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The COVID-19 Pandemic's Impact on Worry and Medical Disruptions Reported by Individuals with Chromosome 22q11.2 Copy Number Variants and Their Caregivers

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Keywords

Copy number variations (CNVs); neurodevelopmental psychiatric disorders (NPDs); 22q11.2 deletion syndrome; 22q11.2 duplication syndrome; COVID-19

Abstract

Background: The world has suffered immeasurably during the COVID-19 pandemic. Increased distress and mental and medical health concerns are collateral consequences to the disease itself. The G2MH (Genes to Mental Health) Network consortium sought to understand how individuals affected the rare copy number variations (CNVs) of 22q11.2 deletion and duplication syndrome, associated with neurodevelopmental/neuropsychiatric conditions, were coping. The article focuses on worry and disruptions in medical care caused by the pandemic. **Methods:** The UPenn COVID-19 Stressor List and care disruptions questions were circulated by 22 advocacy groups in English and 11 other languages. **Results:** 512 people from 23 countries completed the survey; most were caregivers of affected individuals. Worry about family members acquiring COVID-19 had the highest average endorsed worry whilst currently having COVID-19 had the lowest rated worry. Total COVID-19 worries were higher in individuals completing the survey towards the end of the study (later pandemic wave). 36% (n=186) of the sample reported a significant effect on health due to care interruption during the pandemic. 44% of individuals (n=111) receiving care for their genetic syndrome in a hospital setting reported delaying appointments due to COVID-19 fears; 12% (n=59) of the sample reported disruptions to treatments, of those reporting no current disruptions, 59% (n=269) worried about future disruptions if the pandemic continued. Higher levels of care disruptions were related to higher COVID-19 worries (*p*s<.005). Minimal differences by respondent type or CNV type emerged. **Conclusions:** Widespread medical care disruptions and pandemic-related worries were reported by individuals with 22q11.2 syndrome and their family members. Reported worries was broadly consistent with research results from prior reports in the general population. The long-term effects of COVID-19 worries, interruptions to care, and hospital avoidance require further study.

Introduction

The global COVID-19 pandemic has had major reverberating effects on mental and physical health around the world and may have disproportionately affected populations requiring substantial medical and psychiatric care. One such group includes individuals affected by chromosomal microdeletions or microduplications, pathogenic copy number variations associated *a priori* with increased risk for neurodevelopmental and neuropsychiatric disorders (CNV-NPD) (Kirov, 2015; Malhotra and Sebat, 2012; Martin *et al.*, 2020; Merikangas *et al.*, 2009), such as the chromosome 22q11.2 deletion and duplication syndromes. 22q11.2 deletion and duplication syndromes are thought to result from non-homologous meiotic recombination events occurring in approximately 1 in every 1,000 fetuses and 1/2148 livebirths, with the deletion being more common than the duplication (Blagojevic *et al.*, 2021). Most deletions are *de novo* whereas duplications are often familial. Individuals with either condition may present with any combination of congenital anomalies including but not limited to congenital heart disease and palatal differences; endocrine abnormalities, T cell lymphopenia, feeding difficulty, GERD, FTT, constipation chronic otitis media, hearing loss, sleep apnea, respiratory distress, asthma; ophthalmologic differences; scoliosis, C-spine differences, craniosynostosis; microcephaly, macrocephaly, dysmorphic craniofacial features; hypotonia, seizures, migraines, speech delay, expressive speech and language delay, developmental delay, gross motor delay. The chromosome 22q11.2 syndromes also have an elevated risk of developmental and behavioral differences such as attention deficit hyperactivity disorder (ADHD), anxiety, and psychotic disorders (Bassett *et al.*, 2017; Brunet *et al.*, 2008; Hiroi *et al.*, 2013; McDonald-McGinn *et al.*, 2015; Tang *et al.*, 2014). Despite the phenotypic overlap, 22q11.2 deletion syndrome is typically associated with higher medical burden and intellectual disability than 22q11.2 duplication (Olsen *et al.*, 2018), although, the syndrome is known to be quite heterogeneous across both the deletion and duplication.

Individuals affected with a CNV-NPD heavily rely on developmental services and medical and mental health care (Fung *et al.*, 2015); the multimorbidity often causes a great burden in these individuals and their caregivers (Chawner *et al.*, 2020). The stress and care disruptions resulting from the pandemic will likely have long term effects, making individuals with 22q11.2 syndrome more susceptible to neurodevelopmental or neuropsychiatric disorders. Research quantifying pandemic related burden and distress will be helpful for longitudinal work that examines developmental pathways associated with genetic vulnerabilities. Thus, the goal of this study was to help better understand the overall impact of the global pandemic on those affected by 22q11.2 duplication and deletion syndrome and their caregivers.

The prevalence of mental health disorders in the general population have increased significantly during the pandemic (Salari *et al.*, 2020; Santabárbara *et al.*, 2021) and is likely higher for those individuals already at risk for NPDs. Recent work has demonstrated that other groups with neurodevelopmental disorders, such as individuals with Prader-Willi syndrome, a condition associated with obesity and cognitive deficits (Wieting *et al.*, 2021), and Down syndrome (Villani *et al.*, 2020) have elevated mental health symptoms during the pandemic. Significant increase in parental stress has also been reported in the general population (Fontanesi *et al.*, 2020) and in parents of children with autism spectrum disorder or ADHD (Pecor *et al.*, 2021) and developmental disorders (Chan and Fung, 2021). Parents of children with CNV-NPDs might be especially vulnerable as pre-pandemic reports document increased levels of stress and caretaking burden in this population (Cohen *et al.*, 2017). Little work has been done to specifically understand the effects of the pandemic on stakeholders affected by chromosome 22q11.2 copy number variants, although it may be expected they are vulnerable to increased distress due to greater physical and mental health care and rehabilitative service needs.

Given the high medical burden in this community, it is also important to examine the impact of medical care disruptions caused by the pandemic in stakeholders affected by chromosome 22q11.2 deletion and duplication syndromes. Since the diagnosis and treatment of COVID-19 was the primary focus of the medical community during the pandemic, patients seeking medical attention for other medical issues often felt disregarded (e.g., Chang *et al.*, 2021; Schippers, 2020). In a recent report, individuals with rare and undiagnosed conditions reported that the health care challenges they faced as a result of the pandemic were so stressful that some considered forgoing treatment altogether (Halley *et al.*, 2021). The magnitude of care disruptions on the CNV-NPD community is unknown, but beyond the disruption of treatment itself, such disruptions likely added to the distress experienced by these individuals and their caretakers. Understanding the consequences of pandemic-related medical disruptions for those with CNV-NPDs will also inform strategies to prevent similar future outcomes and strategies to regain trust and build resilience into the health care systems for future challenges.

Targeted research is needed to fully understand how the pandemic has impacted individuals affected by 22q11.2 syndrome and their families. Thus, the current study, an initiative of the Genes to Mental Health Network (G2MH) Network, sought to examine perspectives on the impact of the COVID-19 pandemic from a large international cohort of stakeholders affected by 22q11.2

syndromes. It was hypothesized that individuals affected by these with an elevated risk for NPDs and their caretakers would report higher levels of COVID-19 worries compared to recent reports in the general population (Barzilay *et al.*, 2020; Gur *et al.*, 2020). Given the higher medical and psychological burden associated with 22q11.2 deletion syndrome compared to 22q11.2 duplication (Olsen *et al.*, 2018), we hypothesized that pandemic distress and associated medical care disruptions would be higher in the 22q11.2 deletion group compared to the 22q11.2 duplication group.

Methods

Procedures

The study was initiated by a Sub-Committee of the G2MH, a consortium of researchers across 3 continents focusing on genetics of CNV-NPD etiologies. Participants were asked to complete a survey that asked about their worries associated with several COVID-19 stressors and related outcomes, as well as items about their interest and participation in genetic research which will be reported elsewhere (Crowley et al., In Preparation). The survey was first developed in English; six additional language versions were created using an artificial language translator, DeepL(“DeepL Translator”, n.d.) and verified by native language speakers. Surveys were distributed using Redcap electronic data capture hosted at Children’s Hospital of Philadelphia (Harris *et al.*, 2009), to individuals affected by CNV-NPDs and their families between 05/2020-02/2021. Families were targeted through Clinical Centers of Excellence, charities and parent networks. The study was deemed exempt from the Institutional Review Board at the Children’s Hospital of Philadelphia.

Participants

A total of 663 participants completed the COVID-19 survey (52 affected individuals, 543 parents of affected individuals, 38 siblings or non-parent caretakers, 30 did not disclose a specific relationship). However, the majority of participants affected with 22q11.2 deletion (n=443) and 22q11.2 duplication (n=69) syndrome being the most represented. As such, the current set of analyses focuses on the 22q11.2 syndromes. Of this group, participants were primarily female (n=401, 78%; 38 did not report sex). The mean age of the sample was 44.76 years (SD=10.74, range=18-76). Individuals from 23 different countries completed the scale (see Supplemental Figure 1). Most surveys were completed in English (n=443, 87%); the additional language translations were distributed between 11/2020-02/2021. Close to half of participants lived in suburban areas (n=234, 46%), with an additional 136 reporting to be urban dwellers, and 102 residing in rural or farm areas.

Online Survey

Participants completed the COVID-19 Stressor List (Barzilay *et al.*, 2020), a six item scale assessing worries about self and family acquiring COVID-19, infecting other's with COVID-19, currently having COVID-19, dying from COVID-19, and the financial burden from the pandemic (scale α=.83) with a 5-item Likert scale (1-not at all through 5-a great deal). A total worry score was used by summing endorsed worries across all stressor items. Participants also reported on medical care interruptions: what is the effect of pandemic-related medical care disruptions on health, what areas of care have you experienced care disruptions (i.e., visit cancelations and postponements), did you avoid of hospital-related medical care for fear of acquiring COVID-19, and did you experience and/or have future concerns about medication/treatment disruption).

Data Analyses Preparation and Plan

All analyses focused on 22q11.2 duplication/deletion syndrome. For respondent type, those reporting sibling or non-parent caretaker were combined with those who did not disclose relationship status. A region variable was also created by grouping countries by continent or region (see Supplemental Figure 1). An “other” region group was created for the countries (i.e., Thailand and Israel) that did not fit into a region grouping (n=3) and for those not reporting country (n=35). Lastly, a timing variable was created to examine differences in survey responses across the duration of the study: Early (first wave; 05/2020; n=193), Mid (second wave; 06/2020-9/2020, n=216), Late (third wave; 9/2020-02/2021, n =103).

To examine worries, an ANCOVA was conducted with total COVID-19 worry as a dependent variable and respondent type (affected, parent/primary caregiver, other) and CNV type (22q11.2 deletion, 22q11.2 duplication) as between subjects’ variables, controlling for region, dwelling type, and timing; only main effects were examined. A series of logistic regressions were used to examine differences in binary responses across medical disruption items by the above list of covariates, entered simultaneously. To determine if the medical care disruptions were related to COVID-19 worries, a series of ANCOVAs were conducted with total COVID-19 worry as a dependent variable and each of the binary medical care variables (entered in separate models) with the abovementioned covariates. See supplemental material for tables with main statistical results. Models were also ran with age as a covariate, but no significant effects emerged; given that 40 individuals did not complete some or all demographic items (i.e., sex, age, country, dwelling type) age was not used in main analyses. Subjects with missing data were included as a “not reported” group within the given variable.

Results

COVID-19 Worries

Figure 1 illustrates the mean level of distress across the six COVID-19 worry items. The average of the total distress score across all participants was 16.78 (SD=5.36). Neither CNV type nor respondent type were related to total COVID-19 worry (*p*s>.23). There was a significant effect of timing (wave of the pandemic), *F*(1,505)=15.72, p<.001. Respondents in the third wave reported more worries (M=18.60, SD=5.40) than those in the first (M=15.97, SD=5.14; p<.003) and second wave (M=17.02, SD=5.43; p=.04). Respondents in the first and second wave did not differ from the other, p=0.17. No other variables were related to total COVID-19 worry (p>0.09). When the model was restricted to only affect individuals and their parents, there was a tendency for parents to report higher levels of total worry than affected individuals, *F*(1,472)=13.34, p=.07.

Impact of Medical Care Interruptions caused by the Pandemic on Health

One-third of participants (36%, n=186) reported that pandemic-related care interruptions had a significant effect on their health. Of these, the great majority (95%, n=176) endorsed detrimental effects and 10 (5%) reported life-threatening effects. Report of interruption on health was predicted by respondent group (Wald χ^2(2)=10.01, p=0.01). Parents and affected individuals did not differ in reports on effects of treatment disruptions (p=0.16), but parents were less likely to report significant health effects than the other/not-reported group (Odds Ratio (OR)=2.96,95%CI=1.43-6.12,p<0.001). Participants were also asked to report on the type of medical care reported as being disrupted during the pandemic (see Supplemental Figure 2). The most frequently cancelled services were rehabilitation (20% reporting cancellation in this area) and the most reported postponed or delayed services were the specialists or the general practitioners who treats the rare CNV syndrome (44% reporting delay in this area) and rehabilitation services (45% reporting delay). Those reporting health effects from medical disruptions reported higher levels of total COVID-19 worry (M=17.93, SD=5.31) compared with those reporting no health effects from medical disruptions (M=16.38, SD=5.36), F(1,505)=9.82, p=.002 (see Figure 2a).

Avoidance of Hospitals for Care during the Pandemic

A total of 252 individuals (49%) reported receiving hospital-based primary care for their rare genetic disorder under usual circumstances. Of these, 111 (44%) reported avoiding hospital care during this period due to fear of acquiring COVID-19. There was a significant main effect of timing (study/pandemic wave) Wald $\chi^2(2)=6.59$, $p=0.04$. Those that completed the survey in the second wave reported more avoidance than those from the first wave (OR)=1.82,95%CI=1.01-3.27,$p=0.05$; there were no differences between the first and third waves (p=.42). Those reporting care avoidance had significantly higher total COVID-19 worry (M=18.15, SD=5.35) than those reporting no care avoidance (M=16.45, SD=4.50), F(1,245)=7.85, p=.005 (see Figure 2b).

Concerns Regarding Availability of Treatments / Medications during Pandemic

The majority of participants (n=453, 89%) reported no pandemic-related disruptions to the availability of medication and/or treatment at the time of the survey. A total of 17 (3%) participants reported using an alternative medication/treatment, 36 (7%) reported temporarily stopping medication/treatment, and 6 (1%) reported completely stopping medication/treatment. Of those reporting no treatment disruption, over half (n=269, 59%) reported fear that the continuing pandemic would result in medication or treatment interruptions. Dwelling type was related to fear of future medication/treatment disruption, Wald $\chi^2(3)=17.71$, $p<0.001$. Those living in rural/farm areas were more likely to report a fear of future medication/treatment disruption than those living in urban areas, OD=3.09,95%CI=1.76-5.43, $p<0.001$. Urban residence did not differ from the other dwelling types, *p*s>.78. Those reporting higher fear of disruption also reported higher COVID-19 worry (M=17.24, SD=5.59) compared to those not endorsing a fear of future disruption (M=15.79, SD=4.84; see Figure 2c), $F(1, 446)=9.78$, $p=0.002$.

Discussion

This international study aimed to better understand the impact of the global pandemic on those affected by 22q11.2 deletion and duplication syndromes and their caregivers. The findings revealed that COVID-19 related worry in the cohort was broadly consistent with other comparable published reports in the general population, both in total COVID-19 worries and in terms of what items received the highest and lowest mean worry ratings. (Barzilay *et al.*, 2020; Gur *et al.*, 2020; Kornfield *et al.*, 2021). The current findings report widespread disruptions of medical care in individuals affected with a 22q11.2 syndrome across 23 countries, which was related to their level of COVID-19 worries. Minimal differences emerged with respondent type; no differences between 22q11.2 duplication and deletion emerged.

Pandemic-related worries were found to be higher for those stakeholders who responded later in the study as the pandemic continued across the globe and parents tended to have higher worries than those affected with 22q11.2 syndromes. Contrary to our prediction, the current cohort did not demonstrate increased COVID-19-related worry compared to population cohorts in Israel and the USA (Barzilay *et al.*, 2020; Gur *et al.*, 2020; Kornfield *et al.*, 2021). For instance, the average total COVID-19 worries for was 16.341(SD=5.16) in 833 perinatal individuals in the United States (Kornfield *et al.*, 2021) and 16.78 (SD=5.36) in the current cohort. Even the items that received the highest and lowest average worry were similar across cohorts; highest average worry was worry about families acquiring COVID-19 and lowest average worry was about currently having COVID-19 themselves (Barzilay *et al.*, 2020; Gur *et al.*, 2020). These similarities may reflect that the level of worry and anxieties experienced during the pandemic are fairly global, equally affecting cohorts enriched for healthcare workers (Barzilay *et al.*, 2020), perinatal women (Gur *et al.*, 2020; Kornfield *et al.*, 2021), and those individuals with increased NPD and medical burdens, such as the current cohort. Alternatively, the similarities in worries may only be limited to those assessed in the current set of studies; differences in worries across cohorts might appear in responses to pandemic-related stressors that were not assessed. Moreover, despite worries about pandemic stressors being similar, the result anxiety and impacts on life may be different across group (increased anxiety, more impact on clinical care). Although concurrent anxiety and depression were not assessed in the current study, prior reports show a strong link between pandemic distress and depression and anxiety disorders (Barzilay *et al.*, 2020; Gur *et al.*, 2020), suggesting that those affected individuals and their caretakers endorsing the most worries might be at increased vulnerability for psychiatric disorders.

Our results also highlight the significant medical care disruptions experienced during the pandemic by individuals affected by a 22q11.2 syndrome, a population with high rates of NPDs and medical needs. In fact, 36% of individuals reported medical disruptions had significant negative effects on their health. This is especially noteworthy considering a recent report showing that individuals and caretakers with rare and undiagnosed disease reported exacerbations in medical symptoms during the pandemic (Halley *et al.*, 2021), and thereby actually had an increased need for medical attention. Over half of the sample expressed fear of medication and treatment disruption if the pandemic continued. Moreover, for each of the pandemic-related medical care items presented in the current report, all were related to respondents' report of overall COVID-19 distress. Much of extant work that has examined the frequency of canceled or postponed medical care in other populations has not examined the effects of such disruptions on health or stress. In a population of urology patients in Spain, 45% of medical appointments were canceled without being rescheduled in the first 4 weeks of a national lockdown (Luciani *et al.*, 2020); in a cohort of cardiovascular patients in the US, there was a 33% decrease in outpatient visits in the Spring and Early summer of 2020 (Wosik *et al.*, 2021). Of the studies that did assess stress or health impacts, a survey with chronic obstructive pulmonary disease patients in Spain conducted in May 2020, showed that 90% of patients reported some level of cancelation or postponement of care; however, around 80% of the sample reported their lung health or general health was as good as it was before the pandemic if not better (Pleguezuelos *et al.*, 2020), suggesting minimal effects on health due to the medical disruptions. Alternatively, in a sample of Type 1 and Type 2 diabetes patients in the United States assessed in April 2020 (Fisher *et al.*, 2020), 40% reported their diabetes care appointments were postponed or canceled and at least half of the sample reported increased diabetes distress and negative pandemic effects on diabetes management. Thus, although the level of medical disruptions appears to be similar in the current cohort as other patient studies, the impact of such disruptions on perceived health may be heightened in the current cohort. Moreover, when considering an established link between COVID-19 distress and risk for poor mental health outcomes from other studies (Barzilay *et al.*, 2020; Gur *et al.*, 2020), the results suggest that stakeholders in this rare CNV study may require additional medical as well as psychiatric resources during this and future pandemics.

There are limitations that should be considered when interpreting the current results. Respondents who were mothers of children 22q11.2 CNVs from the United States predominated in the sample. Thus, limited inferences can be made regarding differences across respondent type (e.g., affected individual vs caretaker) and region. The timing variable in the current study was a blunt representation of time, split into three waves; through the duration of the study the effects of COVID-19 on the community and medical services likely fluctuated in ways the current timing variables does not capture. This is especially true considering the timing of the pandemic effects and experiences differed across countries and regions. Moreover, several of the survey translations were distributed later in the study timeline, confounding the effects of the wave of the pandemic and international region. Thus, all timing differences in the current set of analyses should be interpreted with caution. Additionally, given that the study used online self-report data, individuals without digital access or skills were likely excluded from the study. Lastly, it cannot be determined whether the current results can be attributed to the presence of a CNV-NPD or are the result of having an NPD more broadly.

In conclusion, the effects of the COVID-19 pandemic for individuals affected by 22q11.2 CNVs and their caretakers were broadly consistent with comparable research results obtained from other general populations. Long term impact from COVID-19 distress, interruptions to care, and hospital avoidance require further study, but suggest that the emotional and psychological needs of patients and their families should be considered in routine, non-psychiatric medical appointments. These data also provide important information for the medical community supporting patients with CNV-NPDs to help improve implementation of medical follow-up and treatments during broadly stressful times, such as the COVID-19 pandemic. Lastly, understanding general distress, both in terms of pandemic-related and treatment-related concerns, will provide insight to longitudinal research in 22q11.2 syndrome cohorts to understand how well-being during the pandemic may impact long term psychological and health outcomes.

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Data availability statement: The data are available upon request. Please contact the corresponding author.

Figure 1.

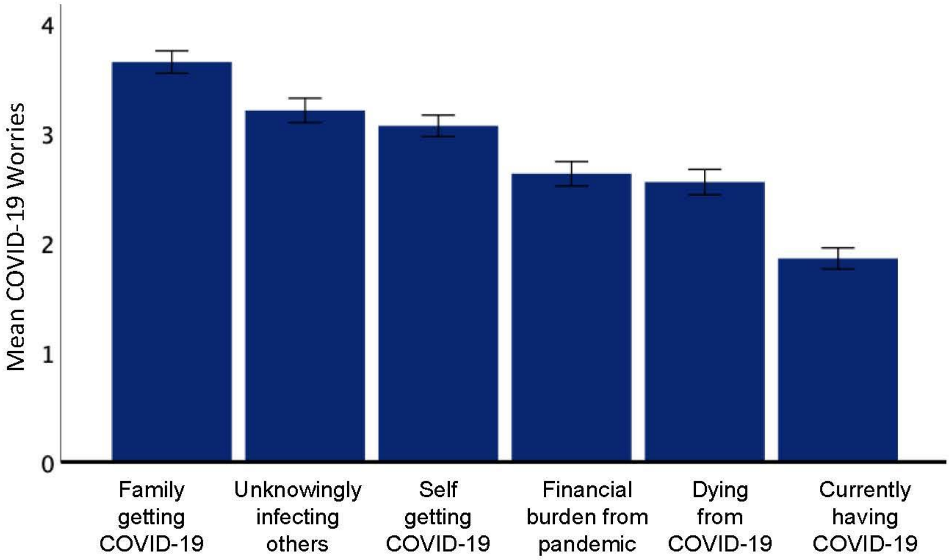
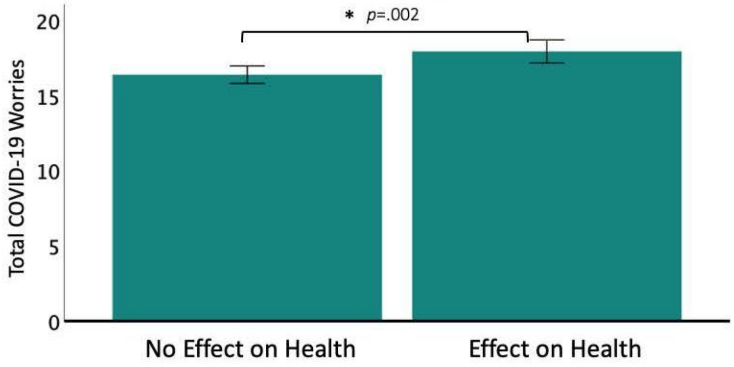


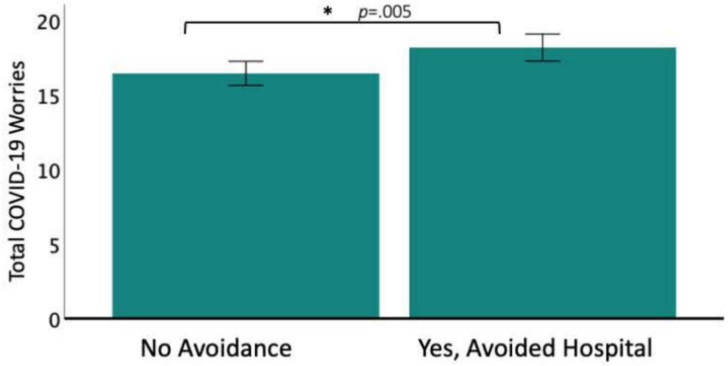
Figure 1: Mean endorsed worry across each of the six COVID-19 worry items. Items are plotted from highest average endorsed worry to lowest endorsed worry. A total COVID-19 worry score was created by summing across each of the six items. Error bars represent 95% Confidence Intervals.

Figure 2.

A. Did Pandemic Related Medical Disruptions Effect Your Health?



B. Did You Avoid Care at the Hospital Because of Fear of Getting COVID-19?



C. If the Pandemic Continues, Do you Fear Your Medications or Treatments will be Negatively Affected?

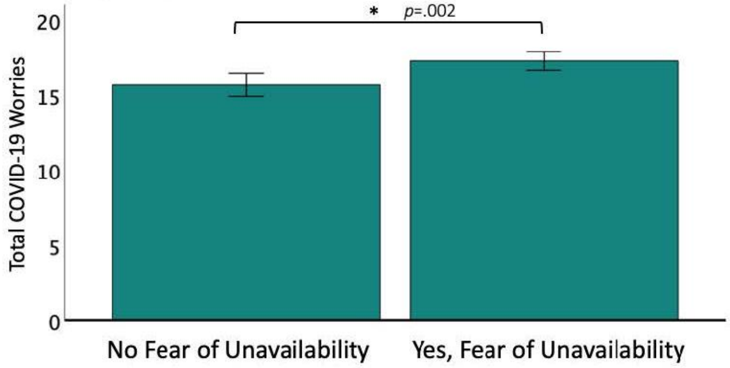


Figure 2: Panel A shows that those reporting pandemic disruptions had a significant effect on health reported more total COVID-19 worries than those reporting the disruptions had no effect on health (A). Panel B shows that of those receiving hospital-based primary care, those reporting avoidance of in-person appointments due to COVID-19 fears reported more total COVID-19 worries than those who did not avoid appointments (B). Panel C shows that those reporting a fear of future pandemic-related treatment disruptions had higher total COVID-19 worries than those reporting no fear of medical treatment disruption (C). Error bars represent 95% Confidence Intervals.

Supplemental Materials

Figure S1: Participants by Country and Region

Frequency by Country

		Frequency	Percent
Valid	Argentina	3	.6
	Australia	21	4.1
	Austria	1	.2
	Belgium	17	3.3
	Canada	21	4.1
	Chile	32	6.3
	France	7	1.4
	Germany	5	1.0
	Ireland	19	3.7
	Israel	2	.4
	Italy	4	.8
	Mexico	1	.2
	New Zealand	5	1.0
	Portugal	2	.4
	Romania	1	.2
	Serbia	1	.2
	Spain	10	2.0
	Thailand	1	.2
	Ukraine	1	.2
	United Kingdom	37	7.2
	United States of America	285	55.7
	Uruguay	1	.2
	Not Reported/Skipped	35	6.8
	Total	512	100.0

Region Grouping

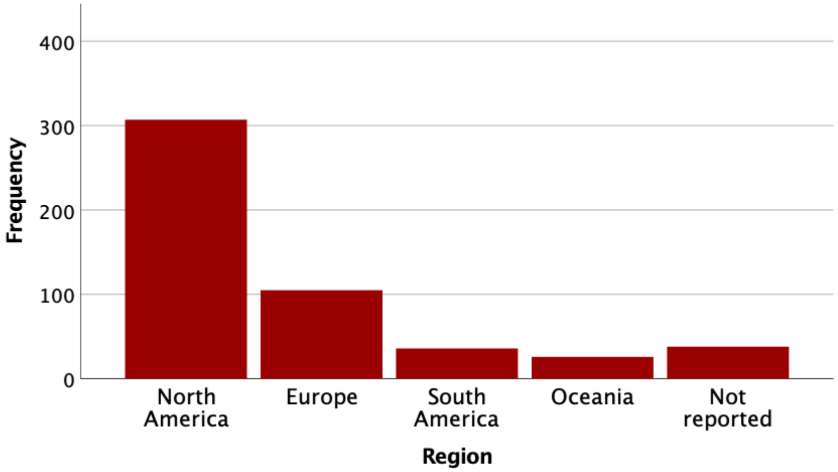
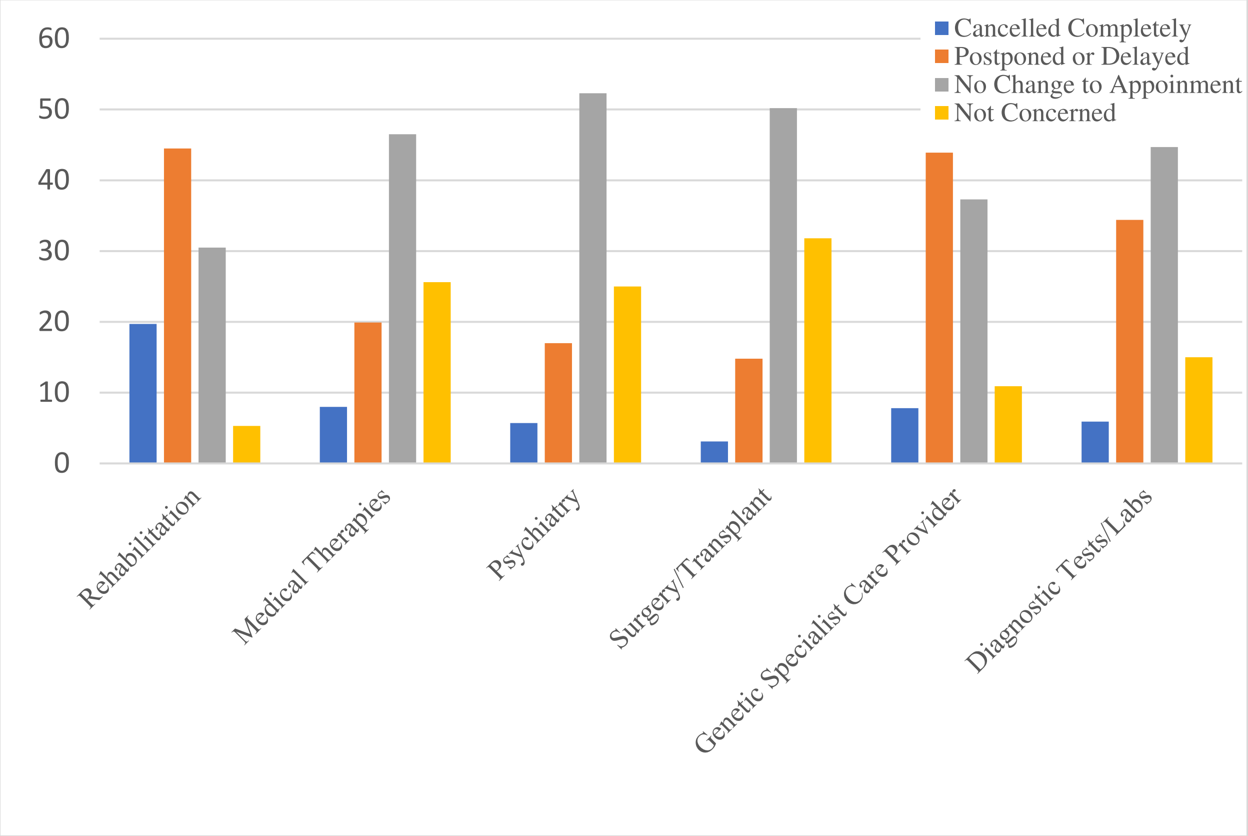
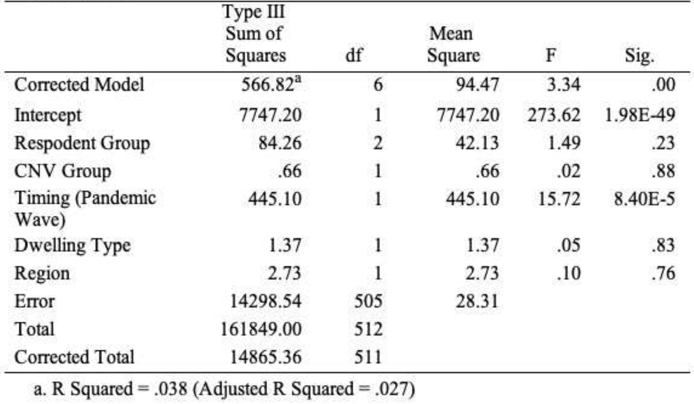


Figure S.2. Appointment Cancelations or Postponements by Type of Medical Care



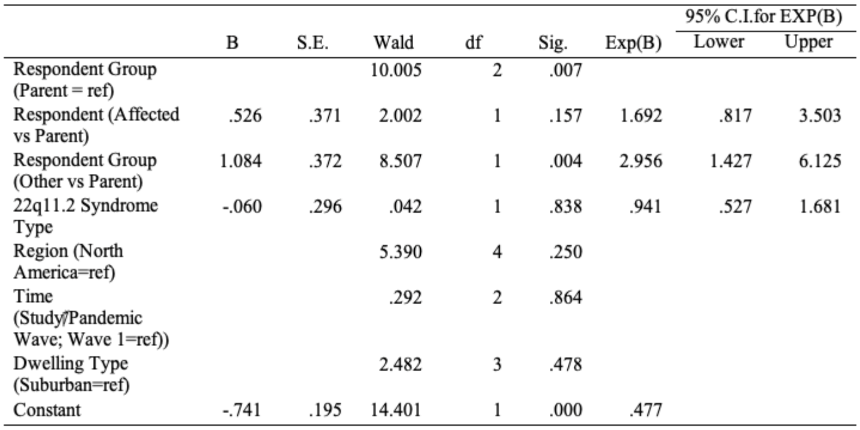
Supplemental Table 1. Predicting Total COVID-19 Distress



	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	566.82^a	6	94.47	3.34	.00
Intercept	7747.20	1	7747.20	273.62	1.98E-49
Respodent Group	84.26	2	42.13	1.49	.23
CNV Group	.66	1	.66	.02	.88
Timing (Pandemic Wave)	445.10	1	445.10	15.72	8.40E-5
Dwelling Type	1.37	1	1.37	.05	.83
Region	2.73	1	2.73	.10	.76
Error	14298.54	505	28.31		
Total	161849.00	512			
Corrected Total	14865.36	511			

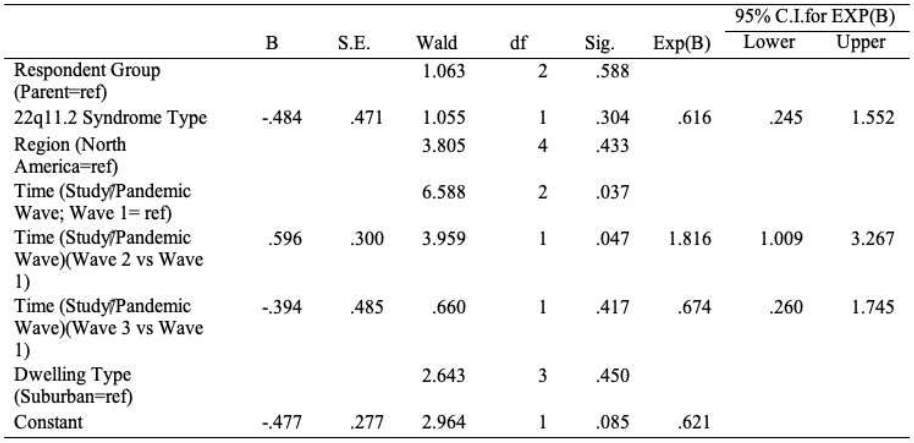
a. R Squared = .038 (Adjusted R Squared = .027)

Supplemental Table 2. Predicting Medical Care Disruptions on Health



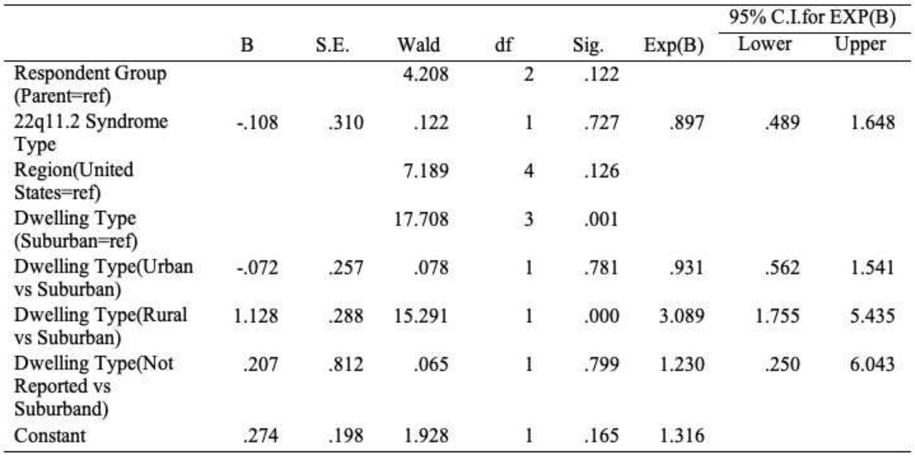
	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Respondent Group (Parent = ref)			10.005	2	.007			
Respondent (Affected vs Parent)	.526	.371	2.002	1	.157	1.692	.817	3.503
Respondent Group (Other vs Parent)	1.084	.372	8.507	1	.004	2.956	1.427	6.125
22q11.2 Syndrome Type	-.060	.296	.042	1	.838	.941	.527	1.681
Region (North America=ref)			5.390	4	.250			
Time (Study/Pandemic Wave; Wave 1=ref))			.292	2	.864			
Dwelling Type (Suburban=ref)			2.482	3	.478			
Constant	-.741	.195	14.401	1	.000	.477		

Supplemental Table 3. Predicting Avoidance of Hospital Due to Fears of Getting COVID-19



	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Respondent Group (Parent=ref)			1.063	2	.588			
22q11.2 Syndrome Type	-.484	.471	1.055	1	.304	.616	.245	1.552
Region (North America=ref)			3.805	4	.433			
Time (Study/Pandemic Wave; Wave 1= ref)			6.588	2	.037			
Time (Study/Pandemic Wave)(Wave 2 vs Wave 1)	.596	.300	3.959	1	.047	1.816	1.009	3.267
Time (Study/Pandemic Wave)(Wave 3 vs Wave 1)	-.394	.485	.660	1	.417	.674	.260	1.745
Dwelling Type (Suburban=ref)			2.643	3	.450			
Constant	-.477	.277	2.964	1	.085	.621		

Supplemental Table 4. Predicting Fear of Treatment Disruptions if Pandemic Continues



	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Respondent Group (Parent=ref)			4.208	2	.122			
22q11.2 Syndrome Type	-.108	.310	.122	1	.727	.897	.489	1.648
Region(United States=ref)			7.189	4	.126			
Dwelling Type (Suburban=ref)			17.708	3	.001			
Dwelling Type(Urban vs Suburban)	-.072	.257	.078	1	.781	.931	.562	1.541
Dwelling Type(Rural vs Suburban)	1.128	.288	15.291	1	.000	3.089	1.755	5.435
Dwelling Type(Not Reported vs Suburband)	.207	.812	.065	1	.799	1.230	.250	6.043
Constant	.274	.198	1.928	1	.165	1.316		