Stress During the Early Months of COVID in the U.S.: The Role of Fear and Health Status Across the Age Spectrum

Jill M. Chonody
Barbra Teater
Katrina Hannan
Katelyn Hall

Abstract: The stress that the COVID pandemic has caused is immeasurable and is likely to impact people for many years to come. Service providers such as social workers are experiencing these impacts both personally and professionally. As new research emerges, a greater understanding of the emotional toll related to COVID can help to inform social work practice. To add to this gap in the literature, an online survey explored the factors that contribute to higher stress reactions among individuals in the general population (n = 412) and across the age spectrum. Bivariate analyses indicated a significant increase in stress from pre- to during-COVID for the entire sample and across the three age groups. Multivariate analysis revealed more conversations about COVID, more alcohol use, knowing someone who had tested positive, increased fear, greater avoidance of reading/watching information about COVID, decreased health status, and increased income contributed to stress during-COVID. Increased fear and decreased health status were significant when stress was examined separately among the three age groups. The results indicated the importance of understanding and responding to fear during public health crises and illustrate how interventions may shift for clinical social workers as they seek to address multi-layered concerns. Social workers can help manage the impact of the pandemic by providing clients with therapeutic services, psychoeducation, and case management.

Keywords: COVID; stress; fear; health; age

On March 11, 2020, the World Health Organization (WHO) declared the novel coronavirus (COVID) a global pandemic. Data from the Centers for Disease Control (CDC, 2022a) indicate over 75,012,446 reported cases in the United States (US) and more than 884,853 deaths due to COVID at the time of this writing. According to WHO (2022), more than 376 million cases have been reported globally and over 5,666,000 deaths. The severity and magnitude of this illness and public health crisis have led people to experience immense stress, fear, and uncertainty worldwide. Greater demands on the social work profession have been reported as a result (Cross & Gonzalez Benson, 2021), and social workers "are bearing witness to the struggles of the most vulnerable and isolated in our society" (Abrams & Dettlaff, 2020, p. 302). Consequently, clinical social workers and other counseling related disciplines have shifted to account for these complex emotions (Vostanis & Bell, 2020), including promoting telehealth as best practice with therapeutic interventions focused on the social-emotional impact of COVID.

COVID is a respiratory illness that causes fever/chills, coughing, and shortness of breath. While the virus expresses itself differently in different individuals, other symptoms may include fatigue, loss of taste and smell, headache, muscle or body aches,

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Jill M. Chonody, PhD, LCSW, Professor, School of Social Work, Boise State University, Boise, ID. Barbra Teater, PhD, LMSW, Professor, Department of Social Work, College of Staten Island, City University of New, York New York, NY. Katrina Hannan, LCSW, practicing social worker and PhD student, Social Welfare, Graduate Center, City University of New York, New York City, NY. Katelyn Hall, LMSW, practicing social worker and graduate, Boise State University, Boise, ID.

sore throat, congestion/runny nose, and/or diarrhea (CDC, 2022d). While many people recover from this illness, others struggle to survive. Therefore, people remain alarmed and terrified of this virus and the public health crisis that has ensued and continues to threaten lives. The severity of the illness has an extensive range. While some individuals are asymptomatic, approximately 81% experience mild symptoms, 14% experience severe symptoms, and 5% experience a critical illness (CDC, 2021). Moreover, the CDC (2022c) indicates that older adults and people with underlying health conditions have a greater risk for developing severe complications if they contract COVID. Preliminary data determined that older people are at higher risk of death from COVID. The CDC (2022a) reported 75.6% of deaths in the US related to COVID have been among adults age 65 years and older; 27.5% were among people who were 85 years and older.

In an effort to minimize the spread of the virus, governments across the globe recommended or mandated specific guidelines, including stay-at-home orders, quarantine, social distancing, working remotely, vaccinations, and wearing masks. Quarantining involves staying within one's home and only going out when necessary. According to the CDC (2022b), social distancing is the practice of maintaining at least six feet between yourself and any people who live outside of your home. The use of masks decreases the virus transmission efficiency as it acts as a barrier for this airborne virus (Li et al., 2020). Vaccinations are highly effective, particularly in preventing severe illness, hospitalizations, and death (CDC, 2022b). These steps appear to effectively prevent transmission, slow the spread of the virus, and reduce hospitalizations and death. Yet, at the time of writing this paper, the Omicron variant had dramatically spread across the US, leading to surges in new cases, including breakthrough cases for individuals who have been vaccinated and additional or re-introduced mandates such as wearing masks, regular testing, and quarantining if exposed.

The drastic life changes due to COVID have profoundly impacted people in a multitude of ways and may continue to have lasting consequences. Many people lost loved ones and some were unable to grieve appropriately. Some people battled the virus, wondering whether they would survive, while others continued to quarantine and reduced socialization. Some people were fortunate to continue working, and many transitioned to working remotely from home. Meanwhile, others continue to report to work in person, especially essential workers such as health care workers. Furthermore, many people have lost their jobs due to financial instability caused by the ripple effect of the pandemic. The stress that COVID has caused is immeasurable (Pearman et al., 2020) and is likely to impact people for many years to come, including social workers who are providing services in hospitals as well as clinical settings. To better understand the emotional impact of COVID, the present study explored the factors contributing to stress reactions among individuals during this public health crisis and examined if differences in stress levels were present across the age spectrum. Such knowledge can assist social workers in identifying preventative measures as well as interventions that can help minimize the stress experience.

Literature Review

Stress during Public Health Crises

People cope with crises, including public health crises in many different ways. Some people have emotional reactions, including anxiety, sadness, and sleep disturbances, whereas others remain calm and seemingly less affected (Fiorillo & Gorwood, 2020; Qiu et al., 2020; Wang et al., 2020). A review of existing research suggests that feeling stressed during a public health crisis is a natural response, and heterogeneous responses to the pandemic are often related to pre-existing psychopathological factors (Fiorillo & Gorwood, 2020; Freckelton, 2020; Pearman et al., 2020; Reznik et al., 2020; Sepulveda-Loyola et al., 2020; Torales et al., 2020). Moreover, loss is a central emotion as the pandemic continues and includes the loss of loved ones, the loss of physical contact and careers, and reduced socialization. All of these factors combined have created a "new normal," and the uncertainty of never returning to the way the world used to be creates a magnitude of unknowns. Trying to remain resilient while waiting to return to the old normal does not ensure any guarantees that it will occur, which in turn, is a basis for additional anxiety and stress (Walsh, 2020).

Social workers play a crucial role in mitigating these fears and stressors. Current clients as well as new clients may want to focus on the way that COVID is affecting their life or the way in which it is exacerbating existing problems, such as anxiety or depression. Discussing the impact of COVID may be pertinent for older adults due to the particular impact that it has had on that age group as well as the dearth of gerontological social workers (Berg-Weger & Schroepfer, 2020). Clients need space and time to grieve their losses, and social workers are in a position to provide supportive and insight-oriented counseling to address these needs. Interventions that support resilience and emotional well-being through skill development are particularly important (Dorado Barbé et al., 2021). Moreover, social workers can focus some of their efforts on helping clients develop new coping skills, such as grounding techniques, and implement therapeutic interventions that incorporate psychoeducation regarding stress, COVID, and the interaction between them.

Additionally, social workers may be in a position to provide psychoeducation to clients within their agencies and in the broader community. Clarity of information related to public health crises is imperative given that it can significantly impact stress levels (Lopez-Pelaez et al., 2020). To stay informed when a community crisis occurs, people seek out event-related information, and the consumption of media has significantly increased as "92% of citizens actively consumed news about the virus" (Casero-Ripolles, 2020, p. 4). However, when information is inconsistent or unavailable, people may be exposed to misleading information, which leads to higher levels of stress and anxiety (Freckelton, 2020; Garfin et al., 2020; Torales et al., 2020). A recent study established an association between obtaining information from quality sources and more accurate knowledge of COVID, which in turn, was associated with lower stress levels (Pearman et al., 2020). For example, recommendations on wearing a facemask in public to prevent the spread of COVID were initially inconsistent, leading to further confusion, fear, and stress (Goh et al., 2020). Therefore, continuous and clear information provided by medical experts is critical to help reduce the stress people experience during times of public health crises.

On the other hand, public messages can also lead to public alarm. For example, to protect oneself from COVID, guidelines for wearing a facemask in public were recommended by the CDC, and "this information led to a panic buying spree by the general public" (Goh et al., 2020, p. 3). Additionally, people were also purchasing essential consumer items in a panic, such as toilet paper, first aid kits, bottled water, and hand sanitizer, which was a safety-seeking response due to ambiguous and fear-inducing media reports (Garfin et al., 2020). Over time, wearing a facemask has aided in reducing stress and anxiety where the mask is present and is "perhaps the most-powerful psychological symbol for the general public" (Goh et al., 2020, p. 1). However, this can be dangerous because some people believe that wearing a mask is sufficient, and thus, may ignore social distancing guidelines and handwashing recommendations (Goh et al., 2020). On the other hand, Williams et al. (2020) found that participants in their study were adherent to social isolation and social distancing guidelines for COVID. In fact, "participants were highly critical of such instances of non-adherence…[and]…stigma was more likely to be attributed to those who were failing to socially distance and isolate" (Williams et al., 2020, p. 6). Social workers may be a part of those teams that help disseminate accurate and up-to-date information to the community.

While safety behaviors act to directly combat feelings of fear and stress related to virus contraction, research suggests that fear during public health crises can drive destructive and concerning social behaviors. Torales and colleagues (2020) report, "in fact, fear of the unknown leads to higher anxiety levels in both healthy people and those with pre-existing mental health problems; unjustified public fear may lead to discrimination, stigmatization and scapegoats" (p. 319). People will likely experience extreme fear, uncertainty, and distorted perceptions of risk which will drive negative social behaviors (Torales et al., 2020). Thus, it is vital to recognize that fear makes people act unusually and often irrationally. Some people shamefully take advantage of the vulnerability of others and make false advertisements about medications which can prevent, treat, or cure diseases (Freckelton, 2020). This "vulnerability creates predatory opportunities for the unscrupulous," such as the quackery which surfaced during the 1889-1892 Russian flu, the 1918-1920 Spanish flu, and the emergence of bogus claims in the present day COVID pandemic (Freckelton, 2020, p. 1). Uncertainty incites stress and fear in regard to infectious disease since they lack clear and distinct boundaries and "are one of the most distressing forms of disaster to deal with psychologically because of the uncertainty they cause" (Reznik et al., 2020, p. 1904). Thus, infectious diseases can create a sense of vulnerability, risk, and stress (Reznik et al., 2020).

Inevitably, when people feel vulnerable and at risk, they feel fearful. For example, research involving the SARS (severe acute respiratory syndrome) pandemic in Hong Kong in 2003 found that people felt anxious and stressed about contracting the illness, and more than 75% of respondents avoided going out or visiting crowded places (Lau et al., 2010). Research related to the stress and psychological implications of previous infectious diseases, in particular, identified that health care workers and survivors suffered long-term consequences. For example, 27% of health care workers during the 2003 SARS CoV outbreak in Singapore reported psychiatric symptoms (Chan & Huak, 2004), and medical staff in Korea that performed MERS-related tasks during the 2015 outbreak showed greater symptoms of posttraumatic stress disorder compared to health-care workers who did not perform MERS-related tasks (Lee et al., 2018).

Similarly, medical staff in direct contact with infected patients reported high levels of anxiety and stigma both during the Ebola outbreaks in Sierra Leone in 2014 and in the Democratic Republic of the Congo in 2018 (Park et al., 2018). Social workers may be in a position to both be impacted by the stress of the pandemic as well as provide support to medical professionals (O'Leary & Tsui, 2020) and clients alike. Their emotional responses also likely range from stress, anxiety, and fear. Further research in this area can guide best practices and identify unique factors that may be associated with the social-emotional reactions to the COVID pandemic.

Stress and COVID

People report experiencing stress, anxiety, depressive symptoms, insomnia, denial, anger, and fear all around the world in response to the ongoing COVID pandemic (Torales et al., 2020). In particular, anxiety related to developing COVID has been found to lead to higher stress levels (Pearman et al., 2020). People report severe anxiety in relation to COVID with women reporting higher stress levels than men (Jungmann & Witthöft, 2020). Research consistently finds that people feel significantly more stressed about COVID (Fitzpatrick et al., 2020; Freckelton, 2020; Pearman et al., 2020; Reznik et al., 2020; Sepulveda-Loyola et al., 2020; Torales et al., 2020; Williams et al. 2020). When faced with extreme stress, individual coping strategies can range from healthy activities, such as exercise and yoga, to behaviors that may be more destructive, such as increased use of alcohol. Resilience against mental disorders, particularly those associated with stress, may be supported by physical activity. For example, depression and anxiety disorders seem to have a "complex interaction of psychological and neurobiological mechanisms" (Strohle, 2008, p. 781). Given the correlation with improvement in depression and anxiety, exercise is thought to have advantages in lowering stress. Exercise can also provide preventative care for other medical conditions, which can improve the quality of life overall (Rafiq et al., 2019). Social work interventions may integrate education about the positive benefits of exercise and encouragement for physical activities to help protect against detrimental impacts on mental health.

On the other hand, increased alcohol use can occur in relation to stress, and alcohol consumption and mental health are negatively associated (e.g., Jacob et al., 2021). Increased psychological stress coupled with chronic alcohol use can change neurological pathways that lead to dependency. In a drug and alcohol dependence study, even social drinkers were found to increase alcohol use in correlation to stress (Clay & Parker, 2018). As such, risk-taking and impulsivity also increased with alcohol use, and if dependency occurs, it creates a long-term negative effect. For example, in a military setting where stressful deployments are common, increased alcohol use was seen as an avoidance coping behavior (Bartone et al., 2017). Thus, understanding the use of alcohol and its impact during a global pandemic is important, particularly in the US where a true "break" from COVID has not occurred like in other countries, such as New Zealand or Iceland.

Furthermore, the effects of the pandemic may also be particularly disadvantageous to older people. Current research suggests that social isolation during COVID has negatively impacted the mental health and well-being of individuals of all ages, but older adults have been substantially affected (Sepulveda-Loyola et al., 2020). In particular, older adults have experienced increased anxiety and fear about contracting

COVID. However, older adults were also found to have better coping methods than younger adults and did not experience significantly higher stress levels as predicted (Pearman et al., 2020). Relatedly, a study examining loneliness and older adults' social needs during social distancing found high levels of loneliness and social isolation across the sample; however, younger adults were experiencing higher levels of emotional loneliness compared to middle and older adults (Teater et al., 2020). Thus, the extent to which the pandemic affects different age groups may differ, and these differences may be relevant to social work practice when determining interventions or areas of assessment.

Gaps in the Literature

Previous research has suggested that stress and fear (Fiorillo & Gorwood, 2020; Freckelton, 2020; Pearman et al., 2020; Reznik et al., 2020; Sepulveda-Loyola et al., 2020; Torales et al., 2020; Walsh, 2020) are likely outcomes when in the face of health crises, such as the COVID pandemic. Emerging research specific to the pandemic has substantiated some of the social emotional reactions that people are feeling, including anxiety, sadness, sleep disturbances, social isolation, and loneliness (Fiorillo & Gorwood, 2020; Qiu et al., 2020; Sepulveda-Loyola et al., 2020; Wang et al., 2020). However, what is missing from our current understanding is how COVID is impacting people across different age groups. The experience of lockdowns, social distancing, and the virus itself likely impacts people differently based on their age group due to various developmental milestones, such as retirement and other significant life experiences. Greater insight into the reactions of individuals based on age can inform social work practice. That is, prevention and intervention can be tailored for clients or community groups to better address their needs. Therefore, this study sought to add to the growing knowledge base on stress during the COVID pandemic and the variables that are associated with stress in the general population and across the age spectrum (young adults; middle-aged adults; older adults) by asking the following research questions: (1) To what extent did stress levels change from pre-COVID to during-COVID? (1a) How did this vary across the age spectrum? (2) What is the association between individual-level factors, coping factors, and COVID restrictions and levels of stress during-COVID? (2a) How do these factors impact stress across the age spectrum? Greater knowledge and understanding about the impact of COVID across the age spectrum can inform social work practice and shape the interventions that may be used to address those impacts.

Method

Setting and Sample

Data for this study was collected from an online questionnaire distributed through Mechanical Turk (MTurk), an Amazon product that allows for participant recruitment for survey completion for a monetary reward ($0.75). The survey was also distributed through social media (Facebook; Twitter). Survey participants are referred to as "workers" in MTurk, and a large pool of these workers is available for possible participation. To ensure that the workers are not "fake" or are simply filling out the items without reading them, they will first pass through a series of unpaid questionnaires that will be checked to determine if they are completing the surveys mindfully. For this study, "master workers" (i.e., low survey rejection rate) were

selected for the sample, which means that past researchers have accepted their completed survey, and response bias was not suspected. In addition, the participants were required to provide a survey code at the end of the study to the researcher to receive the payment; this also helps to ensure against fake workers. MTurk recruits study participants based on the study inclusion and exclusion criteria, which the researcher specifies. Researchers posted the survey details for social media recruitment and encouraged participants to share the link or repost on their social media. Study inclusion criteria were the same for both platforms and were specified as those aged 18+ and US residents. Identifying information (e.g., name, contact details) was not recorded during survey completion. The survey was available in both platforms between June 17, 2020, and August 1, 2020.

Prior to data collection, approval was granted from the Institutional Review Board at Boise State University. The beginning of the survey started with the cover letter, which included the purpose of the study, the confidential and voluntary nature of the study, and the researcher's contact information. Survey completion served as consent for participation. About half of the total sample ($n = 458$) was gained from each of the two data collection strategies, MTurk ($n = 245$) and social media ($n = 213$).

Instrumentation

The survey was comprised of author-created items to measure the independent and dependent variables and was distributed to participants at one point in time. Many of these variables were written to assess specific aspects of coping with the pandemic. Stress (dependent variable) was measured by a single-item indicator that read: "During COVID, how would you rate your stress on a scale of 1 – 10 with 10 indicating higher levels of stress?" Fear was measured in the same way, except "fear" replaced the word "stress." A previous study found that a single-item indicator of stress demonstrated content and construct validity (Elo et al., 2003). Participants were also asked to rate their stress prior to COVID using the same rating scale.

Participants were asked to indicate the extent to which a number of activities may have changed during the pandemic (i.e., *more, less, the same*), including how much one was working, consuming alcohol, and exercising and if they were avoiding reading/watching information about COVID and avoiding thoughts and feelings about COVID (1 = *strongly disagree* to 6 = *strongly agree*). Participants were also asked how much of their *conversations* with others were about COVID (1 = *none at all* to 5 = *a great deal*). Questions were included on the type of restrictions participants were under in their state (*no activity restrictions/changes related to COVID-19*; *voluntary quarantine due to fear of exposure*; *mandated self-isolation/quarantine by medical professional/government* (not allowed to go out for any reason); *stay-at-home orders by local government and/or employer urging people to stay at home* (e.g., can still take walks and socialize outdoors while maintaining social distance); *shelter-in-place order by local government* (i.e., only permitted outdoors for essential purposes), the extent to which they were socially distancing (*all the time, sometimes, not at all*), and how often they were wearing a mask (same answers as social distancing). Participants were asked if they knew someone who tested positive for COVID (*yes/no*), and if so, who was this person to them (e.g., partner, friend). Additionally, participants were asked sociodemographic questions, including age (written in as a number), identified gender, race/ethnicity, number of people in the household, total household income, the highest

level of education, and the importance of religious/spiritual beliefs in one's daily life. Health status was rated using a 6-point scale (very poor, poor, fair, good, very good, excellent). Additional data were collected on relationship status, sexuality, state of residence, and religious beliefs for descriptive purposes only.

Data Analysis

Data were analyzed using IBM SPSS, version 24, software for descriptive statistics as well as bivariate and multivariate analyses. Age was categorized based on Petry's (2002) classification of young adult (18 -35 years), middle-aged (36 – 55 years), and older adult (56+) to complete analyses of stress based on age groupings. Paired-samples *t*-tests and one-way ANOVAs were used to explore any difference in levels of stress from pre-COVID to during-COVID for the entire sample and by the three age groupings. ANOVAs were used to examine the association between stress levels during COVID and the three age groups, and post-hoc comparisons using the Tukey test were performed to assess specific differences between groups. Prior to conducting multivariate analyses (i.e., ordinary least squares regression), bivariate analyses were conducted to determine the direction and significance of the association using independent samples *t*-tests and Pearson product moment correlations. Variables found to be significant at the bivariate level were included in the multivariate analyses. Alpha was set at .05. Missing data were addressed through listwise deletion.

Results

Sociodemographic Profile of the Sample

After removing participants with incomplete data, a total of 412 participants remained for analysis. The sample was on average 42 years old, and most identified as a woman (60.8%) and White (non-Hispanic; 70.7%). Most participants (60.6%) were married/partnered, with an average of 2.8 persons living in the household. The largest percentage of participants (23.8%) had a household income of $30,000 – $49,000, and the most commonly reported highest level of education was a four-year degree (47.9%). Thirty-eight of the 50 states and Washington, DC were represented. The top five states were Idaho (*n* = 48; 12.4%), Indiana (*n* = 48; 12.4%), Ohio (*n* = 35; 9.1%), California (*n* = 33; 8.5%), and New York (*n* = 24; 6.2%). Stress was moderately high on average (6.9 on a 10-point scale), alcohol use was indicated as the "same" by a majority of the participants (52%) as well as the amount participants were working (45%), and exercise was evenly divided between more, less, and the same. Nearly half of the respondents (47.3%) reported knowing someone who tested positive for COVID. Table 1 provides the full details of the sociodemographic characteristics of the sample.

Table 1. *Sociodemographic Characteristics of Respondents*

Characteristic		n (%)
Gender (n=411)	Trans*/Genderqueer/Non-binary	3 (0.7%)
	Woman	250 (60.8%)
	Man	158 (38.4%)
Sexual Orientation (n=402)	Bisexual	54 (13.4%)
	Lesbian, gay	15 (3.7%)
	Queer	5 (1.2%)
	Straight	328 (81.4%)
Race/Ethnicity (n=406)	African American/Black	20 (4.9%)
	Asian American	67 (16.3%)
	Bi/multiracial	8 (2%)

Characteristic		n (%)
	Latinx	12 (2.9%)
	Native American/Pacific Islander	9 (2.2%)
	White	290 (70.7%)
Highest Degree (n=408)	High school graduate/equivalency	26 (6.4%)
	Technical training	7 (1.7%)
	Some college	47 (11.5%)
	Two-year degree (Associate's)	34 (8.3%)
	Four-year degree (Bachelor's)	195 (47.9%)
	Graduate degree (Master's or PhD)	99 (24.2%)
Religious or Spiritual Beliefs (n=410)	I'm not religious or spiritual	60 (14.6%)
	I'm spiritual, but not religious	80 (19.5%)
	Atheist	33 (8.1%)
	Jewish	10 (2.4%)
	Muslim	6 (1.5%)
	Protestant	84 (20.5%)
	Catholic	62 (15.1%)
	Buddhist	4 (1%)
	Agnostic	24 (5.6%)
	Hindu	37 (9%)
	Other	10 (2.4%)
Relationship Status (n=410)	Dating	42 (10%)
	Single/widowed/divorced	117 (28.1%)
	Married/partnered	252 (60.6%)
Household Income (n=400)	Less than $10,000	24 (6%)
	$10,000 – $29,999	56 (14%)
	$30,000 – $49,999	95 (23.8%)
	$50,000 – $69,999	68 (17%)
	$70,000 – $89,999	63 (15.8%)
	$90,000 – $149,999	74 (18.5%)
	More than $150,000	20 (5%)
Alcohol Use During COVID (n=411)	Same	212 (51.6%)
	Less	100 (24.3%)
	More	99 (24.1%)
Physical Exercise During COVID (n=411)	Same	149 (36.3%)
	Less	131 (31.9%)
	More	131 (31.9%)
Working During COVID (n=411)	Same	186 (45.5%)
	Less	139 (34%)
	More	84 (20.5%)
Know Someone Who Tested Positive (n=412)	Yes	195 (47.3%)
	No	217 (52.7%)
Who Tested Positive (n=195)	Self	2 (1%)
	Parent	4 (2.1%)
	Friend	79 (40.5%)
	Close Relative	25 (12.8%)
	Distant Relative	28 (14.4%)
	Coworker	26 (13.3%)
	Other	31 (15.9%)
Restrictions Due to COVID (n=412)	None	18 (4.4%)
	Voluntary Quarantine	60 (14.6%)
	Mandated Quarantine	14 (3.4%)
	Stay at Home	231 (56.1%)
	Shelter in Place	89 (21.6%)
Practicing Social Distancing (n=411)	All the Time	301 (73.2%)
	Sometimes	96 (23.4%)
	Not at All	14 (3.4%)

Characteristic		n (%)
Wearing a Mask in Public (n=411)	All the Time	305 (74.2%)
	Sometimes	81 (19.7%)
	Not at All	25 (6.1%)
		Mean (SD)
Age (range: 18-78 years) (n= 412)		42.1 (13.59)
Number of People in Household (n= 408)		2.8 (1.43)
Physical Health (n= 412)		4.3 (1)
Spiritual/Religious Beliefs Importance[a] (n= 409)		3.6 (1.81)
Having Conversations About COVID[b] (n= 411)		3.2 (1.13)
Avoid Reading/Watching COVID info[c] (n= 410)		3.1 (1.71)
Avoid Thoughts/Feelings About COVID[c] (n= 410)		3.3 (1.5)
Fear[d] (n= 410)		5.8 (3.27)
Pre-COVID Stress[d] (n= 410)		4.8 (2.13)
During COVID[d] (n= 410)		6.9 (2.26)

[a] theoretical range=1-6; [b] theoretical range=1-5; [c] theoretical range=1-6; [d] theoretical range=1-10.

Stress Pre-COVID and During-COVID: Entire Sample and by Age Group

A paired samples *t*-test was conducted to compare pre-COVID stress levels with during-COVID stress levels. The increase in stress for the sample was over two points greater from pre- (M = 4.79) to during-COVID (M = 6.86), $t(408)$ = -18.35, $p<.001$. The effect size of this change was large (d = .94). Paired samples *t*-tests were also conducted to examine how stress levels changed by age group and where each group started with regard to their stress. Younger participants had moderate pre-COVID stress levels (M = 5.09) and experienced an almost two-point increase during-COVID (M = 7.01), $t(155)$ = -10.89, $p<.001$. Middle-aged participants also had a moderate stress level on average, albeit slightly lower than the younger participants (M = 4.70), and their during-COVID average (M = 6.49) was significantly higher, $t(177)$ = -12.63, $p<.001$. Lastly, older participants had the lowest stress level pre-COVID (M = 4.36), which increased exactly two points during-COVID (M = 6.36), $t(74)$ = -7.68, $p<.001$.

Stress During COVID: Bivariate Results

Pearson's product moment correlations indicated that greater avoidance of watching/reading information about COVID, decreased health status, increased conversations about COVID, increased fear, greater avoidance of thoughts and feelings, and increased income were statistically significant in relation to stress levels. The number of people in the household, the importance of religious beliefs, age, and educational status were not significant (see Table 2).

Table 2. *Correlations Between Continuous Variables* (n = 410)

	Stress	Convos	Fear	Thoughts	Read	Health	Age	House	Educ	Income
Stress	---									
Convos	.40[a]	---								
Fear	.59[a]	.43[a]	---							
Thoughts	.25[a]	.06	.32[a]	---						
Read	.19[a]	.02	.12[b]	.65[a]	---					
Health	-.16[b]	.04	-.04	-.04	.00	---				
Age	-.09	.02	-.09	-.21[a]	-.24[a]	-.12[b]	---			
House	.09	.10	.15[b]	.23[a]	.16[b]	.06	-.26[a]	---		
Educ	.07	.25[a]	.11[b]	.02	-.06	.13[b]	-.04	.08	---	
Income	.15[b]	.13[b]	.04	-.08	-.11	.18[a]	.11[b]	.12[b]	.21[a]	---
Beliefs	.03	.16[b]	.08	.08	.04	.12[b]	.12[b]	.15[b]	.12[b]	-.03

Notes. Stress=Level of stress during COVID; Convos=Conversations are about COVID; Fear=Degree of fear during COVID; Thoughts=Avoiding thoughts and feelings about COVID; Read=Avoiding reading and watching information about COVID; Health=Physical health status; Age=Chronological age; House=Number of people in household; Educ=Highest level of education; Income=Total household income; Beliefs=Importance of religious/spiritual beliefs; [a] p<.001; [b] p<.05

Two *t*-tests were conducted to determine the relationship between stress and gender (women/men) and if participants knew someone who tested positive. Compared to men (M = 6.20), women (M = 7.27) had higher levels of stress during-COVID, t(404) = -4.78, p<.001. Similarly, knowing someone with a positive test (M = 7.48) compared to not knowing anyone (M = 6.31) was associated with higher stress levels, t(408) = 5.41, p<.001.

ANOVAs were used to test for differences by the degree to which participants were working, drinking alcohol, and exercising along with the type of restrictions imposed in one's state, relationship status, race/ethnicity, the individual who tested positive for COVID, wearing a mask, and social distancing. Those who were working the same had less stress levels than those who were working less or more, but the latter two groups were not statistically different. Thus, those two groups were combined for the OLS regression. Those who were drinking more indicated greater stress than those who were drinking the same or less; however, the same and less groups were not statistically different and were combined for the regression. Those who were exercising less had greater stress levels than those who were exercising the same or more, but the latter two groups were not different. Again, they were combined for the regression. While those who were never wearing a mask and not practicing any social distancing were significantly different than those who were doing these things some or all of the time, the sample size for the two never groups was quite small (14 and 25, respectively); thus, meaningful conclusions could not be made with such small numbers. No differences in stress level were found by type of restrictions, the individual who tested positive for COVID, relationship status, and race/ethnicity (see Table 3).

Table 3. *Results of one-way ANOVA for Stress*

Variable	n	M (SD)	F(df)	p
Alcohol use[a]				
Same	211	6.51 (2.37)	10.82 (407)	<.001
Less	100	6.73 (2.00)		
More	99	7.75 (2.02)		
Exercise[b]				
Same	149	6.52 (2.24)	4.11 (407)	.02
Less	131	7.29 (2.29)		
More	130	6.82 (2.20)		
Working[c]				
Same	185	6.48 (2.34)	5.35 (405)	.01
Less	139	7.20 (2.91)		
More	84	7.21 (2.04)		
Practicing social distancing[d]				
Yes, all the time	299	6.87 (2.18)	4.49 (406)	.01
Sometimes	96	7.05 (2.35)		
No, not at all	14	5.14 (2.57)		
Wearing a mask[e]				
Yes, all the time	303	6.93 (2.18)	5.43 (406)	.01
Sometimes	81	7.02 (2.37)		
No, not at all	25	5.44 (2.50)		
Restrictions				
None	18	6.67 (2.50)	0.35 (405)	.84
Voluntary quarantine	59	7.08 (2.11)		
Mandated quarantine by medical professional	14	7.21 (2.40)		
Stay at home orders	230	6.86 (2.20)		
Shelter in place	89	6.72 (2.50)		
Person who tested positive				
Self	2	4.50 (2.12)	1.48 (187)	.19
Parent	4	9.00 (1.41)		
Friend	78	7.42 (2.00)		
Close Relative	25	7.52 (2.42)		
Distant Relative	28	7.64 (1.70)		
Coworker	26	7.08 (1.92)		
Other	31	7.77 (1.89)		
Race				
American Indian	9	7.33 (1.73)	1.48 (400)	.17
Asian American	67	6.36 (1.94)		
African American/Black	20	6.15 (2.58)		
Biracial/multiracial	6	7.33 (1.75)		
Chicano/Mexican American	5	7.00 (2.55)		
Puerto Rican	3	9.33 (1.15)		
White	288	6.97 (2.32)		
Another race	10	7.10 (2.23)		

Notes: [a]Significant differences between "more" and "less" and "same."
[b]Signficant differences between "less" and "same" and "more."
[c]Significant differences between "same" and "less" and "more."
[d]Significant differences between "no, not all" and "yes" and "sometimes."
[e]Significant differences between "no, not all" and "yes" and "sometimes."

Stress During COVID: Multivariate Results

The one-step OLS regression results for the sample explained 47% of the variance in stress during COVID, $F(11) = 30.58$, $p<.001$. Seven variables were significant in the model: having more conversations about COVID, using alcohol more, knowing someone who had tested positive, increased fear, greater avoidance of reading/watching information about COVID, decreased health status, and increased income. Table 4 has the complete results. Fear was the greatest contributing variable

in this model (β = .44), which can be an indicator of the relative importance of the variable to the model (Field, 2009). Multicollinearity was not evident in the analyses as VIF was below 10 and tolerance was above .25. Durbin Watson was 2.

Table 4. *Results of Regression on Stress: Full Sample* (*n* = 387)

Variable (Reference Group)	B	SE	β
Constant	3.40	.79	
Conversations about COVID	.33	.09	.17***
Alcohol use (Drinking more)	.29	.10	.11**
Work (Working same amount)	.14	.18	.03
Exercise (Exercising less)	.08	.19	.02
Know someone who tested positive for COVID (Yes)	-.39	.19	-.09*
Degree of fear during COVID	.40	.04	.44***
Avoiding thoughts & feelings about COVID	.01	.08	.92
Avoiding reading & watching information about COVID	.18	.07	.13**
Physical health status	-.40	.09	.17***
Gender (Men)	.28	.18	.06
Total household income.	.09	.03	.13*
R^2			.47

*p<.05 **p<.001 ***p<.0001.

To determine how these factors helped explain stress by age group, three regressions were completed by age—older, middle, and younger adults. The regression results for older participants explained the most variance (66%), $F(11) = 7.42$, *p*<.001. Three variables were significant: more use of alcohol, increased fear, and decreased health status. In this model, fear has a higher contribution to stress when compared to alcohol use and subjective ratings of health. The model for middle-aged participants explained 52% of the variance, $F(11) = 15.41$, *p*<.001. Four variables were significant: more conversations about COVID, increased fear, decreased health status, and increased income with fear having a highest contribution to stress. Lastly, the model for younger participants explained 37% of the variance, $F(11) = 9.91$, *p*<.001. Results indicated three variables were significant: more conversations about COVID, increased fear, and decreased health status with fear having the highest contribution to stress. Table 5 has the full results.

Table 5. *Factors Contributing to Stress During COVID*

Variable (Reference Group)	Young (*n*= 149)			Middle (*n*= 170)			Older (*n*= 68)		
	B	SE	β	B	SE	β	B	SE	β
Constant	4.83	1.35		2.34	1.22		1.51	1.86	
Conversations	.34	.15	.18*	.33	.14	.16*	.32	.21	.15
Alcohol use (More)	.34	.17	.14	.10	.15	.04	.79	.32	.22*
Work (Same amount)	-.01	.31	-.00	.21	.28	.05	.18	.40	.04
Exercise (Less)	-.20	.32	-.04	.29	.30	.06	.30	.45	.06
Positive test (Yes)	-.43	.32	-.10	-.35	.29	-.08	.20	.48	.04
Fear	.34	.09	.35***	.38	.06	.43***	.60	.10	.67***
Avoid thoughts	.01	.15	.01	.13	.12	.09	-.13	.19	-.08
Avoid reading	.19	.12	.15	.08	.10	.06	.31	.17	.20
Health	-.49	.16	-.21**	-.27	.13	-.12*	-.53	.23	-.20*
Gender (Men)	.36	.34	.08	.29	.28	.06	.26	.41	.05
Income	.05	.05	.07	.17	.04	.24***	-.01	.07	-.01
R^2			.37			.52			.66

Notes. Young =18-35 years, Middle= 36-55, Older=56+; Conversations = Conversations are about COVID. Positive test = Know someone who tested positive for COVID. Fear = Degree of fear during COVID. Avoid thoughts = Avoiding thoughts and feelings about COVID. Avoid reading = Avoiding reading and watching information about COVID. Health = Physical health status; Income = Total household income.
*p<.05 **p<.01 ***p<.001

Discussion

Results of this study add to the growing substantive literature regarding COVID, emotional reactions, and coping strategies, with a particular focus of the impact across the age spectrum. Fear was the biggest contributor in the regressions on stress in terms of effect size, followed by health status. These results also provide some interesting insight into specific variables that were only significant for certain age groups and not others. For example, income was significant only for middle-aged participants. Perhaps the impact is felt most strongly here, given a traditional work trajectory. Middle-aged people may be situated in the center of their moneymaking years, whereas older people are more likely retired and younger people may still be in the early stages (or even still in school).

Similarly, it was noteworthy that only younger people reported more stress when having more conversations about COVID. Perhaps having these discussions made the pandemic "more real" for them in that the messaging has been, at least in part, that young people need not worry too much about it since they would survive it. Moreover, young people may be experiencing the pandemic as their first experience of social instability (Vostanis & Bell, 2020), which could contribute to greater stress.

Relatedly, increased alcohol use was significant for older people; however, identifying which behavior is the problem and which is the reaction to a problem is complicated. That is, maybe the drinking was a function of the stress, but in turn, it was creating more stress. Further research into the role of alcohol use during the pandemic is warranted, particularly for older adults. Stay-at-home orders and social distancing could contribute to more at-home drinking that only provides temporary relief from fear, stress, or uncertainty. Assessing for changes in alcohol use and how it impacts stress levels are areas of focus for social workers across practice settings. Moreover, these unique age-specific findings may be ways to tailor questions during assessment. Future research should seek to investigate how these factors may be related to other behavioral changes.

While no conclusions can or should be drawn from the small sample of participants who were "never" practicing social distancing or wearing a mask, it was an intriguing finding that their stress levels were around two points lower (on a scale of 1 – 10 with higher scores indicating higher levels of stress) than those doing these things "always" or "sometimes." Perhaps their lower stress level may be an artifact of the small sample, but future research should interrogate this idea further. Perhaps these participants are generally not worried about contracting or spreading the virus or do not subscribe to the general guidelines, and in turn, their stress level is low as they are "operating as usual."

The results also speak to how different social work interventions and coping strategies may need to be modified by age group. While fear was the largest factor in elevated stress for all three age groups, understanding the source of that fear and how individuals address or avoid it is important for social workers. Tailoring methods to our clientele, particularly around COVID-related stress, can be an important way to support people during the pandemic. Future research should also look at what stressors exist in people's lives and how the pandemic exacerbated those areas. Participants in this study had moderately low to moderate levels of stress prior to COVID, but this increased by nearly two points across every age group. This change in stress level

represents a large and significant effect as stress was measured on a 10-point Likert scale with higher values indicating higher levels of stress; thus, stress increased by approximately 20%. Given the role of fear, future research should also investigate what behaviors may be related to fear. For example, risk-taking behaviors or even greater avoidance may be reactions to fear. Greater insight into the association of these factors will further inform social work practice.

Social workers have historically been part of efforts to address societal hardship and attend to deficits felt in certain populations (Berg-Weger & Schroepfer, 2020). Responding to COVID has called upon the skills and knowledge of the profession. Clinicians made swift shifts to telehealth and remote working to provide clients with ongoing support and therapy (Hirschi et al., 2022; Rosten et al., 2022), and social work educators did the same for their students as classes moved to online platforms. Social work students were also put in a position to rise to this challenge of learning during a pandemic, including innovation in field placements (e.g., Morris et al., 2020). Acknowledging and supporting this reflexivity is a teachable moment, given that it relates to what future practitioners will be called upon to do in their practice. More than ever, social work students need to be taught about best practices related to telehealth and how that influences practice in new ways, such as the support needed to be effective (Funk, 2021; Hirschi et al., 2022) and the necessity of professional flexibility (Rosten et al., 2022). Relatedly, students will need to be taught about the impact of COVID, how to provide education about it, and the ways in which clients will need different kinds of support. Part of this education should include emphasizing the specific needs of clients along the age spectrum and how COVID has differentially impacted clients of different age groups, as well as student wellness and strategies that support self-care, which is crucial to social work practice (Reay, 2021).

Limitations

The findings of this study should be considered against several limitations. First, the use of convenience sampling and the demographics of the study sample, which consisted of individuals who are generally comfortable with the use of technology, generally healthy, predominately White, and highly educated, limit the extent to which the study results can be generalized. Future research should continue to sample the general population to explore the effects of COVID and should be purposive in recruiting individuals from different backgrounds, health status, including the mental health status of individuals, and varying identities. Second, the authors constructed the measurement of the variables of interest and relied on self-report. For example, participants were asked to retroactively rate their stress levels prior to the onset of COVID and then assess their current stress levels during COVID. Such retroactive assessment can contribute to the presence of recall bias in the study which can underestimate or overestimate the true effect or association found (Althubaiti, 2016). Despite the potential presence of recall bias, the self-reports by the participants are *their* narratives and lived experiences in relation to how they perceive themselves currently and in the past. Additional research is needed to determine evidence of validity and reliability for items developed for this survey beyond face validity. In addition, future studies should consider both subjective and objective outcome measures, such as collecting cortisol levels for measuring stress, and should include additional variables reflecting protective factors such as social support, and measures of mental health. Finally, as this study was exploratory in nature, there is a risk of Type

1 error in running many tests to explore relationships, yet we decided to include variables based on previous research, specifically, past pandemic research.

Conclusion

COVID has and continues to affect the world by interrupting education and employment, limiting social contact and opportunities to socialize, and playing the role of a silent and deadly threat that can be contracted unknowingly with unlimited possibilities of impact on one's health and life. One result of this public health crisis has been an increase in self-reported levels of stress among individuals and across age groups. While individuals in this study all reported increased stress from pre- to during-COVID, the highest level of stress was reported among those in the young adult group, followed by the middle-aged adults, and then the older adult group. A strengthening of coping strategies as people get older may account for these age-related differences (Pearman et al., 2020). A common factor among the three age groups was the contribution of increased fear and decreased health status in explaining levels of stress during-COVID. Such findings point to the need for clear messaging and leadership in preparing, navigating, and coping with public health crises with particular attention to messages and strategies to calm feelings of fear and ease stress and anxiety in the face of uncertainty. Social workers play a key role in managing the impact of the pandemic by providing clients with therapeutic services, psychoeducation, and case management. Expanding the knowledge base on how COVID impacts the emotions of individuals will allow social workers to ask other assessment questions and tailor interventions to client needs. Moreover, community efforts aimed at vulnerable populations are essential (O'Leary & Tsui, 2020) as this pandemic has further exposed systemic inequalities (Abram & Dettlaff, 2020; Cross & Gonzalez Benson, 2021).

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Author note: Jill M. Chonody, School of Social Work, Boise State University, Boise, ID 83725. Email: jillchonody@boisestate.edu