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Decline of psychological health following COVID-19 pandemic designation: A descriptive study

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Decline of psychological health following COVID-19 pandemic designation: A descriptive study

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Abstract

Background: Coronavirus disease-19 (COVID-19) was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020 and currently in the state of Texas, USA, there are more than 675,000 cases with 14,000 deaths. Many of these implementations can increase sedentary lifestyles. which can lead to the development of chronic diseases, obesity development among the population and overall cause serious threats to people's physical health and lives. Individuals with pre-existing conditions are at increased risk of contracting COVID and thus may have higher levels of stress.

Objective: Explore the relationship between individual's level of physical activity and status of mental health, on individuals with health conditions versus those with none, before and after COVID-19 was declared a pandemic for the citizens of Texas.

Methods: An electronic survey was disseminated throughout various regions of Texas. 157 respondents were asked questions about their demographics, time spent on daily physical activities, and daily mental health status before and after COVID-19 was declared a pandemic. Frequency distribution and descriptive statistics was performed.

Results: 61% of participants reported having 1 or more health conditions with 13.6% of the respondents having 3+ medical conditions. These same individuals reported a 10% increase in 0-30 mins of daily activity after the pandemic declaration compared to a 10% increase in healthy individuals. There was a 2-fold increase in the number of participants reporting more frequent feelings of nervousness, worrying too much, having trouble relaxing and feeling afraid something awful might happen after the pandemic. More specifically, individuals with pre-existing medical conditions reported on average a 10% higher incidence of feelings of stress, anxiety and sadness compared to healthy counterparts after the pandemic declaration.

Conclusions: Stressful life conditions and having a chronic disease are risk factors that can affect mental health and reduce the ability of proper daily functioning. Therefore, when implementing pandemic protocols, municipalities should consider providing mental health support to their citizens to protect them from this invisible adverse effect.

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Decline of psychological health following COVID-19 pandemic designation: A descriptive study

Short Paper

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Abstract

Background: Coronavirus disease-19 (COVID-19) was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020 and as of this writing, the state of Texas, USA, has are more than 675,000 cases with over 14,000 deaths. Many of these implementations can increase sedentary lifestyles. which can lead to the development of chronic diseases, obesity development among the population and overall cause serious threats to people's physical health and lives. Individuals with pre-existing conditions are at increased risk of contracting COVID and thus may have higher levels of stress.

Objective: Explore the relationship between individual's level of physical activity and status of mental health, on individuals with health conditions versus those with none, before and after COVID-19 was declared a pandemic for the citizens of Texas.

Methods: An electronic survey was disseminated throughout various regions of Texas. 157 respondents were asked questions about their demographics, time spent on daily physical activities, and daily mental health status before and after COVID-19 was declared a pandemic. Frequency distribution and descriptive statistics was performed.

Results: 61% of participants reported having 1 or more health conditions with 13.6% of the respondents having 3+ medical conditions. Though not significant, participants with 1 or more preexisting condition drastically decreased their activity as evident by a 10% increase in sedentary lifestyles after the COVID-19 pandemic designation. On the contrary, we observed a 9% increase in the number of individuals without a preexisting condition reporting 30-60 min of physical activity per week. There was a 2-fold increase in the number of participants reporting more frequent feelings of nervousness, worrying too much, having trouble relaxing and feeling afraid something awful might happen after the pandemic. More specifically, individuals with pre-existing medical conditions reported on average a 10% higher incidence of feelings of stress, anxiety and sadness compared to healthy counterparts after the pandemic declaration.

Conclusions: Stressful life conditions and having a chronic disease are risk factors that can affect mental health and reduce the ability of proper daily functioning. Therefore, when implementing pandemic protocols, municipalities should consider providing mental health support to their citizens to protect them from this invisible adverse effect.

Keywords: Pandemic; Anxiety; Stress; Physical Health; Quality of Life; Mental Health

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Introduction

Coronavirus disease-19 (COVID-19) was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020 [1] and in the State of Texas there are more than 675,000 cases with 14,000 deaths. The routines of individuals have been impacted since the beginning of the pandemic due to the implementation of restrictions and preventative measures such as social distancing, self-isolation, stay at home orders and closure of businesses and recreational facilities. Many of these protocols can negatively promote sedentary living and decrease activity levels which can lead to the development or exacerbation of chronic diseases and mental health issues [2-5]. We aimed to explore the relationship between individual's physical activity and mental health before and after COVID-19 was declared a pandemic in a cohort of Texas residents. We hypothesize that the COVID-19 pandemic declaration that led to the implementation of social distancing and self-isolation protocols will negatively impact mental health, increase stress and anxiety with decreased levels of activity reported by all participants.

Methods

Recruitment

Texas residents 18 years of age and older were recruited using social media and email using a convenience and snowball recruitment strategy over a 2-week period in the month of July 2020. This study of unidentified respondents was considered exempt from human subjects review by the University of Texas Health Science Center at San Antonio Institutional Review Board.

Survey Instrument

A shortened survey instrument initially developed by Flanagan et al [6] was used to capture respondent demographics, medical history, and physical and mental health. Physical and mental health questions were constructed in a manner to determine health status before and after the implementation of COVID-19 quarantine protocols.

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Demographics and Medical History

The participants gender (male, female, no response), age, marital status, employment status, household number, ethnicity, and race were collected. Participants were asked to indicate if they have been diagnosed with any chronic medical conditions, including cardiovascular, respiratory, Gastrointestinal. Genitourinary, kidney, hematologic, infectious, dermatological, vision, endocrine, musculoskeletal, oncologic or neurologic diseases. Survey participant demographics are presented in Table 1.

Questions on Physical Activity

Participants were asked to detail their physical activity levels before and after the COVID-19 pandemic designation. Specifically, they were asked to detail their physical activity/exercise minutes per day. Participants were able to select categorical variables of 0-30; 30-60; 60-90; 90-120; or more than 120 minutes of daily physical activity.

Psychological and Mental Health Questions

Participants were asked if they were worried about their physical health as it related to COVID-19. They were also asked about generalized stress, anxiety and sadness before and after the COVID-19 pandemic. Eight other questions were asked in regards to (1) feeling nervous, anxious or on edge; (2) not being able to stop of control worry; (3) worrying too much about different things; (4) trouble relaxing; (5) being restless that its hard to sit still; (6) becoming easily annoyed or irritable; (7) feeling afraid as if something awful might happen; and (8) difficulty getting things done because of these mental health issues. Participants selected either (1) not at all, (2) several days, (3) over half the days, or (4) nearly every day. Each response was converted to a numerical score for analysis.

Statistical Analysis

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Descriptive statistics were calculated to summarize response frequency. Respondents who refused to answer a question were considered missing and not used in calculating proportions. We report all summary statistics. For paired testing of questions that asked for pre– and post–COVID-19 comparisons, we used a paired samples t-test to analysis means. The significance level was set at $\alpha = .05$, and all tests were 2-sided. All data were processed using SPSS version 23.0 for Windows (SPSS Inc., Chicago, IL, USA).

Results

Participant Demographics

160 individuals responded to the social media posts. The vast majority of respondents were married, white, non-Hispanic/Latino females. 41% of respondents identified themselves as Hispanic/ Latino, higher than the 31% estimated census of Hispanic/Latinos in Texas (Table 1). More than half of the respondents were under the age of 45 (57%) with full time jobs (73%); 19% indicated they were unemployed.

61% of participants reported having 1 or more pre-existing medical condition with 13.6% of the respondents having 3+ medical conditions. Medical conditions with the highest frequency included hypertension (22.3% of all respondents), respiratory problems (14%), endocrine disorders (13.4%) and gastrointestinal problems (12.7%). Participant responses to pre-existing medical conditions in presented in Table 2.

Physical activity in response to COVID-19 not impacted

No significant differences in self-reported physical activity were observed for the entire sample of respondents to our survey request. Similarly, no significant differences were observed in the subgroup of individuals with pre-existing medical conditions or those otherwise healthy. Though not significant, participants with 1 or more preexisting condition drastically decreased their activity as evident by a 10% increase in sedentary lifestyles after the COVID-19 pandemic designation. On the contrary, we observed a 9% increase in the number of individuals without a preexisting condition

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reporting 30-60 min of physical activity per week.

COVID-19 pandemic negatively effects psychological health

Respondents were asked how the quarantining protocols in Texas impacted their psychological health (Table 3). Analysis revealed significant increases in respondents fear, annoyance, restlessness, worry, nervousness, sadness, anxiety and stress ($p<0.001$). Specifically, more than twice the number of participants reported more frequently feeling nervous, worrying too much, having trouble relaxing and feeling afraid something awful might happen after the pandemic. This negative impact on psychological wellbeing interfered with their ability to accomplish their work, tasks or interactions with other people. Similar results were found in individuals with and without pre-existing conditions. The only exception is for individuals without pre-existing medical conditions that reported the COVID-19 pandemic had no significant impact on their ability to relax ($p=0.08$).

Discussion

After the pandemic declaration, quarantine and social distancing protocols were implemented to help mitigate the spread of COVID-19 in the State of Texas. Implementing this protocol comes with several quality of life related adverse effects independent of COVID-19 infection. With more individuals required to stay home, in isolation from friends, family and colleagues, physical and mental health can depreciate. Mental health has been drastically affected in our respondents due to the social isolation dictated by local municipalities in Texas. Overall, individuals responded to our survey feeling more stress, anxiety and sadness after the pandemic was declared. The long-term implications of quarantine protocols on mental health are yet to be known. However, evidence from natural disasters suggest that mental health symptoms reach their peak in the months following and can persist for years [7]. For example, 5% of the Texas population affected by Hurricane Ike met

criteria for Major Depressive Disorder in the months following the storm [8]. Therefore, while significant impact is demonstratable approximately 4 months into the quarantining protocol, there is potential to see even greater impacts in the months to come.

Quarantine protocols can have a serious impact on physical health leading to the development and progression of chronic diseases [9]. The American College of Sports Medicine recommends that most adults engage in moderate-intensity exercise training for more than 30 minutes for more than 5 days a week [10]. Contrary to Tinson and colleagues [2], participants with no medical conditions increased their physical activity after the pandemic was declared, with more individuals meeting or exceeding the recommended American College of Sports Medicine physical activity guidelines [10]. Though not statistically significant, there was a decrease in physical activity among participants with pre-existing conditions indicating a potential risk of decreased overall health that may cause medical exacerbations. Given that COVID-19 risk is significantly higher in segments of the population that have preexisting medical conditions, it is not unexpected that this group decrease their time outside in fear of unintended exposure to the virus.

Limitations

Our results are limited due to the self-reported nature of our survey and the convenient sampling method used to recruitment participants. Further, without the use of geocoding like zip codes, we are limited in our ability to generalize the results to different regions of Texas. Finally, our survey was distributed only in English although Spanish is also a dominant language in large areas of Texas.

Conclusions

The quarantine protocols implemented in Texas has led to significant levels of stress and anxiety in the respondents of this survey. Physical activity can be utilized as a coping mechanism to alleviate the psychological distress people may feel. Psychological distress experienced during the

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COVID-19 pandemic is likely to have long term clinical implications.

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DP conceptualized the study. DP, LS and JP developed the survey questions. YG developed the online survey database. DP and YG performed the data analysis. All authors who contributed significantly to the work are listed in the byline. DP and YG wrote the manuscript and LS and JP provided edits. All authors approved the final version of this manuscript Study data were collected and managed using REDCap electronic data capture tools hosted at the University of Texas Health Science Center at San Antonio. REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture for research studies, providing 1) an intuitive interface for validated data capture; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for data integration and interoperability with external sources.

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Conflicts of Interest

None declared

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Table 1. Participant Demographic	%
Race	
American Indian or Alaskan Native	0%
Asian	6%
Black or African American	2%
Native or Pacific Islander	2%
White	84%
Not reported	5%
Unknown	1%
Ethnicity	
Hispanic or Latino	41%
Not Hispanic or Latino	54%
Not Reported	5%
Unknown	1%
Gender	
Female	87%
Male	13%
Not reported	1%
Age	
18-25	11%
26-35	28%
36-45	19%
46-55	21%
56-65	17%
66-75	4%
Pre-Existing Medical Conditions	N (%)
1 Diagnosed Medical Condition	52 (33%)
2 Diagnosed Medical Condition	21 (13%)
3 Diagnosed Medical Condition	13 (8%)
4 or more Diagnosed Medical Condition	8 (5%)

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Table 2. Distribution of participants with pre-existing condition

Pre-existing Condition	N	%
Cardiac/Heart Disease	6	3.82%
Respiratory Problems	22	14.01%
Gastrointestinal Problems	20	12.74%
Genitourinary/Kidney Disease	5	3.18%
Blood Condition	10	6.37%
Infectious Disease	1	0.64%
Dermatological Condition	13	8.28%
Vision Condition	7	4.46%
Endocrine Conditions	21	13.38%
Diabetes	10	6.37%
Muscle or Bone Problems	8	5.10%
Abnormal Blood Pressure	35	22.29%
Cancer	6	3.82%
Neurological/ Psychiatric Condition	14	8.92%

Individuals that indicates they had a pre-existing condition were asked to indicate which they had from this list. Individuals were able to select more than one, if applicable. Percentage was calculated from the entire sample size.

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Table 3. Changes in mental health following as a result of the COVID-19 pandemic

	Total Sample		Preexisting Medical Conditions		Healthy Individuals	
	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid
Feeling nervous, anxious or on edge	1.78 ± 0.77	2.36 ± 0.91***	1.88 ± 0.77	2.53 ± 0.98***	1.63 ± 0.75	2.13 ± 0.74***
Not being able to stop or control your worry	1.57 ± 0.82	1.95 ± 0.93***	1.63 ± 0.84	2.04 ± 1.03***	1.41 ± 0.80	1.82 ± 0.77**
Worrying too much about different things	1.73 ± 0.81	2.31 ± 1.02***	1.78 ± 0.75	2.40 ± 1.06***	1.68 ± 0.90	2.18 ± 0.98***
Trouble relaxing	1.70 ± 0.89	2.09 ± 1.03***	1.81 ± 0.91	2.29 ± 1.06***	1.58 ± 0.86	1.84 ± 0.95
Being so restless that it's hard to sit still	1.27 ± 0.62	1.55 ± 0.81***	1.31 ± 0.63	1.64 ± 0.91**	1.21 ± 0.62	1.45 ± 0.65*
Becoming easily annoyed or irritable	1.68 ± 0.67	2.07 ± 0.86***	1.70 ± 0.68	2.16 ± 0.88***	1.68 ± 0.66	2.00 ± 0.81*
Feeling afraid as if something awful might happen	1.41 ± 0.70	2.04 ± 0.99***	1.45 ± 0.73	2.12 ± 1.01***	1.38 ± 0.68	1.92 ± 1.01***
How difficult did these make it for you to do your work, take care of things or get along with other people	1.22 ± 0.73	1.69 ± 0.86***	1.34 ± 0.92	1.77 ± 0.95***	1.19 ± 0.66	1.62 ± 0.72***

Participants selected either (1) not at all, (2) several days, (3) over half the days, or (4) nearly every day. Each response was converted to a numerical score for analysis. For the question on difficulty, participants selected either (0) I did not experience any of the conditions; (1) not difficult at all; (2) somewhat difficult; (3) very difficult; (4) extremely difficult.

*p<0.05; **p<0.01; ***p<0.001

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