms (used as a continuous score), sociodemographic variables, COVID-19-related risk factors and psychosocial protective factors (mastery, coping mechanisms and sense of belonging to the local community).

**Table 2** Measures for psychosocial protective factors

Mastery	<p>Mastery is a psychological resource referring to the extent to which people perceive that they have control over their life circumstances. Mastery is not considered to be a fixed personal resource, but rather, it can evolve with the experiences (good and bad) that individuals face across the lifespan.<sup>26</sup> SCMH respondents were administered the 7-item scale developed by Pearlin and Schooler, 1978.<sup>26</sup></p> <ol style="list-style-type: none"> <li>1. You have little control over the things that happen to you.</li> <li>2. There is really no way you can solve the problems you have.</li> <li>3. There is little you can do to change many of the important things in your life.</li> <li>4. You often feel helpless in dealing with the problems of life.</li> <li>5. Sometimes you feel that you are being pushed around in life.</li> <li>6. What happens to you in the future mostly depends on you.</li> <li>7. You can do just about anything you really set your mind to.</li> </ol> <p>The answer categories were: strongly agree; agree; neither agree nor disagree; disagree; strongly disagree. A score was assigned to each item, from 0 (strongly agree) to 4 (strongly disagree). An overall score was derived by summing the scores for the seven items. Scoring was reversed for items 6 and 7.</p>
Coping mechanisms	<p>The SCMH assessed coping mechanisms by asking respondents: 'Are you doing any of the following activities for your health?'</p> <ul style="list-style-type: none"> <li>▶ Communicating with friends and family</li> <li>▶ Meditating</li> <li>▶ Praying or seeking spiritual guidance</li> <li>▶ Exercising outdoors</li> <li>▶ Exercising indoors</li> <li>▶ Changing food choices</li> <li>▶ Participating in hobbies</li> <li>▶ Changing sleep patterns</li> </ul> <p>The answer categories were: yes, for my mental health; yes, for my physical health; yes, both for my mental and physical health; and no. Responses were dichotomised: Yes, for my mental and/or physical health; No. Responses to exercise outdoors and exercise indoors were combined into a single variable.</p>
Sense of community belonging	<p>The following item was used to measure sense of community belonging: 'How would you describe your sense of belonging to your local community?'</p> <ul style="list-style-type: none"> <li>▶ Very strong</li> <li>▶ Somewhat strong</li> <li>▶ Somewhat weak</li> <li>▶ Very weak</li> </ul>

SCMH, Surveys on COVID-19 and Mental Health.

Unadjusted means/corrections of harsh parenting in relation to depression and other risk and protective factors are provided in online supplemental table A, as well as the number of missing values for all variables included in the models. In preliminary analyses, we examined interactions between depression and other risk and protective factors in relation to harsh parenting; none of the interactions were statistically significant.

Analyses were based on weighted data. Weights created by Statistics Canada ensure that data are representative of the population and incorporate several factors to reduce bias, including an adjustment for non-response and post-stratification to Census population counts. To account for survey design effects of the SCMH/CCHS, SEs, coefficients of variation and 95% CIs were estimated using the bootstrap technique.<sup>49</sup> Differences between estimates were tested for statistical significance, established at the  $p < 0.05$  level. Analyses were conducted in SAS Enterprise Guide version V.7.1 (SAS Institute).

The study used Strengthening the Reporting of Observational studies in Epidemiology (STROBE) cross-sectional reporting guidelines.<sup>50</sup>

### Patient and public involvement

None.

## RESULTS

### Changes in depression over time (research question 1)

Table 3 shows the prevalence of a positive screen for MDD among Canadian parents and compares estimates from the 2020-SCMH and 2021-SCMH, and the CCHS. In the 2021-SCMH, 14.4% of fathers and 21.2% of mothers screened positive for MDD. These percentages were not statistically higher than those observed in the 2020-SCMH. However, based on data for eight provinces, among both fathers and mothers, the prevalence of a positive screen for MDD was substantially higher in the 2020-SCMH and 2021-SCMH than in the CCHS. The prevalence of MDD in the 2021-SCMH has at least doubled compared with what was observed pre-COVID-19 (for fathers, from 3.9% in the CCHS to 13.2% in the 2021-SCMH; for mothers, from 6.9% to 24.1%).

### Harsh parenting in relation to depression (research question 2)

Based on data from the combined 2020/2021-SCMH, mothers were more likely than fathers to report harsh parenting (mean score 1.19 vs 1.02). For both fathers and mothers (table 4), mean scores for harsh parenting were higher among those who screened positive for MDD than among those who did not screen positive (for fathers, 1.27 vs 1.00; for mothers, 1.53 vs 1.10). A gradient

**Table 3** Prevalence of positive screen for MDD, by gender, parents aged 18 or older, Canada, 2021, 2020 and 2015–2019

	2021 SCMH		2020 SCMH		CCHS	
	%	95% CI	%	95% CI	%	95% CI
Prevalence of positive screen for MDD						
Fathers	14.4	(10.7 to 18.0)	12.4	(10.0 to 14.9)		
Mothers	21.2	(17.3 to 25.0)	17.0	(14.3 to 19.8)		
Estimates based on eight provinces*						
Prevalence of positive screen for MDD						
Fathers	13.2†	(8.9 to 17.6)	12.9†	(9.6 to 16.1)	3.9	(2.7 to 5.2)
Mothers	24.1†	(18.9 to 29.3)	18.8†	(15.2 to 22.5)	6.9	(5.7 to 8.1)

Sources: 2020/2021 SCMH; 2015–2019 CCHS.

\*Comparisons between SCMH and CCHS were based on eight provinces. CCHS data were collected in 2019 for Ontario and Manitoba; 2018 for Prince Edward Island; 2016 for Newfoundland and Labrador, Nova Scotia, New Brunswick and Saskatchewan and 2015 for British Columbia.

†Significantly different from CCHS ( $p < 0.05$ ).

CCHS, Canadian Community Health Survey; MDD, major depressive disorder; SCMH, Surveys on COVID-19 and Mental Health.

emerged by severity of depression. For fathers, mean harsh parenting scores ranged from 0.69 among those reporting no depressive symptoms to 1.34 among those reporting symptoms indicative of moderately severe or severe depression; for mothers, the corresponding scores ranged from 0.79 to 1.55.

### Other risk and protective factors for harsh parenting (research question 3)

Table 5 shows OLS regression model results examining depression and other risk and protective factors in relation to harsh parenting. Depressive symptoms were entered as a continuous variable. Among fathers, factors associated with elevated harsh parenting scores were depressive symptoms, being a front-line worker, two or more adult household members, male child, child aged

5 or older, and two or more children in the household. Protective factors were being non-white and higher levels of mastery.

Among mothers, elevated harsh parenting scores were associated with depressive symptoms, household income in the top two quintiles, child aged 5–11 (compared with younger children), two or more children in household, feeling lonely or isolated due to COVID-19 and increased alcohol consumption since the pandemic onset. Meditation was a protective factor.

The standardised beta coefficients provide information on the relative importance of the risk and protective factors. For both genders, the strongest predictors of harsh parenting were the depressive symptoms score and the child being aged 5–11.

**Table 4** Mean harsh parenting scores, by depression and gender, parents aged 18 or older (with at least one child aged 18 months to 17 years), Canada, 2020/2021

	Mean harsh parenting score			
	Fathers		Mothers	
	Mean	95% CI	Mean	95% CI
Overall	1.02	(0.97 to 1.08)	1.19*	(1.14 to 1.24)
Positive screen for MDD				
Yes (PHQ-9 score 10+)	1.27*	(1.12 to 1.42)	1.53*	(1.38 to 1.69)
No (PHQ-9 score 0–9) (reference)	1.00	(0.94 to 1.06)	1.10	(1.05 to 1.16)
Severity of depression				
No depression (score 0, reference)	0.69	(0.59 to 0.78)	0.79	(0.67 to 0.90)
Minimal (score 1–4)	1.08*	(1.00 to 1.17)	1.12*	(1.04 to 1.20)
Mild (score 5–9)	1.19*	(1.04 to 1.33)	1.33*	(1.24 to 1.42)
Moderate (score 10–14)	1.22*	(1.05 to 1.39)	1.52*	(1.34 to 1.70)
Moderately severe/severe (scores 15–27)	1.34*	(1.07 to 1.61)	1.55*	(1.28 to 1.82)

Source: 2020/2021 Survey on COVID-19 and Metal Health.

\* $p < 0.05$ .

MDD, major depressive disorder; PHQ-9, Patient Health Questionnaire-9.

**Table 5** Regression coefficients relating depressive symptoms score and other factors to harsh parenting, by gender, parents aged 18 or older (with at least one child aged 18 months to 17 years), Canada, 2020/2021

Risk and protective factors		Fathers			Mothers		
		B	95% CI	Beta	B	95% CI	Beta
Parent depressive symptoms score†		0.02*	(0.01 to 0.04)	0.13	0.03*	(0.01 to 0.05)	0.18
Sociodemographic factors							
Age group of parent	18–34	–0.01	(–0.21 to 0.18)	–0.01	–0.04	(–0.21 to 0.14)	–0.02
(reference 45+)	35–44	0.12	(–0.01 to 0.26)	0.07	–0.03	(–0.17 to 0.10)	–0.02
Parent racialised group member	Non-white	–0.19*	(–0.35 to 0.03)	–0.11	0.09	(–0.07 to 0.26)	0.05
Parent immigrant		–0.03	(–0.20 to 0.14)	–0.02	–0.04	(–0.21 to 0.14)	–0.02
Educational attainment of parent	Postsecondary completed	0.03	(–0.12 to 0.19)	0.02	0.09	(–0.08 to 0.26)	0.05
(reference, high school or less)	Bachelor's or higher	0.04	(–0.16 to 0.25)	0.02	–0.02	(–0.21 to 0.16)	–0.01
Parent front-line worker		0.22*	(0.02 to 0.42)	0.06	–0.14	(–0.31 to 0.03)	–0.05
Two or more adults in household		0.39*	(0.24 to 0.55)	0.10	–0.16	(–0.32 to 0.01)	–0.05
Resides in urban centre		–0.15	(–0.30 to 0.00)	–0.07	–0.05	(–0.18 to 0.08)	–0.02
Household income quintile	2	–0.03	(–0.26 to 0.20)	–0.01	0.11	(–0.10 to 0.32)	0.04
(reference quintile 1)	3	0.07	(–0.17 to 0.32)	0.03	0.01	(–0.19 to 0.21)	0.01
	4	0.05	(–0.18 to 0.29)	0.03	0.25*	(0.03 to 0.46)	0.12
	5	0.09	(–0.14 to 0.32)	0.05	0.27*	(0.04 to 0.49)	0.13
Two or more children in household		0.17*	(0.05 to 0.29)	0.09	0.20*	(0.09 to 0.32)	0.10
Gender of child (reference female)	Male	0.12*	(0.00 to 0.24)	0.07	0.04	(–0.07 to 0.14)	0.02
Age group of child	5–11 years	0.25*	(0.09 to 0.41)	0.15	0.28*	(0.15 to 0.41)	0.15
(Reference 18 months to 4 years)	12–17 years	0.21*	(0.04 to 0.38)	0.12	0.14	(–0.02 to 0.30)	0.08
Risk factors related to COVID-19							
Loss of job or income		0.01	(–0.13 to 0.15)	0.01	0.07	(–0.06 to 0.21)	0.04
Difficulty meeting financial obligations or essential needs		–0.14	(–0.31 to 0.04)	–0.06	–0.16	(–0.33 to 0.01)	–0.07
Death of family member/friend/colleague		–0.10	(–0.33 to 0.14)	–0.03	–0.07	(–0.23 to 0.10)	–0.02
Feelings of loneliness or isolation		0.06	(–0.06 to 0.19)	0.04	0.14*	(0.02 to 0.26)	0.08
Physical concerns		0.13	(–0.02 to 0.28)	0.07	0.10	(–0.04 to 0.23)	0.05
Increased alcohol consumption		0.00	(–0.15 to 0.14)	0.00	0.15*	(0.02 to 0.28)	0.07
Increased cannabis consumption		0.16	(–0.13 to 0.45)	0.05	–0.14	(–0.37 to 0.09)	–0.03
Concerns about being target of violence in the own home‡					0.32	(–0.14 to 0.78)	0.06
Protective factors							
Mastery score†		–0.02*	(–0.03 to 0.00)	–0.09	0.00	(–0.02 to 0.01)	–0.02
Coping mechanisms	Communicate with friends/family	0.00	(–0.18 to 0.19)	0.00	–0.05	(–0.32 to 0.23)	–0.01
	Meditate	–0.04	(–0.20 to 0.13)	–0.02	–0.18*	(–0.30 to –0.06)	–0.09

Continued



Table 5 Continued

Risk and protective factors	Fathers			Mothers			
	B	95% CI	Beta	B	95% CI	Beta	
Pray or seek spiritual guidance	-0.09	(-0.22 to 0.04)	-0.05	0.00	(-0.11 to 0.12)	0.00	
Exercise	0.14	(-0.02 to 0.31)	0.07	-0.08	(-0.25 to 0.09)	-0.03	
Change food choices	0.02	(-0.11 to 0.14)	0.01	-0.07	(-0.17 to 0.04)	-0.04	
Participate in hobbies	-0.02	(-0.15 to 0.10)	-0.01	-0.02	(-0.12 to 0.09)	-0.01	
Change sleep patterns	0.04	(-0.12 to 0.20)	0.02	0.02	(-0.09 to 0.14)	0.01	
Sense of community belonging (reference very weak)	Very strong	0.06	(-0.21 to 0.33)	0.02	-0.16	(-0.46 to 0.15)	-0.06
	Somewhat strong	0.00	(-0.24 to 0.23)	0.00	-0.10	(-0.39 to 0.19)	-0.06
	Somewhat weak	0.19	(-0.06 to 0.43)	0.10	-0.01	(-0.29 to 0.27)	0.00

Source: 2020/2021 Survey on COVID-19 and Mental Health. Note: A 'missing' category was included for household income quintile and a 'not applicable' category for front-line worker, but results are not shown.

\* $p < 0.05$ .

†MDD and mastery scores were entered into regression models as continuous variables.

‡Insufficient sample size to examine fathers' concerns about being target of violence in the home.

Beta, standardised beta coefficient; MDD, major depressive disorder.

## DISCUSSION

Based on SCMHS data pertaining to wave 3 of the COVID-19 pandemic, 14.4% of fathers and 21.2% of mothers screened positive for MDD. Estimates were similar for wave 2. Comparable estimates for pre-COVID-19 years (2015–2019) in eight provinces showed that the prevalence of screening positive for MDD had at least more than doubled among Canadian parents during the pandemic. By contrast, rates of depression among Canadian adults had been stable from the early 2000s to the pre-COVID-19 era.<sup>51 52</sup>

Mothers were more likely than fathers to report harsh parenting, and for both genders, depressive symptoms were related to harsh parenting. A gradient was observed—parents in the highest category for depressive symptoms had the highest harsh parenting scores. When associations were examined in multivariate regression models controlling for other risk and protective factors, the association between depressive symptoms and harsh parenting remained significant for both genders. Pre-COVID-19 baseline data are not available for harsh parenting, but a crowd-sourcing Statistics Canada survey conducted in June 2020 found that 46% of parents reported that, because of the pandemic, they were 'very' or 'extremely' concerned about having less patience, raising their voices, or scolding or yelling at their children.<sup>44</sup> A study in the Netherlands, where pre-COVID-19 data were available, reported significantly higher harsh parenting levels during COVID-19, compared with pre-COVID-19 times.<sup>53</sup>

According to Coyne *et al*,<sup>54</sup> because of COVID-19, parents are facing a 'collision of roles', which has heightened stress levels. The parental stress model<sup>55 56</sup> proposes that stress occurs when demands conflict with expectations (their own or others') and resources needed to cope are lacking.<sup>56</sup> Previous research has shown that

adults with high parental stress are more likely to engage in harsh parenting.<sup>19 56–59</sup>

For mothers, the associations of loneliness, isolation and greater alcohol consumption with higher levels of harsh parenting may reflect increased parental stress due to COVID-19. Most mothers who reported higher alcohol use attributed the increase to stress. Other research has shown that maternal alcohol consumption is a predictor of harsh parenting.<sup>60</sup> Among fathers, being a front-line worker during COVID-19, with the chronic strain inherent in such jobs, may have impeded their ability to fulfil their role as parents.

Our findings that parents were more likely to resort to harsh parenting with school-aged children and when there were two or more children in the household are consistent with previous research.<sup>23 57 58 61</sup> Multiple children in the household and the strain of helping young children with schooling may be particularly stressful. The results of analyses of socioeconomic status (SES) in relation to harsh parenting have been inconsistent.<sup>62</sup> Although some studies have shown that low SES is a risk factor for harsh parenting,<sup>57 61 63 64</sup> we found that mothers with higher incomes were more likely to engage in harsh parenting. This may be specific to COVID-19; two-thirds of Canadian mothers reported the extra responsibility of home schooling.<sup>65</sup> For women with higher incomes and demanding jobs, the added responsibility may have contributed to stress. A German study reported that decreased sharing of childcare responsibilities during COVID-19 was a risk factor for harsh parenting,<sup>57</sup> and may be relevant to our finding that harsh parenting was more common among mothers than fathers. This is consistent with previous research suggesting that if mothers assume more responsibility in parenting than fathers, the resulting stress may intensify emotional responses in discipline situations.<sup>47</sup>



Studies of protective factors for harsh parenting are rare. Our finding that psychosocial factors were protective (mastery for fathers and meditation for mothers) likely reflects the role of these psychosocial resources in stress reduction. Previous research has found that women benefit more from meditation than men do.<sup>66 67</sup> A review article concluded that mindful meditation could be taught to parents and was effective in improving self-regulation among those experiencing chronic stress.<sup>68</sup> A Norwegian study<sup>69</sup> reported that fathers' positive engagement with children was dependent on a sense of mastery.

Consistent with our results, previous research has found that maternal<sup>20 22</sup> and paternal depressive symptoms<sup>19–21</sup> were associated with harsh parenting. For both genders, depression was a strong risk factor for harsh parenting. It has been proposed that the association stems from irritability that often accompanies depression. Parents experiencing irritability express more negative feelings toward their children, are less tolerant and capable of resolving issues through reasoning, and are more likely to resort to harsh techniques to deal with misbehaviour. Feeling helpless may also be relevant. A study carried out during COVID-19 found that such feelings were the main mechanism predicting depressive symptomology,<sup>70</sup> which, in turn, led to emotional regulation problems that negatively affected parent–child interactions.

During these COVID-19-dominated times, Canadian parents have reported struggles with their mental health and challenges with parenting.<sup>23 65</sup> Parental depression and dysfunctional parenting are associated with negative child outcomes such as attachment issues, lower cognitive/intellectual functioning performance, anxiety, depression, conduct disorder, attention deficit hyperactivity disorder, impaired socioemotional development and child maltreatment.<sup>20 25 33–43</sup> Although the cross-sectional nature of the data precludes drawing conclusions, a recent meta-analysis showed that the association between parental depression and negative child outcomes (cognitive and intellectual functioning, impairment in social interactions, and internalising and externalising symptoms)<sup>20</sup> was at least partially mediated via dysfunctional parenting. That is, depression led to dysfunctional parenting, which negatively affected children's health and well-being. A systematic review published in 2022<sup>71</sup> concluded that there had been a deterioration in the mental health of children and youth since the onset of COVID-19.

The findings of this study underscore the importance of the implementation of and access to programmes that identify and treat depression among parents. However, during COVID-19, access to healthcare of any type has been particularly challenging; in a survey conducted during the first year of the pandemic, half of Canadian adults reported difficulties obtaining the care they needed.<sup>72</sup> This is unfortunate given that programmes aimed at identifying and treating

depression among adults in primary care settings have been shown to be effective in decreasing depression-related morbidity.<sup>73</sup>

### Strengths and limitations

A strength of this study is the use of data based on large representative samples that can be generalised to the Canadian population. Research has repeatedly shown that mental health deteriorates after a natural disaster,<sup>74 75</sup> but the evidence was largely based on retrospective data. Our study used data collected during waves 2 and 3 of COVID-19, thereby providing an opportunity to investigate the well-being of Canadian parents as the pandemic evolved. The scales measuring depression and parenting have good test–retest reliability and high validity.<sup>12 45–48 76</sup> Also, we were able to examine how COVID-19-related stressors and psychosocial protective factors were associated with harsh parenting. This study is an important contribution to the literature given that call-to-action papers on the impact of COVID-19 on mental health<sup>77 78</sup> emphasise the importance of high-quality research aimed at identifying vulnerable populations and how mental health consequences can be mitigated.

Nonetheless, several limitations should be considered when assessing the findings. Changes in estimates of depression over time were not based on data for all provinces, and the baseline years for comparisons differed. We implicitly assumed stable estimates of depression across these early years (2015–2019). This assumption was supported by a sensitivity analysis of Ontario and Manitoba data, which found stable estimates of depression among adults from 2015 to 2019, followed by an upturn in the 2020 SCMH.<sup>16</sup>

The SCMH collects cross-sectional self-reported data. The extent of harsh parenting may be underestimated because of some respondents' reluctance to disclose such behaviour. How this influences associations between depression and parenting is unknown.

The SCMH measured only one aspect of dysfunctional parenting—harsh parenting; questions about positive parenting and lax parenting were not asked. A recent meta-analysis concluded that links between depressive symptoms and parental behaviour are stronger if a composite measure of parenting that incorporates both positive and negative aspects is employed.<sup>20</sup> The answer categories for all 10 items in the harsh parenting subscale were in the same direction from least to most harsh; this might have promoted 'acquiescence bias'.

CCHS data were collected throughout the year, while SCMH data were collected from September to December in 2020 and from February to May in 2021. Therefore, comparisons of estimates over time are potentially subject to seasonality bias.<sup>79</sup>

The degree to which the SCMH response rates influenced associations between risk and protective factors and harsh parenting is unknown.

## CONCLUSION

COVID-19 has had an unprecedented impact on Canadian families. After more than two decades of stability, rates of depression increased substantially. Furthermore, a strong association was observed between depression and harsh parenting. Since depression and dysfunctional parenting are associated with negative child outcomes,<sup>20 25 33–43 80</sup> programmes aimed at identifying and treating parents with depression would be beneficial. When the parents in this study were being interviewed, COVID-19 cases, hospitalisations and deaths were rising. The psychological and economic repercussions of lockdowns have yet to be fully evaluated. Ongoing monitoring is needed to determine if elevated levels of parental depression persist beyond the pandemic.<sup>81</sup> Furthermore, dysfunctional parenting behaviours can continue even after parents are no longer experiencing depressive symptoms.<sup>81</sup> This underscores the importance of programmes aimed at bolstering parenting skills as families continue to face the challenges associated with COVID-19.

**Twitter** Dawn-Li Blair @DawnLiBlair

**Acknowledgements** The authors thank Dr. Leslie E. Roos for her advice and assistance with the parenting module included in the SCM. HM was supported by the Chedoke Health Chair in Child Psychiatry.

**Contributors** MS, LT and AG conceived of the project. MS, LT and LA decided on the analytical approach. MS conducted the analyses. MS, LT, AG, LA, D-LB, WH and HM interpreted the results. MS drafted and revised the document in response to feedback from LT, AG, LA, D-LB, WH and HM. MS is the guarantor for this study.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** Data for the CCHS and SCM were collected by Statistics Canada under the provisions of the Statistics Act. Before participating in the surveys, respondents were informed that the information they provided would be used for statistical purposes, that their answers would be strictly confidential, and that their participation was voluntary. Respondents consented to reply to the survey and were asked for permission to share the information they provided with the Public Health Agency of Canada. Because this article is based on data from those share files, the project did not undergo ethics review. The SCM underwent a privacy impact assessment and was reviewed by Statistic Canada's internal ethics committee using the Necessity and Proportionality Framework.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data may be obtained from Statistics Canada.

**Supplemental material** This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

**Open access** This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

## ORCID iDs

Lil Tonmyr <http://orcid.org/0000-0002-8722-7616>

Andrea Gonzalez <http://orcid.org/0000-0003-0087-830X>

Dawn-Li Blair <http://orcid.org/0000-0003-2382-0880>

## REFERENCES

- 1 Statistics Canada. COVID-19 in Canada: a six-month update on social and economic impacts. Ottawa (ON) Government of Canada; 2020. Available: <https://www150.statcan.gc.ca/n1/en/pub/11-631-x/11-631-x2020003-eng.pdf?st=bxRrAnwr>
- 2 Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020;395:912–20.
- 3 COVID-19 Mental Disorders Collaborators. Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *Lancet* 2021;398:1700–12.
- 4 Flynn R, Riches E, Reid G, et al. Rapid review of the impact of COVID-19 on mental health. Edinburgh Public Health Scotland; 2020. Available: <http://www.healthscotland.scot/publications/rapid-review-of-the-impact-of-covid-19-on-mental-health>
- 5 National Collaborating Centre for Methods and Tools. What is known about the impact of the COVID-19 pandemic on families with children? Hamilton (ON) McMaster University; 2020. Available: <https://www.nccmt.ca/covid-19/covid-19-rapid-evidence-service/15>
- 6 Dragioti E, Li H, Tsitsas G, et al. A large-scale meta-analytic atlas of mental health problems prevalence during the COVID-19 early pandemic. *J Med Virol* 2022;94:1935–49.
- 7 Leung CMC, Ho MK, Bharwani AA, et al. Mental disorders following COVID-19 and other epidemics: a systematic review and meta-analysis. *Transl Psychiatry* 2022;12:205.
- 8 Cénat JM, Farahi S, Dalexis RD, et al. The global evolution of mental health problems during the COVID-19 pandemic: a systematic review and meta-analysis of longitudinal studies. *J Affect Disord* 2022;315:70–95.
- 9 Salanti G, Peter N, Tonia T, et al. The impact of the COVID-19 pandemic and associated control measures on the mental health of the general population: a systematic review and dose-response meta-analysis. *Ann Intern Med* 2022;175:1560–71.
- 10 Gadermann AC, Thomson KC, Richardson CG, et al. Examining the impacts of the COVID-19 pandemic on family mental health in Canada: findings from a national cross-sectional study. *BMJ Open* 2021;11:e042871.
- 11 Statistics Canada. Survey on COVID-19 and mental health (SCMH). 2022. Available: <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5330> [Accessed 06 Feb 2022].
- 12 Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med* 2001;16:606–13.
- 13 Kroenke K, Spitzer RL. The PHQ-9: a new depression diagnostic and severity measure. *Psychiat Ann* 2002;32:509–15.
- 14 Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME-MD. *JAMA* 1999;282:1737–44.
- 15 Statistics Canada. Survey on COVID-19 and mental health, February to May 2021. The Daily; 2022. Available: <https://www150.statcan.gc.ca/n1/daily-quotidien/210927/dq210927a-eng.htm> [Accessed 19 Jan 2022].
- 16 Shields M, Tonmyr L, Gonzalez A, et al. Symptoms of major depressive disorder during the COVID-19 pandemic: results from a representative sample of the Canadian population. *Health Promot Chronic Dis Prev Can* 2021;41:340–58.
- 17 Patten SB, Williams JVA, Lavorato DH, et al. The prevalence of major depression is not changing. *Can J Psychiatry* 2015;60:31–4.
- 18 Ettman CK, Abdalla SM, Cohen GH, et al. Prevalence of depression symptoms in US adults before and during the COVID-19 pandemic. *JAMA Netw Open* 2020;3:e2019686.
- 19 Cheung K, Theule J. Paternal depressive symptoms and parenting behaviors: an updated meta-analysis. *J Child Fam Stud* 2019;28:613–26.
- 20 Goodman SH, Simon HFM, Shambraw AL, et al. Correction to: parenting as a mediator of associations between depression in mothers and children's functioning: A systematic review and meta-analysis. *Clin Child Fam Psychol Rev* 2020;23:461.
- 21 Kane P, Garber J. The relations among depression in fathers, children's psychopathology, and father-child conflict: a meta-analysis. *Clin Psychol Rev* 2004;24:339–60.
- 22 Lovejoy MC, Graczyk PA, O'Hare E, et al. Maternal depression and parenting behavior: a meta-analytic review. *Clin Psychol Rev* 2000;20:561–92.

- 23 Roos LE, Salisbury M, Penner-Goeke L, *et al.* Supporting families to protect child health: parenting quality and household needs during the COVID-19 pandemic. *PLoS One* 2021;16:e0251720.
- 24 Wilson S, Durbin CE. Effects of paternal depression on fathers' parenting behaviors: a meta-analytic review. *Clin Psychol Rev* 2010;30:167–80.
- 25 Brennan PA, Le Brocque R, Hammen C. Maternal depression, parent-child relationships, and resilient outcomes in adolescence. *J Am Acad Child Adolesc Psychiatry* 2003;42:1469–77.
- 26 Pearlin LI, Schooler C. The structure of coping. *J Health Soc Behav* 1978;19:2–21.
- 27 Gadalla TM. Determinants, correlates and mediators of psychological distress: a longitudinal study. *Soc Sci Med* 2009;68:2199–205.
- 28 Kessler RC. The effects of stressful life events on depression. *Annu Rev Psychol* 1997;48:191–214.
- 29 Kitchen P, Williams A, Chowhan J. Sense of community belonging and health in Canada: a regional analysis. *Soc Indic Res* 2012;107:103–26.
- 30 Michalski CA, Diemert LM, Helliwell JF, *et al.* Relationship between sense of community belonging and self-rated health across life stages. *SSM Popul Health* 2020;12:100676.
- 31 Nicolaisen M, Moum T, Thorsen K. Mastery and depressive symptoms: how does mastery influence the impact of stressors from midlife to old age? *J Aging Health* 2018;30:1084–107.
- 32 Wang J, Patten SB. The moderating effects of coping strategies on major depression in the general population. *Can J Psychiatry* 2002;47:167–73.
- 33 Beck CT. Maternal depression and child behaviour problems: a meta-analysis. *J Adv Nurs* 1999;29:623–9.
- 34 Connell AM, Goodman SH. The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: a meta-analysis. *Psychol Bull* 2002;128:746–73.
- 35 Goodman SH, Rouse MH, Connell AM, *et al.* Maternal depression and child psychopathology: a meta-analytic review. *Clin Child Fam Psychol Rev* 2011;14:1–27.
- 36 Karreman A, van Tuijl C, van Aken MAG, *et al.* Parenting and self-regulation in preschoolers: a meta-analysis. *Inf Child Develop* 2006;15:561–79.
- 37 Kawabata Y, Alink LRA, Tseng W-L, *et al.* Maternal and paternal parenting styles associated with relational aggression in children and adolescents: a conceptual analysis and meta-analytic review. *Dev Rev* 2011;31:240–78.
- 38 McLeod BD, Weisz JR, Wood JJ. Examining the association between parenting and childhood depression: a meta-analysis. *Clin Psychol Rev* 2007;27:986–1003.
- 39 McLeod BD, Weisz JR, Wood JJ. Examining the association between parenting and childhood anxiety: a meta-analysis. *Clin Psychol Rev* 2007;27:986–1003.
- 40 National Research Council, Institute of Medicine (US) Committee on Depression PPathDoC. Associations between depression in parents and parenting, child health, and child psychological functioning. In: England MJ, Sim LJ, eds. *Depression in parents, parenting, and children: opportunities to improve identification, treatment, and prevention*. Washington, DC: National Academies Press (US), 2009.
- 41 Paulussen-Hoogbeem MC, Stams G, Hermanns JMA, *et al.* Child negative emotionality and parenting from infancy to preschool: a meta-analytic review. *Dev Psychol* 2007;43:438–53.
- 42 Pinquart M. Associations of parenting dimensions and styles with externalizing problems of children and adolescents: an updated meta-analysis. *Dev Psychol* 2017;53:873–932.
- 43 Rothbaum F, Weisz JR. Parental caregiving and child externalizing behavior in nonclinical samples: a meta-analysis. *Psychol Bull* 1994;116:55–74.
- 44 Statistics Canada. Canadian community health survey (CCHS) - 2019. 2022. Available: [https://www23.statcan.gc.ca/imdb/p31nstr.pl?Function=getInstrumentList&Item\\_Id=1207185&UL=1V](https://www23.statcan.gc.ca/imdb/p31nstr.pl?Function=getInstrumentList&Item_Id=1207185&UL=1V) [Accessed 06 Feb 2022].
- 45 Arnold DS, O'Leary SG, Wolff LS, *et al.* The parenting scale: a measure of dysfunctional parenting in discipline situations. *Psychol Assess* 1993;5:137–44.
- 46 Lorber MF, Xu S, Slep AMS, *et al.* A new look at the psychometrics of the parenting scale through the lens of item response theory. *J Clin Child Adolesc Psychol* 2014;43:613–26.
- 47 Rhoades KA, O'Leary SG. Factor structure and validity of the parenting scale. *J Clin Child Adolesc Psychol* 2007;36:137–46.
- 48 Salari R, Terreros C, Sarkadi A. Parenting scale: which version should we use? *J Psychopathol Behav Assess* 2012;34:268–81.
- 49 Rust KF, Rao JNK. Variance estimation for complex surveys using replication techniques. *Stat Methods Med Res* 1996;5:283–310.
- 50 von Elm E, Altman DG, Egger M, *et al.* The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *Int J Surg* 2014;12:1495–9.
- 51 Chiu M, Amartey A, Wang X, *et al.* Trends in objectively measured and perceived mental health and use of mental health services: a population-based study in Ontario, 2002–2014. *CMAJ* 2020;192:E329–37.
- 52 Patten SB, Williams JVA, Lavorato DH, *et al.* Major depression in Canada: what has changed over the past 10 years? *Can J Psychiatry* 2016;61:80–5.
- 53 Sari NP, van IJzendoorn MH, Jansen P, *et al.* Higher levels of harsh parenting during the COVID-19 lockdown in the Netherlands. *Child Maltreat* 2022;27:156–62.
- 54 Coyne LW, Gould ER, Grimaldi M, *et al.* First things first: parent psychological flexibility and self-compassion during COVID-19. *Behav Anal Pract* 2021;14:1092–8.
- 55 Abidin RR. The determinants of parenting behavior. *J Clin Child Psychol* 1992;21:407–12.
- 56 Deater-Deckard K. Parenting stress and child adjustment: some old hypotheses and new questions. *Clin Psychol: Sci Pract* 1998;5:314–32.
- 57 Clemens V, Köhler-Dauner F, Ziegenhain U, *et al.* Predictors of parental coping during the COVID-19 pandemic: a survey in Germany. *Front Psychol* 2021;12:715327.
- 58 Connell CM, Strambler MJ. Experiences with COVID-19 stressors and parents' use of neglectful, harsh, and positive parenting practices in the Northeastern United States. *Child Maltreat* 2021;26:255–66.
- 59 Wolf JP, Freisthler B, Chadwick C. Stress, alcohol use, and punitive parenting during the COVID-19 pandemic. *Child Abuse Negl* 2021;117:105090.
- 60 Kim HK, Pears KC, Fisher PA, *et al.* Trajectories of maternal harsh parenting in the first 3 years of life. *Child Abuse Negl* 2010;34:897–906.
- 61 Riem MME, Lodder P, Guo J, *et al.* Predictive models of maternal harsh parenting during COVID-19 in China, Italy, and Netherlands. *Front Psychiatry* 2021;12:722453.
- 62 Cooper K. Are poor parents poor parents? The relationship between poverty and parenting among mothers in the UK. *Sociology* 2021;55:349–83.
- 63 Hoff E, Laursen B, Tardif T. Socioeconomic status and parenting. In: Bornstein MH, ed. *Handbook of parenting*. Erlbaum, NJ: Mahwah, 2002: 231–52.
- 64 Vreeland A, Gruhn MA, Watson KH, *et al.* Parenting in context: associations of parental depression and socioeconomic factors with parenting behaviors. *J Child Fam Stud* 2019;28:1124–33.
- 65 Leclerc K. Caring for their children: impacts of COVID-19 on parents. Statcan COVID-19: data to insights for a better Canada, Statistic Canada catalogue no. 45280001. Ottawa (ON) Statistics Canada; 2020. Available: <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00091-eng.pdf>
- 66 Rojiani R, Santoyo JF, Rahrig H, *et al.* Women benefit more than men in response to college-based meditation training. *Front Psychol* 2017;8:551.
- 67 Wang Y, Chen Y, Sun Y, *et al.* Gender differences in the benefits of meditation training on attentional blink. *Curr Psychol* 2023;42:5178–87.
- 68 Perry-Parrish C, Copeland-Linder N, Webb L, *et al.* Mindfulness-based approaches for children and youth. *Curr Probl Pediatr Adolesc Health Care* 2016;46:172–8.
- 69 Solberg B, Glavin K. From man to father: Norwegian first-time fathers' experience of the transition to fatherhood. *Health Sci J* 2018;12:1–7.
- 70 Ebrahimi OV, Burger J, Hoffart A, *et al.* Within- and across-day patterns of interplay between depressive symptoms and related psychopathological processes: a dynamic network approach during the COVID-19 pandemic. *BMC Med* 2021;19:317.
- 71 Samji H, Wu J, Ladak A, *et al.* Review: mental health impacts of the COVID-19 pandemic on children and youth - a systematic review. *Child Adolesc Ment Health* 2022;27:173–89.
- 72 Statistics Canada. Survey on access to health care and pharmaceuticals during the pandemic, March 2020 to May 2021. The Daily; 2022. Available: <https://www150.statcan.gc.ca/n1/daily-quotidien/211123/dq211123b-eng.htm> [Accessed 19 Feb 2022].
- 73 Siu AL, Bibbins-Domingo K, Grossman DC, *et al.* Screening for depression in adults: US preventive services task force recommendation statement. *JAMA* 2016;315:380–7.
- 74 Beaglehole B, Mulder RT, Frampton CM, *et al.* Psychological distress and psychiatric disorder after natural disasters:



- systematic review and meta-analysis. *Br J Psychiatry* 2018;213:716–22.
- 75 North CS, Pfefferbaum B. Mental health response to community disasters: a systematic review. *JAMA* 2013;310:507–18.
- 76 Levis B, Benedetti A, Thombs BD, *et al.* Accuracy of patient health Questionnaire-9 (PHQ-9) for screening to detect major depression: individual participant data meta-analysis. *BMJ* 2019;365:l1476.
- 77 Holmes EA, O'Connor RC, Perry VH, *et al.* Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *Lancet Psychiatry* 2020;7:547–60.
- 78 Mezzina R, Gopikumar V, Jenkins J, *et al.* "Social vulnerability and mental health inequalities in the "Syndemic": call for action". *Front Psychiatry* 2022;13:894370.
- 79 Lukmanji A, Williams JVA, Bulloch AGM, *et al.* Seasonal variation in symptoms of depression: a Canadian population based study. *J Affect Disord* 2019;255:142–9.
- 80 Gunlicks ML, Weissman MM. Change in child psychopathology with improvement in parental depression: a systematic review. *J Am Acad Child Adolesc Psychiatry* 2008;47:379–89.
- 81 Seifer R, Dickstein S, Sameroff AJ, *et al.* Infant mental health and variability of parental depression symptoms. *J Am Acad Child Adolesc Psychiatry* 2001;40:1375–82.