

STIGMA AND LOW SENSE OF COHERENCE AS LONG-TERM PREDICTORS OF DEPRESSIVE AND ANXIETY SYMPTOMS IN THE POPULATION AMID THE COVID-19 PANDEMIC

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Summary

Background: The COVID-19 has had a profound negative impact on the population's mental health. This study aimed to determine the prevalence of depressive and anxiety symptoms in the general population during the third wave of the COVID-19 pandemic and to identify risk factors associated with these symptoms after implementing initial prevention strategies.

Subjects and methods: A cross-sectional study was conducted among 200 visitors to five general practices in February 2021 in Slovenia. The response rate was 82.0% (164/200). A structured survey was used to assess sociodemographic factors, depressive and anxiety symptoms, exposure to COVID-19 stressors, stress coping strategies used, and sense of coherence (SOC). A score of ≥ 10 points on the Patient Health Questionnaire-9 and ≥ 10 points on the General Anxiety Disorder-7 questionnaire were considered as cut-offs for screened depression and anxiety, respectively. The Mann-Whitney U test, chi-square test, and binary logistic regression were used for statistical analysis.

Results: The prevalence of screened depression and anxiety was 24.4% and 12.9%, respectively. Independent predictors of depression were stigma related to COVID-19 (OR 2.42, 95% CI 1.57-3.73, $p < 0.001$), low SOC (OR 5.89, 95% CI 2.21-15.72, $p < 0.001$), and smoking (OR 3.53, 95% CI 1.23-10.10, $p = 0.019$). Independent predictors of anxiety were religious rituals cancellation (OR 1.64, 95% CI 1.02-2.65, $p = 0.040$), childcare responsibilities (OR 1.70, 95% CI 1.07-2.69, $p = 0.025$), increased contact with close ones (OR 1.92, 95% CI 1.11-3.29, $p = 0.019$), and low SOC (OR 5.21, 95% CI 1.22-22.31, $p = 0.026$).

Conclusions: Despite efforts to address the pandemic through prevention strategies and the burden of the pandemic decreasing, we still found a high prevalence of depressive and anxiety symptoms. While some risk factors can be addressed quickly, such as by providing stable childcare and schooling and enabling access to mental health services for vulnerable families, others require a longer-term approach, such as strengthening SOC and reducing stigma.

Keywords: COVID-19, mood disorders, social stigma, resilience, coping

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INTRODUCTION

The Coronavirus Disease 2019 (COVID-19) pandemic has had a significant impact on global health and the economy, and various measures have been taken to control its spread, including testing, quarantine, self-isolation, contact tracing, travel bans, school closures, assembly restrictions, curfews, and lockdowns (Jakovljevic et al. 2020, Wang et al. 2020, Kunzler et al. 2021)

These measures have contributed to high levels of psychological distress, which is a state of emotional suffering caused by exposure to a stressful event that threatens physical or mental health (Sirois & Owens 2020, Wang et al. 2020). Inability to effectively cope with the stressor can lead to depression or anxiety (Sirois & Owens 2020). A meta-analysis found that the prevalence of depression and anxiety during the pandemic was 33% and 30%, respectively, which is up to ten times higher

than the estimated global prevalence in 2015 of 4.4% and 3.6% (Friedrich 2017, Wang et al. 2020).

During the COVID-19 pandemic, several stressors have been identified as contributing to psychological distress. These include infection-related stressors, stressors related to the loss of activities, and financial and resource-related stressors (Park et al. 2020, Wang et al. 2020). Other factors, such as female gender, no current relationship, health profession, previous chronic disease, younger age, lower education, and lower socio-economic status, have also been associated with increased psychological distress (Kunzler et al. 2020, Wang et al. 2020, Sun et al. 2021).

Resilience, or the ability to adapt to stress, is important in preventing mental health disorders. Adaptive coping mechanisms, such as approach coping strategies and the use of humour, can help prevent mental health issues, while avoidant coping strategies have been found to be

associated with poorer mental health outcomes (Gurvich et al. 2020, Jakovljevic et al. 2020).

One key factor in a person's ability to adjust to stress is their sense of coherence (SOC). People with a higher SOC understand the stressor better, are more likely to select an appropriate strategy and available resources to deal with the stressor and have a stronger sense that dealing with the stressor is a meaningful process than people with lower SOC (Eriksson & Lindström 2005). High levels of SOC are associated with better stress management and lower rates of burnout, anxiety, and depression, while low levels are associated with these negative outcomes (Sairenchi et al. 2011).

Short-term stressors, particularly infection-related ones, have been linked to increased depression and anxiety symptoms during the COVID-19 pandemic. Prevention strategies like raising awareness and providing mental health support through phone or digital means have been suggested, but the effect of social, cultural, and religious factors on mental health during the pandemic has not been studied extensively. Furthermore, once prevention strategies are implemented, further monitoring is needed to identify long-term risk factors that may persist beyond the pandemic.

This study aimed to a) evaluate the prevalence of depressive and anxiety symptoms during the third wave of the COVID-19 pandemic when initial prevention measures were implemented, and some repressive measures were lifted, and b) identify short- and long-term risk factors associated with these symptoms.

SUBJECTS AND METHODS

Design and data collection

We conducted a cross-sectional study among visitors to Primary Health Centre Trebnje, Slovenia. We invited every general practice visitor aged 18 years or older to complete a paper-based survey. The survey was distributed to five general practices from 1/2/2021 to 12/2/2021. After providing complete description of the study to the patients, written informed consent was obtained. Additionally, the gender and age of non-responders were recorded. The study was approved by the Slovenian National Medical Ethics Committee (document number 0120-510/2020/3). The personal data of patients were protected according to the Law on Personal Data Protection.

Study population

The study population comprised of patients aged 18 years or older with no exclusion criteria: blindness, cognitive impairment, or any other condition that would interfere with understanding the questions. We initially studied 200 patients. Among them, 36 were non-responders with a median age of 66 (55-74) years, 16 (44.4%) were female and 20 (55.6%) were male. The response rate was 82.0%. Finally, 164 patients were included in the study. The median age was 50 (38-60) years, 90 (54.9%) were female, 74 (45.1%) were male. The baseline characteristics of the study population are shown in Table 1.

Research instrument

We created a structured questionnaire in which we collected sociodemographic data, assessed depressive and anxiety symptoms, exposure to COVID-19 related stressors, coping strategies used, and SOC of the observed population.

Sociodemographic data

Sociodemographic data included: gender, age, education, marital status, smoking status, associated diseases, daily pills intake, financial stability, and weekly physical activity.

Depressive symptoms

We used the nine-item Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al. 2001) to screen for depressive symptoms. The PHQ-9 has been previously used for this purpose in the Slovenian population (Kozel et al. 2012) and has demonstrated high internal reliability and test-retest reliability. In our sample, Cronbach's alpha was 0.87. Each item on the PHQ-9 is rated on a 4-point Likert scale ranging from 0 (not at all) to 3 (almost every day). Based on symptom severity, the PHQ-9 categorises individuals into five levels, with cut-off points at 0-4 (no depressive symptoms), 5-9 (mild depressive symptoms), 10-14 (moderate depressive symptoms), 15-19 (moderately severe depressive symptoms), and 20-27 (severe depressive symptoms). A score of 10 or higher is recommended as a cut-off for detecting probable cases of depression, with a sensitivity of 88% and a specificity of 85% (Kroenke et al. 2001, Levis et al. 2019).

Anxiety symptoms

To screen for anxiety symptoms, we used the seven-item Generalized Anxiety Disorder-7 (GAD-7) questionnaire (Spitzer et al. 2006). The GAD-7 has been previously used for this purpose in the Slovenian population

(Velikonja et al. 2020) and has demonstrated high internal reliability and test-retest reliability. In our sample, Cronbach's alpha was 0.93. Each item on the GAD-7 is scored on a 4-point Likert scale ranging from 0 (not at all) to 3 (almost every day). Based on symptom severity, the GAD-7 categorises individuals into four levels, with cut-off points at 0-4 (no anxiety), 5-9 (mild anxiety), 10-14 (moderate anxiety), and 15 or more (severe anxiety). A score of 10 or higher is recommended as a cut-off for detecting probable cases of anxiety, with a sensitivity of 89% and a specificity of 82% (Spitzer et al. 2006).

COVID-19 related stressors

We assessed nineteen COVID-19 related stressors selected according to previous studies during the SARS and COVID-19 outbreaks (Wu et al. 2009, Park et al. 2020). The degree of exposure to each COVID-19 related stressor was rated on a 5-point Likert scale ranging from 1 (never) to 5 (constantly). Stressors were categorised into three groups: infection-related, activity-related, and financial/resource-related (Table 2). In the present sample, Cronbach's alpha was 0.92.

Coping strategies

We used the fourteen-item Brief Coping Orientation to Problems Experienced (COPE) inventory (Carver 1997) to assess the coping strategies used by participants. The COPE has been previously used for this purpose in the Slovenian population (Zgaga & Avsec 2012) and has demonstrated high internal consistency. In our sample, Cronbach's alpha was 0.81. Participants rated their use of coping strategies on a 4-point Likert scale from 1 (I have not been doing this) to 4 (I have been doing this a lot). The coping strategies were categorised into three groups: approach coping, avoidant coping, and others (Table 3) (Eisenberg et al. 2012).

Sense of coherence

We used the thirteen-item Sense of Coherence (SOC-13 SVN) instrument to assess the ability of individuals to respond to stressful situations (Stern et al. 2019). The SOC-13 has demonstrated high internal consistency and test-retest reliability (Eriksson & Lindström 2005). In our sample, Cronbach's alpha was 0.86. The score on the SOC-13 ranges from 13 to 91 points, but there is no clear cut-off value to distinguish between a low or high score (Eriksson & Lindström 2005). Using a receiver operating characteristic (ROC) curve analysis, we found that a cut-off of 59 points yielded the highest Youden index for both depression (1.48, sensitivity 73%, specificity 75%) and anxiety (1.54, sensitivity 69%, specificity 85%). Therefore, we set a cut-off of 59 points for low SOC.

Classification of risk factors

We classified risk factors as either short-term or long-term based on their duration. The rationale for this classification is based on previous research (Wu et al. 2009, Park et al. 2020). Short-term risk factors were defined as those that are expected to disappear once the pandemic ends (i.e., COVID-19 related stressors). Long-term risk factors were defined as those that were present before the pandemic and are expected to continue after it ends (e.g., living environment, socio-economic status, education level, gender, coping strategies, resilience potential), or that have arisen during the pandemic and require a long-term process to address (e.g., stigma related to COVID-19).

Data analysis

First, we formed normal quantile plots (Q-Q plots) and performed a Shapiro-Wilk test to check the data distribution, which revealed an asymmetric distribution. Accordingly, we presented the data as median and interquartile range or absolute and relative frequencies. Second, we assessed differences between groups using the Mann-Whitney U test and the chi-square test. Furthermore, we performed ROC curve analysis to identify an ideal cut-off of the SOC-13 score. Third, we assessed the internal consistency of the scales using Cronbach's alpha coefficient. Finally, we used multivariate binary logistic regression to estimate odds ratios and 95% confidence intervals for the selected predictors of depression and anxiety. We considered a p-value of <0.05 to be statistically significant. We performed statistical analysis using IBM SPSS Statistics for Windows Version 22.0 (IBM Corp., Armonk, NY, USA).

RESULTS

Baseline characteristics and prevalence of depressive and anxiety symptoms

The baseline characteristics of 164 general practice visitors are shown in Table 1. Of the 164 patients, 40 (24.4%) met the PHQ-9 screening threshold for depression, and 21 (12.9%) met the GAD-7 screening threshold for anxiety disorder.

Of the included patients, 48.8% had no depressive symptoms, 26.8% had mild, 16.5% moderate, 6.1% moderately severe, and 1.8% severe depressive symptoms. Regarding the severity of anxiety symptoms, 61.6% of patients had no symptoms, 25.0% had mild, 8.5% moderate, and 4.9% severe anxiety symptoms.

Significant differences between depressed and non-depressed individuals were found for comorbidities (previous depression and anxiety, associated musculo-skeletal disease), marital status, smoking, financial stability, daily pills intake, weekly physical activity, number of COVID-19 stressors, and SOC-13 score (Table 1).

Similarly, significant differences were found between anxious and non-anxious individuals for comorbidities (previous depression and anxiety, associated musculo-skeletal disease), daily pills intake, weekly physical activity, number of COVID-19 stressors, and SOC-13 score (Table 1).

Table 1. Prevalence of depression and anxiety and baseline characteristics across groups.

Characteristic	Total	Depression	P	Anxiety	P
	N (%) or Median (IQR)	N (%) or Median (IQR)		N (%) or Median (IQR)	
Total	164 (100)	40 (24.4)		21 (12.9)	
Gender					
Female	90 (54.9)	25 (62.5)	0.265	14 (66.7)	0.258
Male	74 (45.1)	15 (37.5)		7 (33.3)	
Age	50 (38-60)	53 (43-59)	0.077	54 (43-59)	0.155
Education					
Primary school	33 (20.4)	12 (30.8)	0.265	7 (35.0)	0.375
High school	84 (51.9)	16 (41.0)		8 (40.0)	
College	30 (18.5)	7 (17.9)		3 (15.0)	
University	15 (9.3)	4 (10.3)		2 (10.0)	
Marital status					
Single	21 (12.8)	4 (10.0)	0.024	2 (9.5)	0.312
Married	92 (56.1)	20 (50.0)		14 (66.7)	
Widowed	10 (6.1)	4 (10.0)		2 (9.5)	
Divorced	9 (5.5)	6 (15.0)		2 (9.5)	
Living with a partner	32 (19.5)	6 (15.0)		1 (4.8)	
Smoking	40 (24.4)	15 (37.5)	0.026	8 (38.1)	0.122
Associated diseases					
Arterial hypertension	26 (15.9)	7 (17.5)	0.743	4 (19.0)	0.678
Diabetes	10 (6.1)	1 (2.5)	0.274	1 (4.8)	0.779
Prior depression	17 (10.4)	11 (27.5)	<0.001	6 (28.6)	0.002
Prior anxiety	4 (2.4)	4 (10.0)	<0.001	4 (19.0)	<0.001
Musculoskeletal disease	35 (21.3)	13 (32.5)	0.048	8 (38.1)	0.047
Daily pills intake	1 (0-3)	2 (0-4)	0.001	2 (0-5)	0.015
Financial stability					
Very low	5 (3.1)	4 (10.3)	0.011	2 (9.5)	0.325
Low	12 (7.4)	4 (10.3)		1 (4.8)	
Medium	68 (41.7)	19 (48.7)		10 (47.6)	
High	73 (44.8)	11 (28.2)		7 (33.3)	
Very high	5 (3.1)	1 (2.6)		1 (4.8)	
Weekly physical activity (h)	4 (2-7)	2 (0-5)	0.001	2 (0-5)	0.004
COVID-19 stressors often or constantly exposed	1 (0-4)	4 (0-10)	0.003	7 (2-14)	<0.001
SOC-13 score					
Low	58 (38.2)	27 (75.0)	<0.001	17 (85.0)	<0.001
High	94 (61.8)	9 (25.0)		3 (15.0)	

Legend: N, number; IQR, interquartile range, SOC, sense of coherence, COVID-19, coronavirus disease 2019; h, hours.

Exposure to COVID-19 stressors

Exposure rates to COVID-19 stressors across groups are shown in Table 2. The most stressful COVID-19 stressors in the population were “risk of infecting others” and “uncertainty about duration of quarantine”. Almost all COVID-19 related stressors were perceived as significantly more burdensome by depressed and anxious individuals than healthy individuals (Table 2).

Stress coping strategies

Depressed individuals used significantly more emotional support and instrumental support compared to healthy individuals. Simultaneously, they used significantly more avoidant coping strategies including denial, venting, substance use, and self-blame (Table 3).

Similarly, anxious individuals used significantly more emotional support, instrumental support, and planning as stress coping strategies compared to healthy individuals. At the same time, they used significantly more avoidant coping strategies including denial, venting, substance use, and self-blame (Table 3).

Multivariate analysis results

Logistic regression analysis showed that significant independent predictors of depression were stigma related to COVID-19, low SOC, and smoking (Table 4). In comparison, predictors of anxiety were cancellation of religious rituals, childcare responsibility, increased contact with close or loved one, and low SOC (Table 5).

Table 2. Exposure to COVID-19 stressors across groups.

COVID-19 STRESSORS	Total (n=164)	Depression (n=40)		Anxiety (n=21)	
	Median (IQR)	Median (IQR)	P	Median (IQR)	P
INFECTION-RELATED					
Risk of becoming infected	1 (1-2)	2 (1-4)	0.014	3 (1-4)	0.004
Risk of infecting others	2 (1-3)	3 (1-4.5)	0.008	4 (2-5)	<0.001
Anxiety about severity and contagiousness of disease	1 (1-3)	2.5 (1-4)	0.002	4 (2-5)	<0.001
Stigma related to COVID-19	1 (1-1)	1.5 (1-3)	<0.001	3 (1-3.5)	<0.001
Uncertainty about duration of quarantine	2 (1-3)	3 (2-4)	0.023	4 (2-4)	0.005
Inadequate access to reliable COVID-19 information	1 (1-2)	2 (1-3)	0.011	2 (1-3.5)	0.020
Inadequate access to vaccines	1 (1-2)	2 (1-3.5)	0.002	2 (1-4)	0.003
ACTIVITY-RELATED					
Daily routine change	1 (1-2)	2 (1-4)	0.001	3 (2-4)	<0.001
Working routine change	1 (1-2)	2 (1-3.5)	0.008	3 (1-4)	0.001
Home schooling	1 (1-2)	2 (1-3)	0.032	1 (1-4)	0.247
Childcare responsibility	1 (1-2)	1 (1-3)	0.096	3 (1-4)	<0.001
Cancellation of religious rituals	1 (1-1)	1.5 (1-3)	0.001	2 (1-4)	<0.001
Increased contact with close or loved ones	1 (1-2)	2 (1-3.5)	<0.001	3 (1-4)	<0.001
FINANCIAL/RESOURCE-RELATED					
Job insecurity	1 (1-2)	1.5 (1-3)	0.043	2 (1-3)	0.007
Economy changes	1 (1-3)	2.5 (1-3)	0.009	3 (1.5-4)	0.009
Difficulty assessing resources for daily living	1 (1-2)	2.5 (2-4)	<0.001	4 (2-4)	<0.001

Legend: n, number; IQR, interquartile range, COVID-19, coronavirus disease 2019.

Table 3. Stress coping strategies used across groups.

COPING STRATEGIES	Total (n=164)	Depression (n=40)	p	Anxiety (n=21)	p
	Median (IQR)	Median (IQR)		Median (IQR)	
APPROACH					
Active coping	3 (1-4)	3 (2-4)	0.953	3 (1-4)	0.857
Emotional support	2 (1-3)	3 (2-4)	0.003	3 (2-4)	0.011
Instrumental support	1 (1-1)	1 (1-2.5)	<0.001	1 (1-2.5)	0.008
Positive reframing	2 (1-3)	2 (1-2)	0.611	2 (1-3)	0.740
Planning	2 (1-3)	3 (2-3)	0.112	3 (2-3.5)	0.022
Acceptance	3 (2-4)	3 (2-3.5)	0.954	3 (2-4)	0.586
AVOIDANT					
Self-distraction	2 (1-3)	2 (1-3)	0.127	2 (1-3.5)	0.502
Denial	1 (1-1)	1 (1-2)	0.021	1 (1-3)	0.014
Venting	1 (1-2)	2 (1-3)	0.001	2 (1-3)	0.018
Substance use	1 (1-1)	1 (1-1.5)	0.006	1 (1-1.5)	0.022
Self-blame	1 (1-1)	1 (1-2)	0.002	2 (1-3)	<0.001
Behavioural disengagement	2 (1-3)	2 (1-3)	0.296	2 (1-3)	0.198
OTHER					
Religion	1 (1-2)	1.5 (1-2)	0.050	2 (1-2.5)	0.073
Humour	3 (2-4)	3 (2-3)	0.220	3 (2-3.5)	0.515

Legend: n, number; IQR, interquartile range.

Table 4. A multivariate logistic regression model of various risk factors of depression.

RISK FACTOR	B	SE	Wald	Exp (B)	95% CI	p
Female gender	0.958	0.520	3.394	2.61	0.94-7.22	0.065
Stigma related to COVID-19	0.883	0.221	15.908	2.42	1.57-3.73	<0.001
Low sense of coherence	1.773	0.501	12.515	5.89	2.21-15.72	<0.001
No current relationship	1.018	0.559	3.319	2.77	0.93-8.27	0.068
Smoking	1.260	0.537	5.513	3.53	1.23-10.10	0.019

Legend: B, coefficient beta; SE, standard error; 95% CI, 95% confidence interval.

Table 5. A multivariate logistic regression model of various risk factors of anxiety.

RISK FACTOR	B	SE	Wald	Exp (B)	95% CI	p
Female gender	0.438	0.679	0.416	1.55	0.41-5.87	0.519
Cancellation of religious rituals	0.499	0.243	4.224	1.64	1.02-2.65	0.040
Childcare responsibility	0.530	0.235	5.058	1.70	1.07-2.69	0.025
Increased contact with close or loved ones	0.650	0.276	5.533	1.92	1.11-3.29	0.019
Low sense of coherence	1.651	0.742	4.957	5.21	1.22-22.31	0.026

Legend: B, coefficient beta; SE, standard error; 95% CI, 95% confidence interval.

DISCUSSION

In this study, we found a 24.4% prevalence of screened depression and a 12.9% prevalence of screened anxiety among visitors to five general practices in Slovenia during the third wave of the COVID-19 pandemic. We identified short-term COVID-19 pandemic-related stressors, such as cancellation of religious rituals and increased contact with close or loved ones, as predictors of these symptoms. Additionally, we found that certain factors that are likely to continue after the end of the pandemic, such as social stigma towards those infected or pre-existing low resilience potential and the use of emotional coping strategies such as smoking, were also predictive of depressive and anxiety symptoms.

During the first and second waves of the COVID-19 pandemic, meta-analyses reported that up to one-third of the population suffered from depression or anxiety (Wang et al. 2020). We found a lower prevalence, particularly for anxiety. At the time of the study, some repressive measures had already been lifted (e.g., complete lockdown, travel bans). Therefore, the studied population was exposed to fewer COVID-19 stressors than studied populations during the first and second pandemic waves. Additionally, some national prevention strategies were implemented (e.g., expanded awareness-raising, telephone stress reduction calls).

There have been several studies that have identified stigma as a predictor of depressive and anxiety symptoms (Teksin et al. 2020, Sun et al. 2021, Alkathiri et al. 2022). Stigma in the COVID-19 context is a social process that aims to exclude people who are perceived as a potential source of the disease and may pose a threat to the well-being of society (Bhanot et al. 2021). Stigma can harm a person's self-esteem and self-respect, which are important factors in the development of depression. When someone feels ashamed or embarrassed about a stigmatised aspect of themselves, it can lead to negative self-perception and poorer opinion of oneself, and this could be a factor in depression (Brandt et al. 2022). In the case of anxiety, stigma can create a culture of fear, where people are too afraid to talk about their mental health problems, leading to isolation and resistance to seeking help (Brandt et al. 2022). Recently, there has been a rise of stigma towards those with Long COVID, which is another group we need to pay attention to (Pantelic et al. 2022). Reducing stigma is therefore a key concern during the COVID-19 pandemic. In our study, we found that stigma was a predictor of depressive symptoms, but not anxiety, although previous research has found a bidirectional relationship between the two (Alkathiri et al. 2022). This may be due to the characteristics of the study

population, which generally had lower levels of anxiety and used substances, in particular alcohol as a coping strategy (Radoš Krnel et al. 2022), a small sample size, or the correlation between one of the COVID-19 stressors included in the model and stigma.

In the past, smoking has been linked to depression as a method of emotional stress coping (Weinberger et al. 2017, Vujčić et al. 2021). During the COVID-19, a quarter of smokers in the United Kingdom reported an increase in smoking (Tzu-Hsuan Chen 2020). The increase in smoking has been associated with a decline in mental health status and overall well-being (Tzu-Hsuan Chen 2020). However, the association between depression and smoking is controversial. The self-medication hypothesis suggests that people may turn to smoking to alleviate symptoms of depression, while another hypothesis posits that smoking may alter neurocircuitry and increase vulnerability to environmental factors, potentially leading to depression (Fluharty et al. 2017). More research is needed to fully understand this issue.

In previous research, low levels of SOC have been linked to depression and anxiety, and a causal relationship has been established between low SOC and an increased risk of developing depression in the future (Eriksson & Lindström 2005, Sairenchi et al. 2011). A connection between low SOC and depression has also been observed during the COVID-19 pandemic (Mana et al. 2021). There are several explanations for the association between SOC and mental health issues. Strong SOC has been associated with lower stress levels during life events, fewer reported instances of experiencing stressful events, reduced emotional distress, and lower anxiety scores (Sairenchi et al. 2011). Therefore, a strong SOC may serve as a protective factor against depression and anxiety during the COVID-19 pandemic, serving as a buffer against stress.

In the past, using religion as a positive coping mechanism has been associated with improved mental health outcomes when dealing with stressful life events (Bonelli et al. 2012). Even during the COVID-19 pandemic, research has shown that positive religious coping is inversely linked to symptoms of depression and anxiety (Thomas & Barbato 2020). Religious beliefs and practices may assist people in coping with difficult life circumstances, provide a sense of purpose and hope, and provide a supportive community for those experiencing depression and anxiety (Bonelli et al. 2012). As a result, not participating in religious rituals may be a risk factor for anxiety in religious individuals.

In our study, increased contact with loved ones was identified as risk factor for anxiety. During the lockdown period, many couples experienced changes in their

relationships and households experienced changes in family dynamics (Alzueta et al. 2021). The enforced social isolation caused families to remain near each other, leading to intense and unresolved contact and the depletion of support networks (Usher et al. 2020, Alzueta et al. 2021). A combination of a previously dysfunctional family environment, financial stress, and limited access to community support can lead to an escalation of conflict and intimate partner violence (Usher et al. 2020). This type of violence has been on the rise during the COVID-19 pandemic (Usher et al. 2020).

Furthermore, the COVID-19 pandemic required many parents to work from home. The closure of schools and day-care centres required parents to manage both remote work and home life, including educating their children at home. A comparative study during the COVID-19 pandemic found that mothers with primary school-aged children had higher levels of psychological distress compared to mothers without school-aged children (Zamarro & Prados 2021). Cross-sectional studies have shown that the burden of caring for children while also managing other responsibilities during the COVID-19 pandemic was strongly linked to symptoms of depression and anxiety in women (Russell et al. 2020). Recently, a causal relationship between these factors has been confirmed (Racine et al. 2021).

Our study has several limitations. First, we acknowledge all limitations associated with the study design (i.e., single-centre, cross-sectional study, small sample size). Second, the prevalence of depressive and anxiety symptoms in older patients may have been underestimated because many non-responders, who were mostly older, did not participate in the study due to practical reasons such as forgetting their glasses. Additionally, due to the cross-sectional design, we do not have information on the mental health status of the studied population prior to the pandemic. However, we attempted to address this

issue by collecting data on previous mental disorders, including depression and anxiety. Finally, we used widely accepted clinical cut-off scores to detect depression and anxiety using the PHQ-9 and GAD-7 questionnaires, but a formal diagnostic process should be conducted to confirm the diagnosis.

CONCLUSIONS

Although some measures have been lifted and interventions have been implemented, we still observed a high prevalence of depression and anxiety symptoms in the general population. The risk factors for these symptoms were complex and related to both short-term pandemic control strategies and long-term personal experiences, appraisals, and stress coping abilities. Some of the identified risk factors could be addressed quickly, such as by providing stable childcare and schooling and enabling access to mental health services for vulnerable families. Others, however, require a longer-term process, such as strengthening SOC and changing attitudes toward stigma. It is important to address long-term risk factors first in future interventions, but it should also be recognised that transient pandemic-associated risk factors may be important as well. Research from the SARS outbreak showed that distress persisted for three years after the end of the outbreak, so it is crucial to plan for and encourage ongoing monitoring of the mental health of the population.

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Conflict of interest

The authors declare that no conflict of interest exists.

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