

Title: How the COVID-19 Pandemic Has Changed Our Lives: A Study of Psychological Correlates across 59 Countries.

Running title: Psychological impact of the COVID-19 Pandemic.

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Abstract

Objective: This study examined the impact of the COVID-19 pandemic and subsequent social restrictions or quarantines on the mental health of the global adult population. **Method:** A sample of 6,882 individuals ($M_{\text{age}} = 42.30$; 78.8% female) from 59 countries completed an online survey asking about several pandemic-related changes in life and psychological status. **Results:** Of these participants, 25.4% and 19.5% reported moderate-to-severe depression (DASS-21) and anxiety symptoms (GAD-7), respectively. Demographic characteristics (e.g. higher-income country), COVID-19 exposure (e.g. having had unconfirmed COVID-19 symptoms), government-imposed quarantine level, and COVID-19-based life changes (e.g. having a hard time transitioning to working from home) explained 17.9% of the variance in depression and 21.5% in anxiety symptoms. **Conclusions:** In addition to posing a high risk to physical health, the COVID-19 pandemic has robustly affected global mental health, so it is essential to ensure that mental health services reach individuals showing pandemic-related depression and anxiety symptoms.

Keywords: COVID-19; pandemic; mental health; depression; anxiety.

How the COVID-19 Pandemic Has Changed Our Lives: A Study of Psychological Correlates across 59 Countries.

Since the World Health Organization declared the outbreak of coronavirus disease 2019 (COVID-19) a pandemic on March 11, 2020, containing the spread of the virus has been an international priority (Huang et al., 2020; Paules, Marston, & Fauci, 2020; Wang et al., 2020). COVID-19 is characterized by its rapid human-to-human transmission and the potential of asymptomatic cases to infect others (Chan et al., 2020; Y. Wang et al., 2020; Yu & Yang, 2020). To reduce community spread, in March, April, and May, 2020, many countries around the world adopted unprecedented restrictions to isolate their populations in their homes and from others – popularly termed “quarantine” or “social distancing” – and implemented social isolation measures that upended countless people’s lives.

There have been precedents for governmental isolation measures in recent years. For example, quarantine measures were imposed in Asia and Canada during the SARS and MERS outbreaks in 2003 and 2012. Temporary home confinement measures taken to avoid rapid infection in the population had a significant mid- to long-term detrimental effect on mental health (DiGiovanni et al., 2004; Jeong et al., 2016). Studies of the effects of quarantine measures have shown in particular that high levels of stress and anxiety experienced during the quarantine period can transition to severe distress, which might eventually lead to significant psychological disorders (Hawryluck et al., 2004; Reynolds et al., 2008; see Brooks et al., 2020 for a review).

In contrast to other outbreaks, isolation measures during the COVID-19 pandemic were extended not only to towns, but to entire countries. The fact that COVID-19 became a global and unpredictable phenomenon might have increased feelings of uncertainty for people around the world, making the outbreak even more stressful than its predecessors (Horesh & Brown, 2020).

The public health emergency along with the economic (Maital & Barzani, 2020) and social impacts (Prime et al., 2020) of the pandemic on people's lives across multiple countries created a global catastrophe, and the full extent of its impact is still unknown (Holmes et al., 2020).

Early studies on the COVID-19 pandemic point to emerging mental health issues (see Torales et al., 2020 for a recent review). However, most of the studies have been conducted in front line health care workers (Tan et al., 2020) or students (Cao et al., 2020; Xin et al., 2020). Only a few studies to date have focused on the psychological consequences for the general public. Wang and colleagues (2020) investigated psychological symptoms among the Chinese general population ($n = 1,211$) during the initial stage of the COVID-19 pandemic. The authors found a high prevalence of stress, anxiety, and depressive symptoms during the outbreak, and up to 53.8% of their sample rated the psychological impact of the pandemic as moderate or severe. Similarly, a study from Cyprus (Solomou & Constantinidou, 2020) reported high rates of depression and anxiety symptoms among the general population ($n = 1,642$) during the strictest confinement restrictions, and being female, under 50 years old, and a university student and/or unemployed was associated with COVID-19-related depression and anxiety symptoms.

Existing studies, therefore, suggest that depression and anxiety symptoms were common psychological responses in very specific global regions during the early stages of the COVID-19 pandemic (Lima et al., 2020; Rajkumar, 2020). Nevertheless, the literature addressing the mental health consequences of the pandemic is still scarce and limited to certain countries, which might not reflect the experiences of other populations across the globe. Similarly, the specific aspects of the COVID-19 pandemic and subsequent social restrictions driving these mental health symptoms are currently unknown. As a result, the purpose of the current study was to examine the impact of the pandemic and subsequent social restrictions on the depression and anxiety

symptoms of the global adult population. In particular, demographic risk factors, COVID-19 exposure, government-imposed quarantine/isolation level, and COVID-19-based life changes were examined as predictors of mental health.

Method

Participants

A participant inclusion/exclusion flowchart is presented in Figure 1. Of the 9,083 individuals who began the survey, 26 did not provide informed consent, 7 provided a clearly nonsensical name for their city, and 2,175 did not complete the survey. As a result, data from 6,882 participants constituted the final sample, which included people from 59 countries from five continents (see Figure 1). Table 1 shows the demographic characteristics of the participants, who ranged in age from 18 to 94 years old and mostly identified as women (78.8%). Most of the respondents were partnered (51.1%) and had an active work status (80.1%).

Measures

The survey consisted of questions categorized into four domains: (a) demographic information, (b) COVID-19 exposure and life change, (c) level of COVID-19 quarantine or isolation, and (d) psychological impact. Participants reported demographic characteristic in terms of country, age (years), gender (man, woman, other [please specify]), work status, marital status, and dependents under the age of 18 years in the home. For analyses, work status was collapsed into two categories (full-time employed, part-time employed, on leave, student = active; unemployed, retired, homemaker, disabled = not active). Marital status was also collapsed (married, or in a domestic partnership = partnered; single or never married, widowed, divorced or separated = not partnered).

COVID-19 exposure status and life changes were assessed using the novel Epidemic – Pandemic Impacts Inventory (EPII) developed by the University of Connecticut (Grasso et al., 2020). This inventory consists of 92 statements about different life domains potentially affected by the COVID-19 pandemic. Due to time constraints, only 21 of the 92 statements were used for this survey capturing primary areas of interest (“Infection history” – 8 which we conceptualized as “COVID-19 exposure”; and “Work and Employment” – 7, “Economic” – 2, “Home life” – 2, and “Social activities” – 2, which we conceptualized holistically as “COVID-19 life changes”). Participants were asked to answer Yes/No about whether the COVID-19 pandemic has impacted those specific domains. In order to anchor these life changes directly in the pandemic, the EPII includes the following prompt in the directions: “Since the coronavirus pandemic began, what has changed for you?”

In order to determine the different quarantine or isolation measures implemented by governments in different countries, four different levels of restrictions were described to participants (Level 0 - “I was not following any specific restrictions”; Level 1 - “I was following mild restrictions (e.g., not gathering with 10 or more people, not traveling outside my city or state)”; Level 2 – “I was following moderate restrictions (e.g., not leaving home except for working, care of another family member, exercise, or getting fresh air)”; Level 3 – “I was following severe restrictions (e.g., not leaving home at all, or only leaving to buy food or medicine).” Participants were asked to report which of these levels they were following during the past week.

Psychological impact was assessed through standardized and validated self-report scales. The depression sub-scale of The Depression, Anxiety and Stress Scale (DASS-21) was used to assess depression symptoms over the past week (Osman et al., 2012). It consists of seven items

scored on a 4-point severity/frequency scale (0 – Did not apply to me at all; 1 – Applied to me to some degree, or some of the time; 2 – Applied to me to a considerable degree, or a good part of time; and 3 – Applied to me very much, or most of the time). A total score is calculated as a sum of all items and multiplying by two. This score provides a severity index of depression symptoms: Normal (0–9); Mild (10–13); Moderate (14–20); Severe-Extremely severe (>21) (Lovibond & Lovibond, 1995). The DASS-21 has been widely used and validated in community samples (e.g., Bados, et al., 2005; Norton, 2007; Yıldırım et al., 2018) and applied in studies related to the SARS and COVID-19 outbreak (Mazza et al., 2020; McAlonan et al., 2007; Stanton et al., 2020). Anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale (Spitzer et al., 2006). The GAD-7 consists of seven items scored in a 4-point Likert scale asking about frequency of anxiety symptoms in the past 2 weeks (0 – Not at all; 1 – Several days; 2 – More than half the days; 3 – Nearly every day). A total score is obtained by summing all items with classifications as follows: Minimal (0–4); Mild (5–9); Moderate (10–14); and Severe (15–21) (Toussaint et al., 2020). The GAD-7 is a reliable and valid instrument widely used in community studies, and recently applied in COVID-19-related research (Liu et al., 2020; Shevlin et al., 2020).

The survey was translated from the original English version into Spanish, Italian, German, Turkish, and French. Existing validated translations of the standardized mood scales were included in the survey (DASS-21 and GAD-7). All other items were translated by a bilingual native speaker for each language from English. A second bilingual native speaker reviewed the translation, and any disagreements in translation were resolved mutually.

Procedure

The study was approved by the Autonomous University of Madrid Ethical Committee (Spain, CEI-106-206) and was conducted in compliance with the declaration of Helsinki. An online survey was created by a team of psychologists using a combination of existing and novel measures to be distributed widely in several countries under social restrictions/quarantine due to the COVID-19 pandemic. The survey, hosted by the online platform www.SurveyMonkey.com, was distributed between April 19 - May 3, 2020. A snowball sampling method was used to collect data, such that participants were invited to complete the anonymous survey and share it with their contacts. The survey was advertised through social media (WhatsApp, Twitter, and Instagram) and professional emailing lists. In addition, Facebook ads were used to promote participation among the general population and to expand the sample across different countries and age ranges. Efforts were made to ensure participation from countries most affected by the COVID-19 pandemic during the data collection period including Italy, Spain, Germany, France, Turkey, U.K., South Africa, and the U.S. (World Health Organization, 2020). The survey was self-paced and about 15 minutes long. In an informed consent document, respondents were informed that their participation was completely voluntary and anonymous. There was no payment for completing the survey.

Data Analysis

Once the data were collected, they were exported from the survey platform to the statistical program SPSS version 23 (IBM Corp., 2015). Participants' countries were classified by income and geographical world region according to the World Bank classification system (Bank, 2017). In order to compare global regions, countries were clustered into six different World Bank global regions: East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, North America, South Asia, and Sub-Saharan Africa.

Descriptive statistics were calculated for the outcome variables of depression and anxiety, followed by the creation of a correlation matrix showing the bivariate relationships between demographic variables and depression and anxiety symptoms. The main statistical analyses involved two hierarchical stepwise multiple linear regressions with depression and anxiety as the outcome variables. In each regression, Step 1 included the covariates of man vs. woman or non-binary/trans, age, country income classification, partnered vs. not partnered, active vs. not active work status, and dependent < 18 years old in home vs. not. Step 2 included COVID-19 exposure variables, Step 3 included level of quarantine, and Step 4 included a number of effects of the pandemic on people's lives. Finally, depression and anxiety scores were compared by global region using two analyses of covariance (ANCOVAs), covarying for the demographics included in Step 1 of the previous regressions. Participants from South Asia were excluded from the ANCOVAs because the subsample size was too small for meaningful comparisons ($n = 4$).

Results

Rates of Depression and Anxiety

Participants scored on average 9.02 ($SD = 9.73$) on the DASS depression scale, reflecting an overall low-mild level of depression across the full sample (Figure 2). On this measure, 12.4% ($n = 854$) of the sample had moderate depressive symptoms (score: 14-20) and 13% ($n = 896$) had severe/extremely severe depressive symptoms (score: 21-42).

Participants scored on average 5.85 ($SD = 5.17$) on the GAD-7, reflecting an overall mild level of anxiety symptoms in the full sample (Figure 2). On the GAD-7, 10.9% ($n = 752$) of the sample had moderate anxiety symptom scores (>10), and 8.62% ($n = 593$) had moderate to severe/extremely severe anxiety symptom scores (>14). In the correlation matrix, increased depression and anxiety symptoms were associated with being woman or non-binary/trans gender

relative to men, younger age, higher country income classification, and being not partnered vs. partnered. Having active compared with not active work status was associated with lower depression but higher anxiety symptoms. Finally, having a dependent child in the home under 18 years of age was associated with lower depression levels but was not associated with anxiety symptoms (see Table 2).

In the first hierarchical linear regression predicting depression symptoms (Table 3), Step 1 was statistically significant, $F(6, 6881) = 107.69$, $R^2 = .086$, $p < .001$, and all demographic variables were significant unique predictors of depression symptoms, in line with the patterns uncovered in the correlation matrix. With the addition of Step 2 COVID-19 exposure predictors, the overall model was still statistically significant, $F(14, 6881) = 51.15$, $R^2 = .094$, $p < .001$. Within the model, currently having the disease, having symptoms of the disease, or having received medical treatment for the disease were all positively and uniquely associated with increased depression. Interestingly, quarantine level (Step 3) was not significantly associated with depression symptoms and there was no increase in the amount of variance explained, although the overall model was still significant, $F(15, 6881) = 47.74$, $R^2 = .094$, $p < .001$. After the Step 4 addition of COVID-19 effects on one's life, the overall model was significant, $F(28, 6881) = 53.35$, $R^2 = .179$, $p < .001$. Within this step, significant predictors of increased depression symptoms included having a hard time doing one's job well in order to take care of others, having a hard time making the transition to working from home, being unable to get enough food or healthy food, being unable to pay bills, having an increase in verbal arguments with other adults in the home, and being separated from family or close friends. Conversely, an increase in workload or work responsibilities was associated with lower depression symptoms.

In the second hierarchical linear regression predicting anxiety symptoms (Table 3), Step 1 was statistically significant, $F(6, 6881) = 92.15$, $R^2 = .074$, $p < .001$, and all demographic variables except for being partnered were significant unique predictors of anxiety symptoms. Relative to the patterns in the correlation matrix, in the regression model an active work status and having a dependent child under age 18 in the home were associated with decreased anxiety symptoms. It should be noted that these changes in effects were quite small and may be due to multicollinearity among predictors rather than true effects. They should therefore be interpreted with caution. With the addition of Step 2 COVID-19 exposure predictors, the overall model was still statistically significant, $F(14, 6881) = 44.99$, $R^2 = .084$, $p < .001$. Within the model, currently having symptoms of the disease but not having been tested, having had symptoms but having not been tested, and having received medical treatment for the disease were all positively and uniquely associated with increased anxiety. Quarantine level (Step 3) was uniquely and inversely associated with anxiety symptoms, and the overall model was still significant, $F(15, 6881) = 42.43$, $R^2 = .085$, $p < .001$. However, the increase in variance explained was so small (.1%) and the p -value of the unique effect so close to non-significance ($p = .042$) that this effect likely again was due to multicollinearity and therefore not a true effect. After the Step 4 addition of COVID-19 effects on one's life, the overall model was significant, $F(28, 6881) = 66.98$, $R^2 = .215$, $p < .001$. Within this step, significant predictors of increased anxiety symptoms included having a hard time doing one's job well in order to take care of others, having a hard time making the transition to working from home, being unable to get enough food or healthy food, being unable to pay bills, having an increase in verbal arguments with other adults in the home, being separated from family or close friends, and having events or celebrations cancelled or restricted. Critically, for both reports of depression and anxiety the higher portion of variance

explained (depression, R^2 change = .09; anxiety, R^2 change = .13) was accounted for by COVID-related life changes as compared to demographics, COVID-19 exposure, or quarantine level.

In the depression ANCOVA, there was a statistically significant effect of global region, $F(4, 6878) = 29.17, p < .001$, partial $\eta^2 = .017$. Figure 3 shows the covariate-adjusted estimated marginal means for depression with error bars representing 95% confidence intervals.

Bonferroni-corrected follow-up pairwise comparisons suggest that participants from Latin America and the Caribbean ($M = 10.38, SE = 1.17$) had lower depression scores than participants from Europe and Central Asia ($M = 11.72, SE = .31; p < .001$), North America ($M = 11.34, SE = .39; p < .001$), and Sub-Saharan Africa ($M = 11.63, SE = 1.04; p < .001$). No other pairwise comparisons were statistically significant.

In the anxiety ANCOVA, there was a statistically significant effect of global region, $F(4, 6878) = 7.11, p < .001$, partial $\eta^2 = .004$. Figure 4 shows the covariate-adjusted estimated marginal means for anxiety with error bars representing 95% confidence intervals. Bonferroni-corrected follow-up pairwise comparisons suggested that participants from East Asia and the Pacific ($M = 4.34, SE = .63$) had lower anxiety scores than participants from Europe and Central Asia ($M = 6.35, SE = .17; p = .014$), North America ($M = 6.25, SE = .21; p = .027$), and Sub-Saharan Africa ($M = 7.23, SE = .56; p = .007$). Further, participants from Latin America and the Caribbean ($M = 5.55, SE = .11$) had lower anxiety scores than participants from Europe and Central Asia ($p = .008$) and Sub-Saharan Africa ($p = .028$).

Discussion

This study examined the effects of the COVID-19 pandemic on the mental health of adults in the general population of five global regions, as well as the demographic risk factors that may have made depression and anxiety symptoms more likely. This is one of the first studies

to provide a global perspective on the pandemic's effects on mental health. While the majority of the sample had low or mild levels of depression and anxiety symptoms during the pandemic, a significant proportion of respondents reported moderate to severe symptoms of depression (25.4%) and anxiety (19.5%). These prevalence rates help generalize to a much larger global population the high rates of mental health issues found in previous studies of specific global regions or countries (Solomou & Constantinidou, 2020). COVID-19-related life changes were the strongest predictors of higher depression and anxiety symptoms over and above effects of demographics, quarantine level, and COVID-19 exposure. Myriad consequences of the pandemic, including challenges paying bills, inability to access food, conflict in the home, and separation from loved ones were linked with poorer mental health.

In line with the current results, emerging studies have consistently reported a high prevalence of depression and anxiety symptoms in populations around the world during the COVID-19 pandemic (Ahmed et al., 2020; Gao et al., 2020; Li et al., 2020; Mazza et al., 2020; Moghanibashi-Mansourieh, 2020, Solomou & Constantinidou, 2020; Ueda et al., 2020; Wang et al., 2020). While most of these cross-sectional studies – including the current study – can only show levels of and not change in depression and anxiety symptoms in the populations studied during the pandemic, a cross-sectional study in China (Ahmed et al., 2020) comparing the psychological impact during the outbreak with an epidemiological study conducted before the pandemic (Huang et al., 2019) concluded that the rates of anxiety, depression, and alcohol consumption were higher, and mental well-being was lower, among Chinese people during the COVID-19 outbreak than before. Additionally, a longitudinal study comparing pre- and during-pandemic levels of depression, anxiety, and well-being in two U.K. population cohorts reported a significant decrease in well-being and a higher probability of anxiety disorders during the

pandemic (24% in vs. the previous 13%; Kwong et al., 2020). Altogether, evidence so far points to the pandemic's negative effect on mental health.

Certain populations may be more vulnerable to the impact of the COVID-19 pandemic on mental health. In line with previous studies (Kwong et al., 2020; Mazza et al., 2020; Moghanibashi-Mansourieh, 2020; Solomou & Constantinidou, 2020; Stanton et al., 2020; Wang et al., 2020), the current study found a higher prevalence of depression and anxiety symptoms among women or people with a non-binary/trans gender relative to men. These findings also are consistent with the literature showing a strong association between woman gender and a higher prevalence of anxiety and depression in the general population in non-pandemic times (Baxter et al., 2014; Kessler, 2003), suggesting gender-role influences on coping with or reporting of mental health symptoms (Mrazek, and Haggerty, 1994; Sandanger et al., 2004). This somewhat consistent finding is complex, and researchers and theorists have postulated many explanations for it, ranging from social norms for the gender-role based experience of emotion, to personality traits, to hormones (Albert, 2015). Whatever the source of these effects, the current findings suggest that women and non-binary-trans individuals may be at greater risk for mental health symptoms during the pandemic.

The current study found other demographic factors such as younger age, not being partnered, and living in a high-income country to be associated with higher levels of depression and anxiety symptoms during the pandemic. In terms of age, others researchers have reported that younger adults may be more vulnerable to the effects of the COVID-19 pandemic (Moghanibashi-Mansourieh, 2020; Qiu et al., 2020; Stanton et al., 2020), which could be a consequence of greater exposure to media, how they are affected by financial crisis, and managing workload responsibilities (Ahmed et al., 2020; Liu et al., 2020). Also, studies about

previous outbreaks have attributed the greater vulnerability of young people to a less effective use of coping strategies than older adults (Yeung & Fung, 2007). The current finding that being not partnered was associated with more depression and anxiety symptoms supports findings in the general population that being separated or divorced are risk factors for some psychological disorders (Afifi et al., 2006; Andrade et al., 2003).

The finding that living in a high-income country during the pandemic is a risk factor for depression and anxiety might seem counterintuitive, though it is in line with studies showing that citizens of these countries report more stress relative to those in low-to-middle income countries (Bromet et al., 2011). A related (and likely overlapping) finding was that countries belonging to the Latin America and Caribbean cluster showed a lower prevalence of mental health symptoms compared to countries belonging to North America, Europe and Central Asia, and Sub-Saharan Africa clusters. Comparing psychological symptoms across different cultures and countries presents complex challenges (Van Bavel et al., 2020), and therefore these findings should be interpreted with caution. However, differences found in symptoms across global regions might in part be explained by the timing of data collection. The COVID-19 pandemic outbreak has evolved rapidly and asynchronously across countries. At the time of data collection, the outbreak was more severe in North America, Europe, and Central Asia in comparison to the Latin America and Caribbean region (see report from World Health Organization, 2020). Prevalence studies during the pandemic have shown the severity of psychological symptoms are especially high in areas most affected by COVID-19 (Moghanibashi-Mansourieh, 2020; Solomou & Constantinidou, 2020). Therefore, lower levels of depression and anxiety reported in global regions might be explained by a possible lower perception of COVID-19 severity or threat.

The main finding of this study is that even though certain demographic characteristics and COVID-19 exposure were associated with increased symptoms of depression and anxiety, the effects that COVID-19 had on a person's life were generally the most robust predictors of negative psychological effects. The most notable effects included the impact that the COVID-19 pandemic had on economic stability (i.e., being unable to get enough food or healthy food, being unable to pay important bills like rent or utilities), work (i.e., having a hard time doing one's job well because of needing to take care of people in the home, having a hard time making the transition to working from home), and social aspects (i.e., being separated from family or close friends, having an increase in verbal arguments or conflict with other adults in home). Somewhat surprisingly, level of quarantine or social restrictions issued by governments at the time of data collection was not a notable predictor of depression and anxiety symptoms. Thus, depression and anxiety in the current sample were not directly accounted for by governmental restrictions but rather likely the consequences of these restrictions and the pandemic as a whole on participants' lives. Studies from prior epidemics have shown that social isolation during a quarantine period is commonly associated with anxiety and depression symptoms (DiGiovanni et al., 2004; Hawryluck et al., 2004). Also, comparing data from a quarantined population vs. no-quarantined population during the COVID-19 outbreak in China ($n = 1,593$), a study reported a higher prevalence of depression (22.4% vs 11.9%) and anxiety (12.9%, vs 6.7%) in the quarantined group (Lei et al., 2020).

The specific unique effects found within the regression provide evidence that COVID-19-related life changes, especially in home and work spheres, were associated with increased depression and anxiety symptoms. Changes in family structure and roles can cause psychological distress, ultimately affecting the relational environment at home (Prime et al., 2020). In this

sense, caregivers who must adapt their work routines to care for others at home are at a higher risk of burden. Additionally, results from the present study show that verbal arguments or conflicts with others at home during the confinement were very strongly associated with depression and anxiety symptoms. A previously problematic family environment combined with financial strain and social isolation – both well-known domestic abuse risk factors (Usher et al., 2020) – might lead to escalating conflicts and violence at home during confinement. Indeed, there has been an unprecedented wave of intimate partner violence during the COVID-19 pandemic (Campbell 2020). Economic insecurity, increase exposure to possible abusive relationships, as well as limited access to support in the community, among others, have been related to intimate partner violence during the COVID-19 pandemic (Peterman et al. 2020). Therefore, providing accessible mental health support to vulnerable families while confined is critical.

Findings presented here need to be interpreted in the context of several study limitations. First, the ongoing COVID-19 pandemic is a volatile phenomenon affecting countries in different ways. This cross-sectional study represents the effects of the pandemic on an adult population in several global regions during a specific period of time (April-May, 2020), and therefore different countries and even different regions within a country were experiencing different scenarios in relation to the pandemic. However, it is important to note that many of the countries were experiencing a prominent peak in the COVID-19 pandemic, and all participants' countries were under some kind of social isolation measures at the time of data collection. Also, with the cross-sectional design, it is not possible to conclude directionality of the relationships found, and people with poor mental health also could have reported worse life changes based on depression- or anxiety-driven viewpoints. Additionally, even while much effort was made to achieve a

generalizable global sample, the representation of countries in different global regions or of specific demographic characteristics was not equal. Therefore, comparisons between global regions, and generalizability to the entire global population, must be viewed with caution. Certain global regions (e.g., North America, Europe) had a much higher representation than other regions (e.g., Asia, Africa) due to limitations in the snowball data collection approach and languages used. Due to the high representation of women in the sample, a finding commonly observed in other psychological studies (Plomecka et al., 2020; Solomou & Constantinidou, 2020), generalizations to men also should be made with an appropriate degree of caution.

Conclusion

The profound changes in life routines due to the COVID-19 pandemic have created an unprecedented impact on people's mental well-being. Isolation, social distancing, and the fallout of the pandemic imply a loss of significant social supports and normalcy which have made it difficult to cope well with pandemic-related stress. Governments have a central role to play in reducing uncertainty among their populations, not only providing trustworthy sources of information and help, but also integrating mental health interventions into their emergency plans during a pandemic. The current findings have direct implications for the importance of making mental health treatment accessible and affordable at the global population level. Previous research has documented the unprecedented roll-out of telepsychology services across the U.S. during the COVID-19 pandemic (Pierce et al., in press) which is one of the primary methods for treating the high rates of depression and anxiety symptoms found in the current study. Psychologists should continue to explore and disseminate both videoconferencing- and telephone-based psychotherapy services, particularly during acute waves of the pandemic. Governmental policies allowing full reimbursement to psychologists and other mental health

care providers for telehealth services are critical (see Pierce et al., in press, for a full review). Providers performing such services should assess the impacts of the pandemic identified in the current study on their patients' mental health and provide both problem-solving therapy to help overcome those impacts to the extent possible, as well as evidence-based approaches to quell the subsequent depression and anxiety symptoms. Additionally, promoting social interactions while keeping physical distance, as well as recommending efficient strategies to reduce anxiety (e.g., relaxation techniques, exercise, good sleep hygiene) might help to reduce the negative impacts of the pandemic (Plomecka et al., 2020). Finally, helping patients optimize remote work settings, establish routines, and reorganize roles at home are vital to help them cope with changes in everyday life, thus retaking some degree of control lost during the pandemic. As the current study shows, psychologists' services are critical in meeting the mental health needs of the population at a global level.

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