

A COMPREHENSIVE STUDY ON EVALUATING ANXIETY
LEVEL ON COVID-19 SURVIVORS: AN ANALYSIS USING
GAD-7 SCALE

By

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for the degree of
Bachelors of Pharmacy (Hons.)

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Declaration

It is hereby declared that

1. The thesis submitted is my/our own original work while completing degree at Brac University.
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3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
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Approval

The thesis titled “A Comprehensive Study on Evaluating Anxiety Level on COVID-19 Survivors: An Analysis Using GAD-7 Scale” submitted by Nowshaba Noshin Achal(20146025), of Spring, 2020 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.

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Ethics Statement

There are no human or animal trials included in this study

Abstract

COVID-19 pandemic has initiated the rise of anxiety levels around the world, and till now, the pandemic has left an effect on the mental state of individuals. The main objective of this research is to evaluate the anxiety status of the post COVID-19 patients. GAD-7 assessments were used among 25 participants, both male and female, aged more than 25. Among them, 15 were infected by the SARS-CoV-2 infection and recovered from it, 10 of them were COVID-19 negative participants. The responses were collected from them through face to face interviews and online video interaction. According to the responses of COVID-19 survivors, 33.33% of people are going through minimal anxiety, and 40% of them are suffering from mild anxiety. It is alarming that 20% of people are experiencing moderate anxiety and 6.67% are suffering from severe anxiety. For non-COVID-19 individuals, minimal anxiety (60%), mild anxiety (20%), moderate anxiety (20%) and severe anxiety are 0%. Therefore, it may be concluded that COVID-19 survivors' anxiety levels may have been impacted by the SARS-CoV-2 infection. Since the working sample size was small, a larger sample size may have produced a more appropriate result.

Keywords: Anxiety, SARS-CoV-2, COVID-19, GAD-7, Pandemic, Survivors

Dedication

To my project supervisor, Dr. Afrina Afrose, who has consistently encouraged me throughout the project and has faith in my abilities.

Acknowledgement

It was a pleasure working under the supervision of Dr. Afrina Afrose. She has guided me to the right path throughout the project. She also arranged training session on how to deal with participants and ask questions in a simple native way. Although data collection was challenging since COVID-19 pandemic is no longer continued, she always motivated me and helped me whenever I found any difficulties. Also, I would like to acknowledge School of Pharmacy and Brac University.

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List of Acronyms

GAD-7 Generalized Anxiety Disorder

COVID-19 Corona Virus Disease

NINS National Institute of Neuroscience Hospital

Glossary

Anxiety	Anxiety is characterized by feelings of worry, tension, or fear, especially around events that are approaching or that we believe may occur in the future.
GAD-7 Scale	A self-reported questionnaire for diagnosing and evaluating the severity and status of generalized anxiety disorder (GAD)
Post COVID-19 patients	People who were infected by COVID-19 virus and survived

Chapter 1

Introduction

1.1 Background

The renowned pandemic of SARS-CoV-2 left the whole world shaken. The outbreak took many lives leaving everyone devastated and making lifestyle changes. The fear of death after being infected by the virus, seeing the death from a near distance changed the people's perspective of life. COVID-19 may influence the rise of anxiety among the people who are COVID-19 survivors. According to (Saeed et al., 2022) the group of people with the highest instances of anxiety was those working in healthcare followed by college students, the general public, teachers, pregnant women and police. Anxiety was worsened by factors associated with risk that included being younger, being female, having a worse socioeconomic situation, and being more exposed to infections. Women were found to be much more anxious than males were, and this difference was observed in different levels of anxiety. In their sample of young adults, 46% reported feeling anxiety of some level, with around 19.5% reporting clinically serious anxiety and another 26% reporting mild anxiety (Mani et al., 2020). Also, the anxiety level of healthcare workers were higher since they had to make direct contact with COVID-19 positive patients. An alarming number of physical therapists reported experiencing anxiety symptoms. A study on the psychological impact of COVID-19 on Korean physical therapists revealed that one-third of them had anxiety. The study's findings showed that anxiety was quite high among them (63%). During the COVID-19 pandemic results outstrip those of a recent national research, where PHQ-9 and GAD-7 evaluations showed a 25.5% incidence of anxiety in the general population (Abdulghani et al., 2022).

1.2 Research Gap

Research on the emergence of anxiety in COVID-19 survivors is nonexistent. Although there are studies that focus on anxiety while the pandemic was ongoing. Those studies showed how anxiety developed among healthcare professionals, young people and females during the pandemic. However, even after the pandemic is over, SARS-CoV-2 might have left an effect on the anxiety level in post COVID-19 situation. Furthermore, no noteworthy research has been carried out that compares the anxiety levels of COVID-19 survivors with those of non-infected individuals

1.3 Objectives

To identify and evaluate the impact of the SARS-CoV-2 in causing anxiety in the post COVID-19 patients.

The investigation for measuring the status of the anxiety will be stand upon on certain parameters like nervousness, too much worrying, inability to control worrying, relaxation issue, being restless, being irritated easily and a feeling of fear using GAD-7 Scale.

1.4 Significance

The purpose of the study is to determine the anxiety levels of individuals who recovered from COVID-19. This study will allow early identification and intervention for post covid-19 patients who are suffering from high level of anxiety which could potentially prevent the rise of serious mental health issues. It is important to understand the anxiety status of post COVID-19 patients since it might be a sign of neuropsychiatric problem caused by neurological impact of SARS-CoV-2 infection. The symptoms and assessment done by GAD-7 will help to indicate if they are suffering from neurological. Besides, this study would identify whether they have the risk of suffering neurological problem in future.

Chapter 3

Methodology

The participant database was collected from the National Institute of Neuroscience hospital. In person interview was conducted in NINS and online video conference was done with the patients. Both male and female participant participated. The age of the participants were 25+.

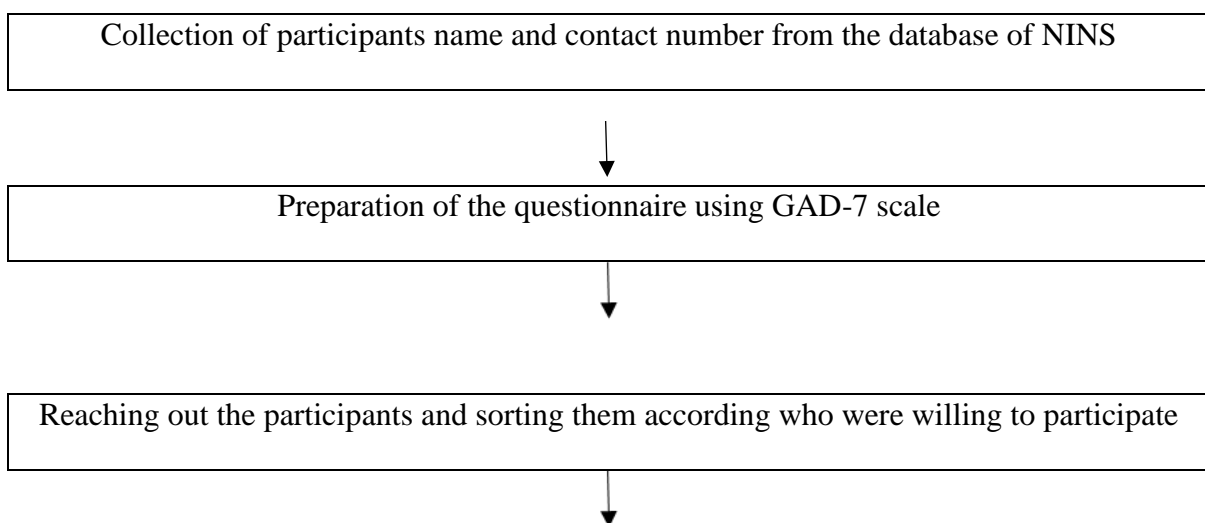
The questionnaire was prepared based on GAD-7 Scale. The participants were asked 7 questions in terms of GAD-7 scale regarding over past two weeks how they have been bothered by some feelings.

Total number of data collected is shown the Table 1 given below:

Table 1: Amount of Data Collected

Total number of Covid-19 survivors	15
Total number of Non-COVID participant	10

Figure 1 displays a flow diagram of the research methodology



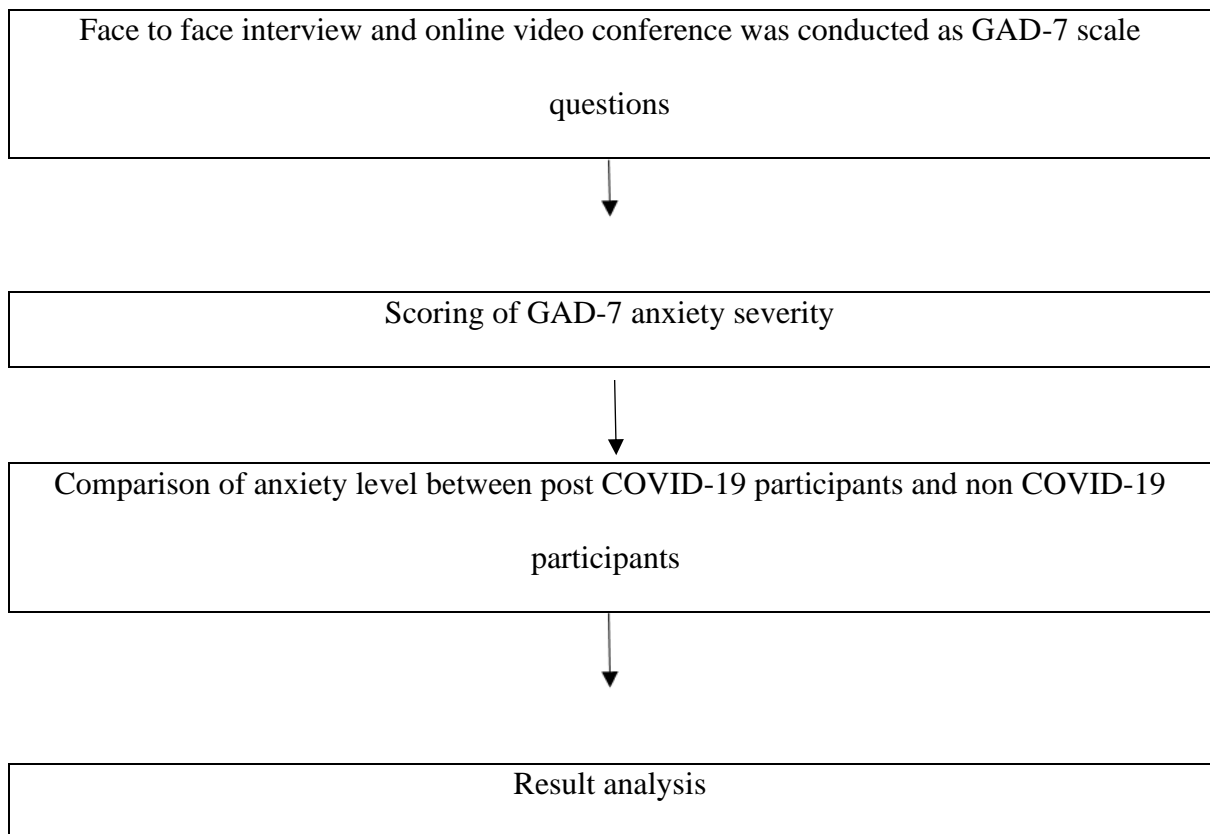


Figure 1: *Flowchart illustrating the methodology of study*

2.1: Identification of participant

Both COVID-19 Participants and non-COVID 19 participants were selected who were willing to participate in this research. Those who were in Dhaka were ask for in person interview in NINS hospital and those who were outside Dhaka, they have interview through online video conference

2.2: The use of GAD-7 for assessing anxiety

Criterion, concept, factorial, and procedural validity were all strong points of the 7 questions of Generalized Anxiety Disorder Scale (GAD-7) (Spitzer et al., 2006). 7 questions were asked and the participants answered it in preference for past two weeks. The questions covered the

parameters like nervousness, worrying, inability to control worrying, relaxation, being restless, feeling irritated easily and a feeling of fear. Then the scoring was done according with their responses.

Figure 2 shown below gives a idea about the GAD-7 questionnaire:

GAD-7				
Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Total Score = ___ = ___ + ___ + ___

Figure 2: *GAD-7 scoring scale* (Romanio et al., 2021)

Gad-7 anxiety severity level: In order to measure this, "not at all," "several days," "more than half the days," and "nearly every day" are the response categories, and they receive scores of 0, 1, 2, and 3, respectively. The score was assigned a value of 0 (not at all) for the participant who does not experience the problem, 1 (several days) for the participant who experiences the problem for 1-2 days per week, 2 (more than half the days) for the participant who tends to experience the problem for 3-5 days per week, and 3 (nearly every day) for the patient who undergoes the problem for 6-7 days per week.

The total GAD-7 score for the seven items varies from 0 to 21.

Score from 0–4 indicates ‘Minimal anxiety’

Score from 5–9 specifies ‘Mild anxiety’

Score from 10–14 shows ‘Moderate anxiety’

Score from 15–21 designates ‘Severe anxiety’

2.3: Generation of Result

The findings were developed by analyzing the obtained result. The percentage of the level of anxiety between post COVID-19 patient and non-COVID individuals were compared. This comparison is shown by generating graph and pie charts.

Chapter 3

Result

GAD-7 anxiety assessment was done among 25 patients. 15 of them were COVID positive and 10 were non-COVID participants. To evaluate their response scoring was done from 0 to 21.

The table 2 shows the score collected from the GAD-7 questionnaire from post COVID-19 patients

Table 2: GAD-7 score: Post COVID-19 patients

Participant no	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Post COVID GAD-7 score
Participant 1	1	1	0	1	1	2	2	9
Participant 2	0	2	0	1	0	0	2	5
Participant 3	0	3	3	3	0	2	2	13
Participant 4	1	1	1	2	0	2	2	9
Participant 5	1	0	0	1	0	1	1	4
Participant 6	1	1	0	0	0	0	0	2
Participant 7	0	1	0	0	0	1	1	3
Participant 8	0	1	0	1	0	0	1	3
Participant 9	1	1	2	2	2	3	1	12
Participant 10	2	3	3	2	0	0	2	12
Participant 11	1	1	0	1	1	1	1	6
Participant 12	3	3	0	0	0	2	0	8
Participant 13	3	3	3	3	2	2	2	18
Participant 14	1	2	0	0	2	1	0	6
Participant 15	0	0	1	0	0	1	0	2

The graphical representation of post COVID patients' response is shown below by figure 3

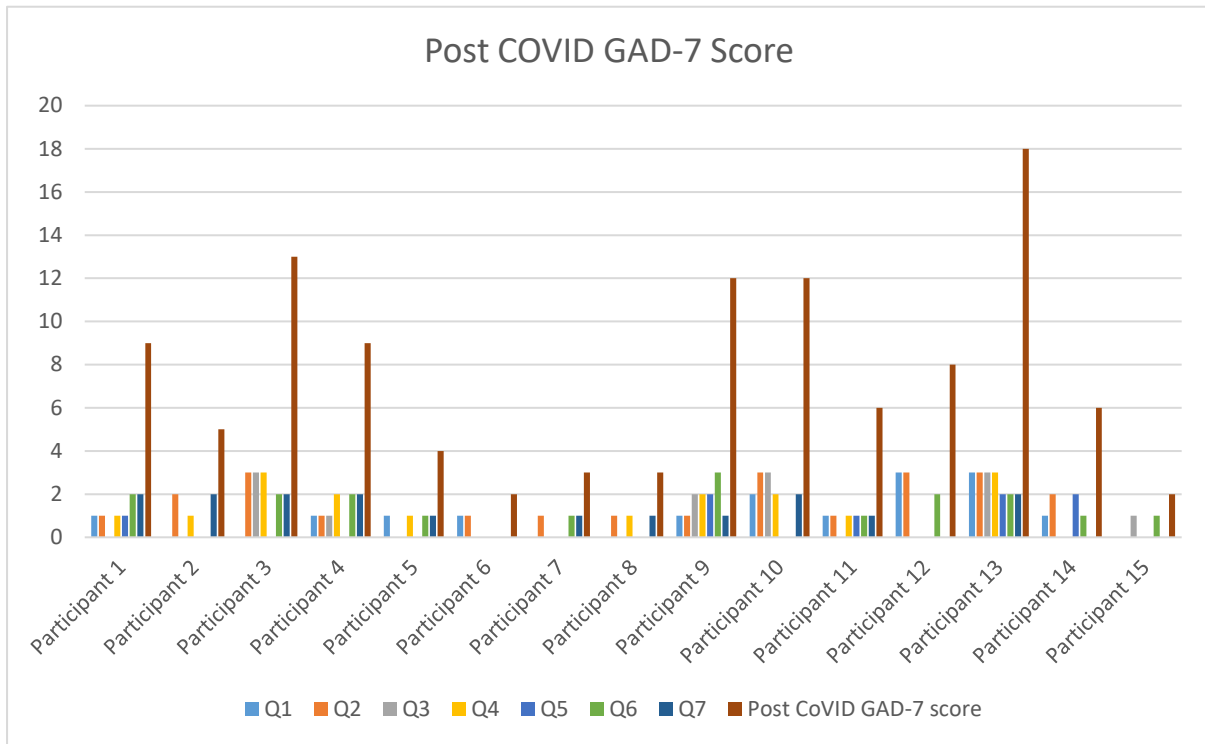


Figure 3: Graphical representation of Post COVID-19 GAD scale

For comparison, response was also collected from non-COVID 19 individuals. The table 3 shows the score collected from the GAD-7 questionnaire from non-COVID 19 individuals.

For comparison, response was also collected from non-COVID 19 individuals.

The table 3 shows the score collected from the GAD-7 questionnaire from non-COVID 19 individuals.

Table 3: GAD-7 score: non COVID 19 participants

Participant no.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	non COVID GAD-7 score
Participant 1	0	0	0	1	0	3	1	5
Participant 2	2	2	2	1	0	2	0	9
Participant 3	1	0	0	0	0	1	0	2
Participant 4	2	3	3	2	1	0	3	14
Participant 5	1	3	2	1	0	3	1	11
Participant 6	0	2	1	1	0	0	2	6
Participant 7	3	0	0	2	0	1	1	7
Participant 8	1	1	1	0	2	2	1	8
Participant 9	1	1	1	1	0	1	1	6
Participant 10	0	0	0	1	0	0	1	2

The graphical representation of non COVID-19 patients' response is shown in figure 4 below:

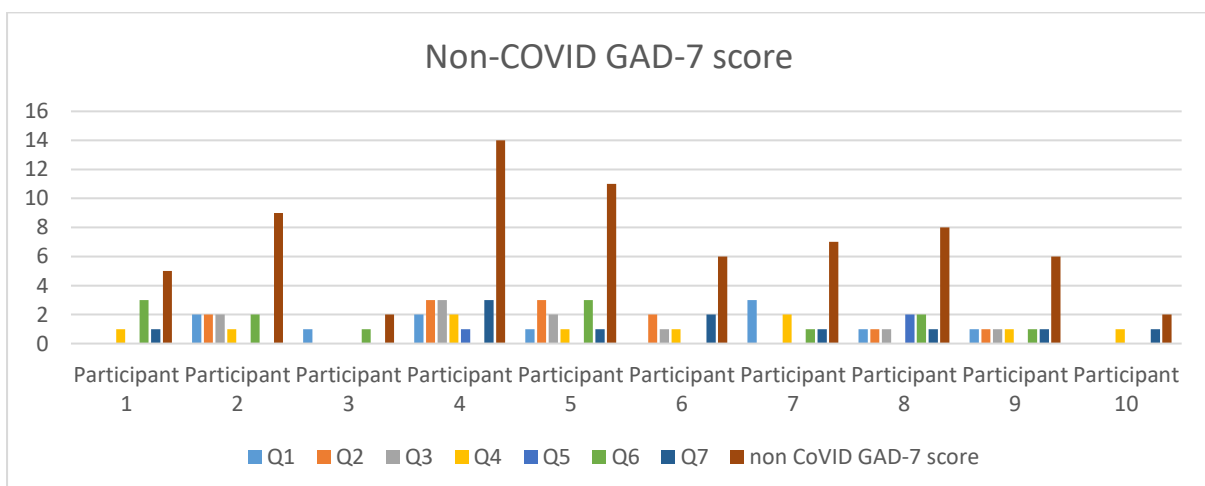


Figure 4: Graphical presentation of non-COVID 19 GAD-7 scale

By Table 4 and Table 5 the percentage of participants are shown in regards of anxiety status.

Table 1 represents COVID-19 Survivors and Table 5 shows the percentage of non COVID-19 participants

Table 4: Analyzing the level of anxiety: For COVID-19 survivors

Anxiety status	Number of patients	Percentage(%)
Minimal anxiety (0-4)	5	33.33%
Mild anxiety (5-9)	6	40%
Moderate anxiety (10-14)	3	20%
Severe anxiety(15-21)	1	6.67%
Total participants:	15	

Table 5: Analyzing the level of anxiety: For non COVID-19 participants

Anxiety status	Number of patients	Percentage(%)
Minimal anxiety (0-4)	2	20%
Mild anxiety (5-9)	6	60%
Moderate anxiety (10-14)	2	20%
Severe anxiety (15-21)	0	0%
Total participants:	10	

Pie charts for showing the percentage of COVID-19 positive participants and non COVID-19 individual who are experiencing anxiety are given below on figure 5 and figure 6:

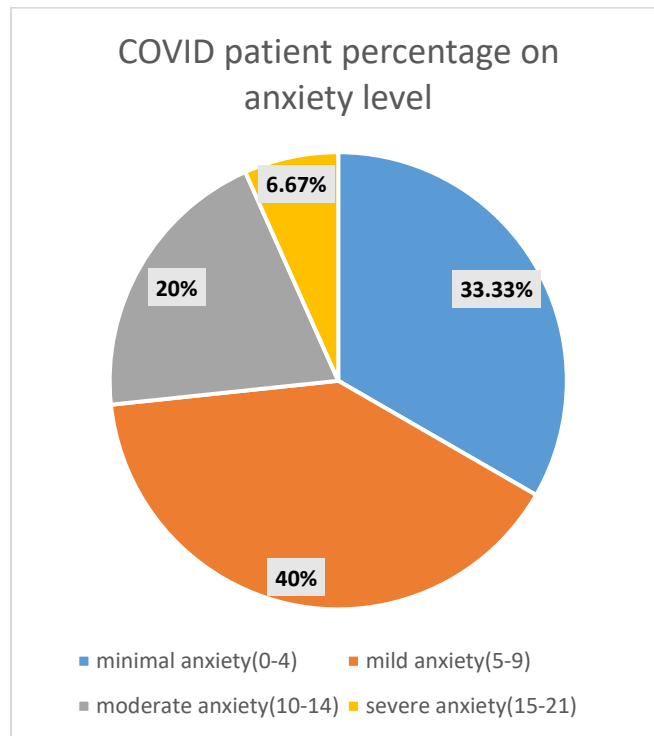


Figure 5: COVID-19 patient percentage on anxiety level

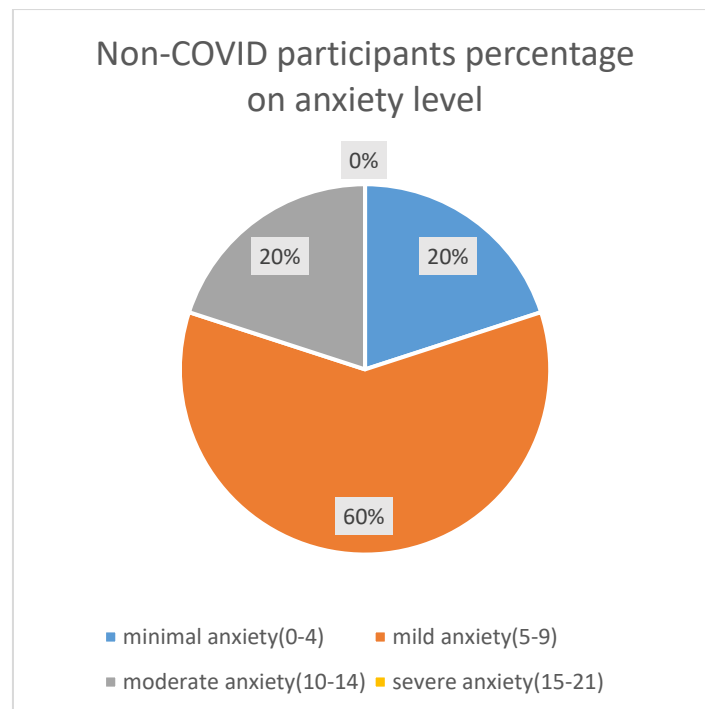


Figure 6: Non-COVID participants' percentage on anxiety level

Another graph is shown below on figure 7 which indicates the comparison between the anxiety status of post COVID-19 survivors and non-COVID-19 participants.

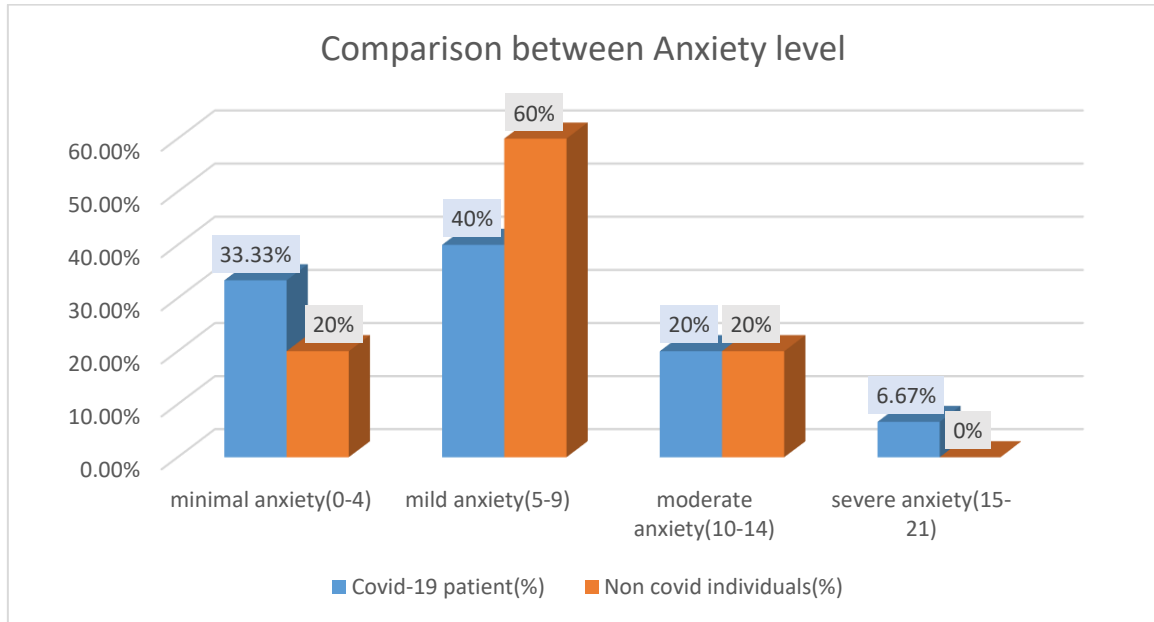


Figure 7: Graph showing the Comparison between the anxiety status of post COVID-19 survivors and non-COVID-19 participants

Chapter 4

Discussion

From the above graphs and pie charts, in terms of COVID-19 survivors, the charts shows 33.33% people are suffering from minimal anxiety and 40% of them are going through mild anxiety. It is alarming that 20% people are experiencing moderate anxiety and 6.67% individuals is suffering from severe anxiety.

On the other hand, in case of non-COVID individuals 60% of people are going through minimal anxiety, both mild anxiety and moderate anxiety contain 20%, respectively. However, none of the participants are suffering from severe anxiety.

In regards of minimal anxiety level, COVID-19 patients have a higher percentage than non-COVID individuals, which is 33.33%, and non-COVID participants contribute 20%. On the contrary, 60% of non-COVID patients suffer from mild anxiety. But only 40% of people suffering from mild anxiety are covid-19 survivors. However, the percentage is the same in terms of moderate anxiety level, which is 20% for both groups. Moreover, it is observed that 6.67% of the people in the COVID-19 group are suffering from severe anxiety, whereas no participant from non-COVID group showed any of the signs of severe anxiety.

From the data, it is observed that for minimal anxiety and severe anxiety level the percentage is higher for post COVID-19 patients. At the moderate anxiety level the percentage is equal for both groups. But it is worth noting that 6.67% of post COVID-19 participants are suffering from severe anxiety, but no one from the non-COVID group contributes to the percentage where the percentage is 0%. In a study examining anxiety level among different occupational groups, it was found that healthcare personnel experienced highest incidence of anxiety which is 36%, with college students the percentage was 34.7%, the general populations' rate of anxiety

was 34%, while teachers, parents and expectant mother reported 27.2% ,23.3%. and 19.5% respectively. The police exhibited lowest percentage which was 8.79% (Saeed et al., 2022).

In another study, the GAD-7 questionnaire was used to evaluate the anxiety level. The result indicated that, 30% of the respondents had mild anxiety, 10% of them were suffering from moderate anxiety and 5% had severe anxiety status (Mattila et al., 2020). Besides, A study was carried out on 91 individuals who had a history of COVID-19 infection. Based on the statistical analysis, candidates from the COVID-19 group showed a much greater average degree of anxiety which is 44%. Additionally, hospitalized patients showed signs of greater anxiety level as compared to the outpatient ones (Sensoy et al., 2020).

Therefore, it can be concluded that SARS-CoV-2 infection might have influenced the level of anxiety in COVID-19 survivors.

Chapter 5

Conclusion and Limitations

5.1 Conclusion

The research concludes that there is a possibility that the SARS-CoV-2 infection has an impact on the anxiety state of the COVID-19 patient. Because more participants shown the sign of anxiety in the scoreboard of GAD-7 scale. However, Research does not support the idea that the COVID-19 virus caused anxiety in those who survived COVID-19.

5.2 Limitation

1. With only 25 participants, the research's data set was limited.
2. The result may not be accurate due to the little amount of data. If the sample size was larger, the result could have been more appropriate.
3. Participants were not interested to participate
4. Some participants were intentionally tried to avoid answering.

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