


## Article

# More Relaxed but Less Helpful: The Relationship between Stress, Age, and Self-Reported Prosocial Behavior during the COVID-19 Pandemic

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**Abstract:** (1) Background: The COVID-19 pandemic has collectively increased stress levels, with individuals making difficult choices between protecting themselves and helping others. Previous research has shown that people engage in more prosocial, or helping, behavior as they age and in moments of acute stress, but it is unclear how stress has influenced perceived changes in prosocial behavior in the later stages of the pandemic and whether this varies across the lifespan. (2) Methods: The current study explored how perceived stress, age, and gender impact participants' reports of perceived changes in their prosocial behavior due to the pandemic using survey questions administered through an online subject pool ( $n = 201$ ). (3) Results: Hierarchical linear regression results revealed results indicated a significant main effect of perceived stress ( $\beta = -0.166, p = 0.021$ ) and age ( $\beta = -0.217, p = 0.003$ ) but not gender ( $\beta = -0.062, p = 0.370$ ) on perceptions of how one's prosocial behavior was affected by the COVID-19 pandemic. (4) Conclusions: Study findings showed that older adults and individuals with higher levels of perceived stress reported a decrease in their prosocial behavior, which supported our hypotheses. These findings provide unique insight into the influence of a long-term health crisis on different groups of people's participation in prosocial behavior, with implications for mental health and community engagement during a pandemic.

**Keywords:** stress; age; prosocial behavior; altruism; COVID-19

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## 1. Introduction

The COVID-19 pandemic introduced a myriad of social dilemmas, where self-interest conflicts with long-term group interests. Notable outcomes of this behavior include prioritizing economic self-interests by “panic-buying” supplies like toilet paper [1]. In the same grocery store, however, one might find an individual considering group interests by wearing a facemask and shopping for their high-risk elderly neighbors. This individual would be displaying considerable prosocial behavior, which can be defined as voluntary action meant to help others, such as volunteering and donating [2]. In addition to dilemmas between engaging in prosocial or selfish actions, many individuals struggled with mental health symptoms during the pandemic, including high levels of stress [3] even over a year after the pandemic's onset [4]. This stress may have had different causes across age groups, with younger adults missing out on important developmental and social stages [5], middle-aged adults concerned about unemployment and increased care responsibilities [6], and older adults' isolating themselves to avoid severe health problems from COVID-19 [7]. Additionally, both perceived stress levels and prosocial behavior may differ between men and women [8,9]. Thus, this study explored how individuals perceive their prosocial behavior to have changed during the COVID-19 pandemic and whether this relationship differs based on perceived stress levels, age, and gender.

Did the pandemic cause individuals to fend for themselves or to reach out and support one another? A theory exists called “altruism born of suffering”, where people are more likely to help others during times of large-scale stress and crisis [10]. There is some

preliminary evidence for such altruism during the pandemic. For example, a previous study using a Social Value Orientation Slider [11] and the Dictator Game to measure prosocial behavior found that German adults' prosociality gradually increased from before the pandemic to during its beginning stages. This increased prosociality was enhanced when individuals felt more responsible and perceived the recipient of their help to be more vulnerable to contracting COVID-19 [12]. Similarly, a sample of Canadian adults reported a high level of prosociality on the Prosocialness Scale for Adults [13] during the early stages of the pandemic from April to July of 2020 [14]. However, the number of coins students allotted to individuals hit hard by COVID, such as healthcare professionals and those with compromised immune systems, in a Pandemic Dictator Game decreased from May to November of 2020 [9]. This discrepancy between increased and decreased prosociality may reflect the complex situational nuances of helping during in a pandemic. Additionally, there is limited research examining the effect of the COVID-19 pandemic on individuals' perception of their own prosocial behavior beyond the beginning stages of the pandemic.

The COVID-19 pandemic is a major source of stress for many individuals due to pervasive health threats, financial instability, and/or lack of socialization. Average stress levels among Americans increased from April 2020 to 2021, and over 80% of Americans reported feeling stress symptoms [15]. These stress levels have remained relative steady two years after the COVID-19 pandemic onset; indeed, in March 2022, the American Psychology Association described the U.S. as being in 'sustained survival model' to reflect the chronic stressors many Americans still experience since the pandemic began [16]. These increased stress levels may vary across different populations depending on how the individuals respond to the stress. For example, both brooding, which is a maladaptive aspect of depressive rumination, and COVID-specific rumination were found to predict higher levels of perceived stress, especially in migraine patients versus healthy adults [17]. Furthermore, a recent literature review concluded that not only can being quarantined increase concurrent stress, but negative psychological effects may still remain years later [18]. All in all, the long-term impacts of stress on perceived changes in prosocial behavior require more investigation.

Individual differences in stress levels may impact an individual's willingness to behave prosocially. Acute stress has been shown to increase prosocial behavior [19], especially in situations where the other person is in dire need of help [20]. Similarly, perceived stress has been found to predict increased prosocial behavior in adults [8]. However, stress has also been shown to decrease prosocial behavior depending on what is the most strategic way for individuals to use their resources to meet their needs [21]. Individuals may engage in helping behaviors as a way to cope with stress [19] because it can improve their self-efficacy, boost their mood, and serve as a distraction from the stressor [22]. Engagement in higher amounts of prosocial behavior has also been found to reduce the negative effects of daily stressors on individuals' overall affect and mental wellbeing [23]. However, the relationship between repeated or long-term stress and prosocial behavior is much less clear. It is possible that the long-term and varied stressors individuals faced during the COVID-19 pandemic may have exhausted certain individuals' capacities to participate in prosocial behavior.

Participation in prosocial behavior is also influenced by age. Lifespan developmental theories propose that, in middle adulthood, humans increasingly value generativity, or "the concern in establishing and guiding the next generation" [24]. Past research suggests an overall positive relationship between age and prosocial behavior [25], with a meta-analysis conducted finding people become more altruistic as they age [26]. Individuals have been shown to develop a more community-based mindset in middle adulthood, which increases the amount of volunteering they do unless they become extremely old or sick [27]. This caveat is important to consider because older adults had the highest mortality risk during the COVID-19 pandemic [28,29], especially if they suffered from comorbidities such as diabetes or cardiovascular disease. Thus, this heightened risk for older adults may have left them less able or willing to be around others in general, hindering their ability to help others.

Lack of access to health, monetary, and social resources can also reduce altruism in the oldest populations [26], which was likely the case for a substantial number of older adults during the pandemic. Older adults also faced greater health risks during the pandemic by simply being around others. However, higher mortality salience in older adults due to the pandemic could be related to increased prosocial behavior, and that prosocial behavior may lead to greater satisfaction [30]. For example, one study found that older individuals engaged in a higher amount of prosocial behavior, including donating blood and sewing facemasks, than they did prior to the pandemic, especially for their close friends and family [31]. Alternately, mortality salience may increase individuals' prosocial behavior unless the prosocial behavior itself reminds the individual of their own mortality [32]. Thus, older adults conscious of their heightened health and mortality risks during the pandemic may have experienced reduced prosocial behavior because being around others to help others reminded them of their current fragility.

In contrast to challenges for older adults, stress increases during the pandemic were particularly pronounced among younger adults [3], likely due to a variety of causes. College students reported increased stress due to the difficulty of online classes, heightened uncertainty especially due to the news, and concerns for the health of their close friends and family [33], in addition to fears about the danger of COVID-19 and contamination fears [4]. While younger adults were particularly vulnerable to negative mental health impacts due to the pandemic, they also displayed the use of coping skills [34]. Additionally, early pandemic stressors differed by age, with individuals aged 31–40 concerned about getting their families sick, individuals aged 41–50 worried about their own safety, and individuals over 50 worried about mortality [35]. Despite increased isolation and decreased physical activity, elderly individuals displayed less negative mental health outcomes and less COVID-specific stress than younger individuals [34]. Ultimately, it is possible that younger adults' higher stress levels during the pandemic [36] encouraged them to participate in more prosocial behavior to cope with stress [19,31].

Finally, past research suggests that women were more likely to display prosocial behavior during the pandemic than men [8,9]. One explanation for this finding is that women are more likely to display personality traits such as neuroticism, or emotional instability, and negative moods, which increased the likelihood that they fear COVID [37]. Similarly, Durbas et al. (2021) found that pandemic-related anxiety and stress were higher among women than men [4]. Thus, heightened fear, anxiety, and stress about the COVID-19 pandemic might encourage women to support others. This explanation is consistent with the "tend-and-befriend" hypothesis, which asserts that stressed women are more likely to display caring behavior towards others whereas stressed men may be more likely to respond via "fight-or-flight" mechanisms [38]. However, one study found that gender did not significantly affect individuals' pandemic-related prosocial decision to stay home to avoid the possibility of infecting others at work [39]. Therefore, gender differences in perceived stress and prosocial behavior must be explored further.

In summary, previous research suggests that older adults become more altruistic as they age. However, their mortality risk and saliency increased during the pandemic, which may influence their participation in helping behaviors. Additionally, while stress levels increased in general during the pandemic, younger adults were found to show the highest increases. Women were also found to display higher levels of stress and prosocial behavior during the pandemic. In addition, more research is needed to determine the impact of the COVID-19 pandemic on individuals' prosocial behavior past the early stages of the pandemic. Thus, this study, conducted approximately two years after the pandemic began, aimed to remedy these gaps in the literature by examining how age, perceived stress, and gender influenced individuals' perceived change in their prosocial behavior due to the COVID-19 pandemic. We hypothesized that older adults and those with higher stress levels would report a decrease in perceived prosocial behavior because of the pandemic, while women would report an increase in perceived prosocial behavior relative to men.

## 2. Materials and Methods

### 2.1. Participants

Two hundred and four participants from the United States completed the study measures on Prolific as part of a larger study; three participants were excluded for failing to complete all study questionnaires. Thus, the final sample was comprised of 201 participants (115 females, 86 males). Table 1 shows the descriptive statistics for the demographic information. The study was approved by the university Institutional Review Board.

**Table 1.** Sample Demographics.

Variable	M	SD
Age	44.2	18.3
Stress Level	16.2	8.7
Prosocial behavior during pandemic	3.6	1.6
COVID effect on prosocial behavior	<i>n</i>	%
Unchanged prosocial behavior	85	42.3%
Decreased prosocial behavior	83	41.3%
Increased prosocial behavior	33	16.4%
Gender		
Female	115	57.2%
Male	86	42.8%
Race		
White	160	79.6%
Asian	25	12.4%
Black or African American	13	6.5%
American Indian or Alaska Native	3	1.5%
Income Level		
<\$20,000	63	31.3%
\$20,000–\$34,999	39	19.4%
\$35,000–\$54,999	32	15.9%
\$50,000–\$74,999	32	15.9%
\$75,000–\$99,999	22	10.9%
>\$100,000	13	6.5%

### 2.2. Measures

#### 2.2.1. Demographics

Information regarding participants' age and gender was obtained using open-ended free response. Race and income level were obtained using multiple choice options.

#### 2.2.2. Perceived Stress Questionnaire

To measure stress levels, the participants completed the 10-item version of the Perceived Stress Scale (PSS-10) [40,41]. With this measure, participants rate statements such as "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?" on a Likert scale from 0 (Never) to 4 (Very Often). The PSS-10 is a reliable ( $\alpha = 0.89$ ) [40,42] and valid measure. Internal consistency within the study sample was high ( $\alpha = 0.92$ ). This measure has been shown to be sensitive to stress due to life events [40]. After reverse-scoring necessary items, a sum score was computed such that higher scores reflect greater perceived stress levels.

#### 2.2.3. Changes in Perceived Prosocial Behavior

Participants were asked to respond to the question "How has the COVID-19 pandemic influenced your prosocial behavior?" using a 1 (Significantly Decreased Prosocial Behavior) to 7 (Significantly Increased Prosocial Behavior) scale.

### 2.3. Procedure

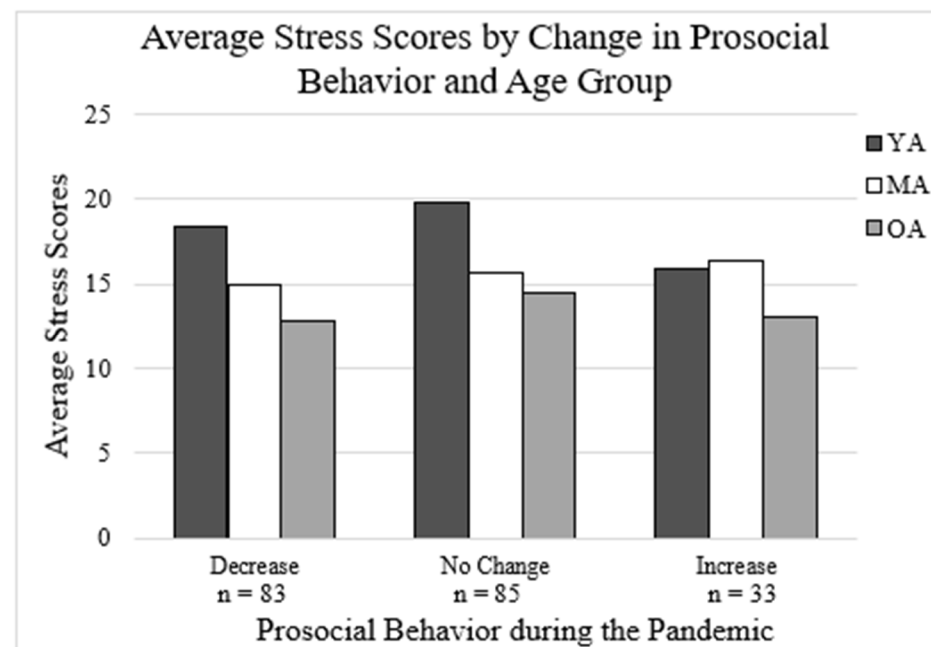
Data collection occurred for a three-week period in April 2022. At this point in the pandemic, vaccines and boosters were available to everyone in the United States aged 5 and

older, and mask mandates were no longer in place in most locations [43]. Prolific participants were paid \$7 for completing the study. Recruitment was stratified by age such that we sought to recruit a relatively equal number of younger (18–35), middle-aged (36–65), and older (65–90) adult participants to have an age-representative sample. Prolific participants clicked on the survey link and were asked to provide digital informed consent. Next, participants responded to demographics information questions (age, gender, race, etc.), and then completed the PSS-10 followed by the single-item COVID-19 prosocial behavior question.

### 3. Results

#### 3.1. Descriptive Statistics

Participants average age ( $M = 44.259$ ,  $SD = 18.300$ ), stress scores ( $M = 16.199$ ,  $SD = 8.705$ ), and self-reported changes in prosocial behavior during the pandemic ( $M = 3.557$ ,  $SD = 1.565$ ) are reported in Table 1. Figure 1 shows the average PSS-10 stress scores and age for those that reported a decrease, no change, or increase in prosocial behavior due to the pandemic.



**Figure 1.** Bar graphs showing the average stress scores (top) and age (bottom) of those that reported a decrease (score of 1–3), no change (score of 4), or increase (score of 5–7) in perceived prosocial behavior due to the pandemic by age group. YA refers to young adults age 18–35; MA refers to middle-aged adult age 36–64; OA refers to older adult age 65+.

#### 3.2. Correlations

Zero-order correlational results between COVID-19 related changes in prosocial behavior, age, and stress showed that older participants tended to report lower levels of stress ( $r = -0.251$ ,  $p < 0.001$ ) and reported a decrease in prosocial behavior after the pandemic onset ( $r = -0.176$ ,  $p = 0.012$ ). The zero-order relationship between stress and COVID-19 prosocial behavior was nonsignificant ( $r = -0.108$ ,  $p = 0.128$ ).

#### 3.3. Independent Samples *t*-Test

An independent samples *t*-test was performed to examine potential gender differences in COVID-related changes in prosocial behavior. However, the results indicated that there was no significant difference between men ( $M = 3.47$ ,  $SD = 1.39$ ) and women ( $M = 3.63$ ,  $SD = 1.69$ ) in COVID-related prosocial behavior,  $t(199) = 0.721$ ,  $p = 0.0472$ .



### 3.4. Regression Predicting Perceptions of COVID-Related Changes in Prosocial Behavior

A hierarchical linear regression was performed to examine the effect of age, gender, and perceived stress on perceived prosocial behavior during the pandemic. The first-order stress, age, and gender predictors were added in the first step of the model,  $R^2 = 0.060$ ,  $F(3, 197) = 4.158$ ,  $p = 0.007$ . Results indicated a significant main effect of stress ( $\beta = -0.166$ ,  $p = 0.021$ ) and age ( $\beta = -0.218$ ,  $p = 0.003$ ) on perceived prosocial behavior, but not gender ( $\beta = -0.062$ ,  $p = 0.370$ ). Individuals who experienced higher levels of stress reported that their prosocial behavior decreased during the pandemic relative to those who experienced lower levels of stress. Moreover, older participants reported decreased perceived prosocial behavior during the pandemic compared to younger participants. The two-way interactions were added in the second step of the model ( $\Delta R^2 = 0.037$ ,  $F(6, 194) = 2.674$ ,  $p = 0.049$ ), but none of these interactions were significant ( $p > 0.05$ ). Similarly, in the third and final step of the regression model, the three-way stress X age X gender interaction was added ( $\Delta R^2 = 0.003$ ,  $F(7, 193) = 0.584$ ,  $p = 0.446$ ), but the interaction effect was nonsignificant. Thus, the effect of stress on perceived changes in prosocial behavior did not depend on age or gender differences.

## 4. Discussion

Overall, this study sought to examine the influence of age, gender, and perceived stress on individuals' perceived change in their prosocial behavior due to the COVID-19 pandemic. Results indicated that both older age and higher stress levels were related to perceptions that one's prosocial behavior had decreased because of the pandemic, which supported our hypotheses. However, although we predicted that women would report a greater increase in perceived prosocial behavior than men, this hypothesis was not supported. No differences in perceived changes in COVID-related prosocial behavior were observed between men and women, which does not support our hypothesis.

Interestingly, the finding that higher perceived stress was related to reports of decreased perceived prosocial behavior opposes previous findings that acute stress increases prosocial behavior [19]. However, perceived stress, such as constant worries and difficulty coping with life changes, may cause individuals to become weary and less able to care for others compared to a single stressful event that may encourage momentary prosocial behavior. Since its beginning, the COVID-19 pandemic has expanded the number of stressors individuals are facing every day, including familial, financial, social, and health stress. While many individuals have shown considerable stress resiliency [34]), these stressors have also been shown to affect individuals long after the onset of the pandemic [4,18]. Due to these collectively experienced worries, individuals may have only had the capacity to keep themselves and the rest of their household physically, mentally, financially, and socially healthy and did not have any more resources to give others, who they were also potentially avoiding to reduce the possibility of transmission. Alternatively, it is possible that individuals who engaged in more prosocial behavior during the pandemic did so to reduce their stress levels [19] through exhibiting personal agency and creating meaning in their lives.

In addition to higher perceived stress levels, older age was another factor related to lessened prosocial behavior during the pandemic. On one hand, this finding contradicts previous research showing that older adults display more altruism [26] and more prosocial behavior [25] than younger adults and also increasingly value contributions to their community [27] and future generations [24] as they age. On the other hand, older individuals uniquely experienced the highest mortality rates during the pandemic [28,29]. While this high-risk might have increased older adults' mortality salience, which has been shown to increase prosocial behavior [30], it also possibly decreased their willingness to be around others to even be able to engage in prosocial behavior, and it might have reminded them of their own fragile nature, effectively discouraging participation in prosocial behavior [32]. Ultimately, older individuals had to decide to protect their own physical health, since it was at such high risk, rather than to support their communities during the pandemic.

All in all, the finding that older age and higher perceived stress were related to reports of decreased prosocial behavior during the pandemic provides insight into which populations' helping behaviors suffered during this health crisis. Despite older individuals' increased isolation during the pandemic [7,34], we found that they exhibited lower stress levels than younger adults, which corroborates previous findings [3,33,36]. Both of these populations, but especially young adults, are some of the most in need of participation in prosocial behavior, due to its use as a coping method to deal with stress [19,22] and reduce its negative mental symptoms [23]. Thus, younger adults experiencing high stress levels may have been motivated to help others lessen their stress, ultimately explaining why less stressed older adults alternatively reported a perceived decrease in prosocial behavior. Additionally, these findings uniquely explore the relationship between stress, which has been widely experienced during the pandemic, and prosocial behavior almost two years after the beginning of the pandemic. Overall, this study provides pertinent information about the behavioral choices certain groups of individuals make during a pandemic where the interests of oneself contrast with the interests of others.

While we anticipated that women would report greater increases in prosocial behavior, the results of this study failed to find such gender differences. This finding is consistent with work showing that males and females reported engaging in the prosocial decision stay home from work to avoid infecting others during the pandemic in similar proportions [39]. However, the gender results of the present study differ from past work showing that women experienced greater prosocial behavior during the pandemic than men [8]. However, key distinctions between the present study and this past research may account for these differences in study findings. Notably, past studies examined gender differences across 60 countries and examined prosocial actions during the pandemic [8]. In contrast, the present study focused on prosocial behavior among participants in the United States exclusively and assessed perceived changes (increases or decreases) in prosocial behavior due to the pandemic. It is possible that gender differences in prosociality during the pandemic may differ by nationality as many countries' responses to the pandemic differed dramatically. Alternatively, it is possible that women engaged in more prosocial behavior than men before the pandemic, and this behavior was unaffected by the pandemic; such an explanation would not have been captured by previous study measures. Consequently, while females may engage in prosocial behavior more than men, the COVID-19 pandemic may not have affected women's prosocial behavior any more than men's behavior.

Despite this study's important and unique findings, there were several limitations. First, the measure of changes in prosocial behavior due to the pandemic relied on one self-report question rather than observational or behavioral measures. While the use of single-item measures is sometimes questioned as being less psychometrically sound than multi-item assessments of constructs, the use of single items has been shown to reduce participant fatigue and frustration at multiple items asking the same question [44,45]. Additionally, this question did not ask about specific COVID-related prosocial behaviors as some other studies did [31] but instead asked about prosocial behavior in general. It is possible that people already felt they were behaving prosocially by wearing masks, engaging in social distancing, and getting a vaccine and felt less of a need to do more. It is also plausible that individuals engaged in different degrees of COVID-related versus non-COVID-related prosocial behaviors due to the pandemic. In that case, this study's measure of general prosocial behavior might not have been detailed enough to detect differences between changes in certain kinds of prosocial behavior due to the pandemic.

Similarly, this study's measure of perceived stress included questions about individuals' general, long-term experience of stress, rather than asking about COVID-related stress as in some other studies [4,8,9,34]. It is possible that COVID-related stress may have different impacts on perceived changes in prosocial behavior compared to general perceived stress. The measures of perceived stress over the past month and perceived changes in prosocial behavior were obtained during a relatively calm period of the pandemic (April 2022) when vaccines were largely available and mask mandates became less

widespread. Nevertheless, the long-term consequences of the pandemic still result in high levels of stress in 2022 for many Americans [16]. Thus, examining how long-lasting or repeating stressors brought on by the pandemic influence COVID-related prosocial behavior could provide important insight into the specific effects of the pandemic, rather than examining broad changes in stress and prosocial behavior. Therefore, future research should examine a wide range of specific prosocial behaviors and stressors, both pandemic-related and not, in addition to comparing behavioral and stress data at earlier and later stages of the pandemic. Furthermore, we note that the data was also collected retrospectively, rather than in a linear sequence to assess changes before and after the pandemic onset. Thus, we cannot draw causal inferences about the impact of stress on actual behavioral changes in prosocial behavior due to the COVID-19 pandemic.

## 5. Conclusions

This study uncovered important relationships, ultimately finding that older adults and those with higher levels of perceived stress reported decreased prosocial behavior due to the COVID-19 pandemic. Overall, these findings exemplify how the pandemic uniquely impacted older and younger adults. Since younger adults were found to exhibit higher stress levels than older adults, it is possible that they engaged in prosocial behavior to remedy this stress. Alternatively, although less stressed, older adults may have avoided others and thus avoided engaging in prosocial behavior due to their heightened mortality risk and saliency during the pandemic. Additionally, women and men's changes in prosocial behavior due to the pandemic did not differ, which may be due to the fact that the pandemic did not alter women's already heightened prosocial behavior relative to men. All in all, these findings can help improve researchers' understandings about how certain individuals respond to the stressors and social dilemmas brought on by an unprecedented health crisis. Moreover, this research shows how older adults and more stressed individuals may not have the mental and physical capacity to help others during stressful times like the COVID-19 pandemic when it may be both dangerous and beneficial to help others. Thus, this study can inform future efforts to safely keep these populations engaged in their communities during such trying times.

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**Informed Consent Statement:** Informed consent was obtained digitally from all subjects involved in the study.

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