Identifying for risk of Psychological Disorder in COVID-19 survivors of Bangladesh

By

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Bachelor 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.

2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.

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.

4. I/We have acknowledged all main sources of help.

Student's Full Name & Signature:

Student Full Name
Student ID:

Approval

The thesis titled "Identifying for risk of Psychological Disorder in COVID-19 survivors of Bangladesh" submitted by Anindita Das Dristi (ID-17346032) of Spring 2022 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.

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Ethics Statement

In This survey, all the participants were informed about the purpose of this survey. There was a consent form, for the participants before they filled out their responses. Also, they were informed no personal information will be disclosed without their consent.

Abstract:

The psychological problem increased significantly during the pandemic of Corona virus. In this research, a significant relationship between psychological disease and the effect of Coronavirus has been tried to correlate. An online survey was conducted over 317 people, infected by Corona virus. Before and after mental health condition was evaluated here. A person faced mental health problems for various reasons, for example, severe infection, tissue damage, blood clotting abnormalities, the overreaction of the immune system, decrease tissue size and many more. These kinds of complications may occur due to the effect of the pandemic, for example, immense fear, frustration etc. People are facing anxiety, depression, panic disorder and personality disorder like mental health problems and panic disorder get increased significantly due to the effect of the Corona virus. Here, a statistical analysis was done over the survey response on before and after health conditions and the responses are significantly different.

Keywords:

Dedication:

Dedicated to my parents, who inspire me in every step of my life.

Acknowledgment

Firstly, I want to thank the almighty who has blessed me with tremendous strength then, to my parents, who have consistently supported me and inspired me over the years.

I want to express my gratitude to the Dean of the School of Pharmacy at BRAC University, Professor Dr. Eva Rahman Kabir. Also, I am grateful to my honorable supervisor Dr. Afrina Afrose for her valuable time, guidance and immense support. Her inspirational words have encouraged me to take on new initiatives while conducting this research. Without her analytical leadership, inspiration, and support, this project would not have been possible, as well as the entire faculty member for their guidance, support, and encouragement over the years.

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List of Acronyms

SARS-Cov2- Severe Acute Respiratory Syndrome Corona Virus 2

EVD- Ebola Virus Disease

CNS- Central Nervous System

SPSS- Statistical Package for Social Science

CVO- Circumventricular Organ

BBB- Blood Brain Barrier

RNA- Ribonucleic Acid

MRI- Magnetic Resonance Imaging

PTSD- Post-traumatic stress disorder

Chapter 1

Introduction

1.1 Background:

The novel coronavirus called SAR Cov2 has resulted in the outbreak of a respiratory disease known as COVID-19. This infectious virus originated in December 2019 in Wuhan, China and estimated that the COVID virus spread all over the world between January and February by the centers for disease control and prevention. It can spread, when an infected person sneezes, coughs, talk and release respiratory droplets in the air and another person inhales those droplets. Also, close contact like, touching, shaking the hands and after that touch the face can spread the virus. COVID-19 was classified as a pandemic on March 11th, 2020. Over 79.2 million of COVID-19 cases and over 1.7 million fatalities had been recorded globally as of December 29, 2020. Greatest weekly average of 4.3 million confirmed new cases in December 2020 were noticed compared to any other month. The Bangladeshi government issued a stay-at-home directive on March 26 to reduce the prevalence of perpetual transmission. It caused business centers to close. To stop the spread of this deadly illness, the Bangladeshi government implemented several preventive measures. These projects, though, encounter difficulties in Bangladesh, a nation with a lower-middle income and one of the densest populations on the planet. In terms of professional and academic careers, this unexplained sense of "home quarantine" has had a significant impact on mental health. "For instance, a study of populations affected by Ebola virus disease (EVD) outbreaks revealed that the abrupt deaths of friends, family members, and coworkers, as well as the stigmatization and social exclusion of survivors, caused widespread fear, depression, and anxiety" (*Anxiety, Depression and Insomnia: The Impact of COVID-19 on Mental Health | Gavi, the Vaccine Alliance*, n.d.).

1.2 Research gap:

There are many statistical research articles about the relevance between COVID-19 infection and the pandemic with mental disorders or psychological disorders. But how this Coronavirus affects the brain or CNS or by which way the virus crosses the blood-brain barrier (BBB), this information is still unclear. Some theory has been introduced by the researchers but those are still under observation. More detailed and vast research needs to conduct for the clarification of this topic.

1.3 Objectives:

The main center of concern of this study is to identify the risk of psychological disorders due to COVID-19.

Objective 1: To learn about the post-COVID health condition.

Objective 2: To know about the factors associated with psychological disease.

Objective 3: For determination the correlation between COVID-19 and different mental health problems.

1.4 Significance:

Almost 6 million people were infected by COVID-19 worldwide and a large number of people are facing many psychological problems. They are facing problems because of the COVID-19 pandemic. The health of our brain or mental health is equally important as physical health. If any kind of discomfort occurs in any person's mental health that can disrupt the normal life of a person. By identifying the proper reason for infected brain functions, a suitable treatment can provide to bring them into a normal and healthy life.

Chapter 2

Methodology

2.1 Selecting of patients:

The participants for this statistical research were over 25 years old and were affected by COVID-19. During taking the survey responses, their post-COVID mental health condition was a matter of concern.

Most importantly, all the participants of this survey are well concerned about this statistical research survey about post-COVID mental health conditions and provided all the information willingly.

2.2 Data Collection:

An online based well-structured questionnaire was prepared using google Forms and shared those forms via Facebook, what's app, Messenger, Email and all kinds of social media. Also, some responses were taken via direct contact with the person. No one was forced to participate in the survey. Total of 317 people was taken for the analysis.

2.3 Statistical analysis:

To further understand the participant demographics, descriptive analysis was conducted. To determine the relationship between the variables, multiple regression was used. To determine the significant correlations between various variables and factors, spearman correlation was used. Simple frequency analysis was applied to determine the psychological issue. SPSS software program was used to conduct the analysis. SPSS is an analytical tool by which quantitative analyses are conducted.

Chapter 3

Literature Review:

Mental and physical health are equally important. It includes our emotional, psychological and social well-being. Mental health influences our thoughts, emotions, and behaviors. Moreover, it influences the way we respond to stress, contact or communicate with others, and make decisions. Every moment of life, from childhood and adolescence to maturity, is very impotant for mental health.

3.1 Mental Problems:

3.1.1 Anxiety:

Anxiety is a feeling that is accompanied by stressful feelings, worried thoughts, and physical changes like hypertension. Recurrent intrusive thoughts or worries are common in people with anxiety disorders. Out of fear, they might steer clear of particular situations. In addition, they might experience physical signs like sweating, trembling, drowsiness, or an accelerated heartbeat. Although they are not the same thing, anxiety and fear are frequently used as synonyms. Fear is viewed as an appropriate, in-the-moment, and fleeting answer to a clearly discernible and specific intimidation, whereas anxiety is a future-oriented, long-term response mainly focused on a diffuse threat (*Anxiety*, n.d.)

3.1.2 Depression:

Depression is a common and dangerous medical condition that has an adverse impact on a person's feelings, thoughts, and behavior. Depression results in depressed emotions and/or a loss of interest in previously enjoyed activities. It can cause a range of mental and physical issues and impair a person's ability to operate both at home and at work.

3.1.3 Panic Disorder:

One variety of anxiety conditions is panic disorder. When there is no actual risk, it might lead to panic attacks, which are quick feelings of fear or stress. One could feel like they are losing control. A person may have some physical symptoms such as, fast heartbeat, sweating, chest pain, breathing difficulties, etc. it can happen anytime, anywhere without any warning.

3.1.4 Personality Disorder:

A mental health problem known as personality disorder involves persistent, chronic, disruptive habits of thinking, acting, feeling, and relating to others. These behaviors significantly disturb the individual and/or limit their capacity to operate. Personality disorders can lead to deviant actions, erroneous perceptions of reality, and unhappiness in all facets of life, including employment, relationships, and social interaction. Additionally, those who suffer from personality disorders might not be aware of their bothersome habits or how they affect others negatively.

3.2 Covid19 and mental problems:

SARS-CoV-2, the virus that produces COVID-19, has been linked to several mental health issues. Those who have been exposed to the virus have a higher risk of acquiring a number of neurological problems in the first year following the infection. Such issues include strokes, memory and cognitive issues, depression, migraine headaches, anxiety. According to recent studies, in the US, there were 69.8 million patients, 62,354 of whom had COVID-19 diagnoses. A psychiatric illness, such as anxiety, and depression was later identified in nearly 20% of COVID-19 diagnoses within three months of the COVID-19 diagnosis (Taquet et al., 2021).

A pre-existing psychiatric condition increased the likelihood of receiving a COVID-19 diagnosis by 65% compared to those who did not. The findings were surprising, according to the experts, and require more research. Psychiatric disorder need to add to the list of risk factors

for COVID-19 in the meantime (*20% of COVID-19 Patients Receive a Psychiatric Diagnosis within 90 Days – NIHR Oxford Health Biomedical Research Centre*, n.d.).

In addition, the post-COVID brain is linked to movement disorders, including tremors, involuntary muscle contractions, epileptic seizures, altered hearing and vision, balance and coordination issues, and other symptoms resembling those of Parkinson's disease.

One of the most prevalent brain-related, long-COVID symptoms is memory issues, sometimes known as brain fog. People who received the virus had a 77% higher probability of experiencing memory issues compared to those in the control groups. Some people are able to fix these issues, but many others continue to struggle. It makes no difference if someone is young or elderly, male or female. It is currently unknown whether the percentage of patients who have short-term improvement versus those who experience persistent issues.
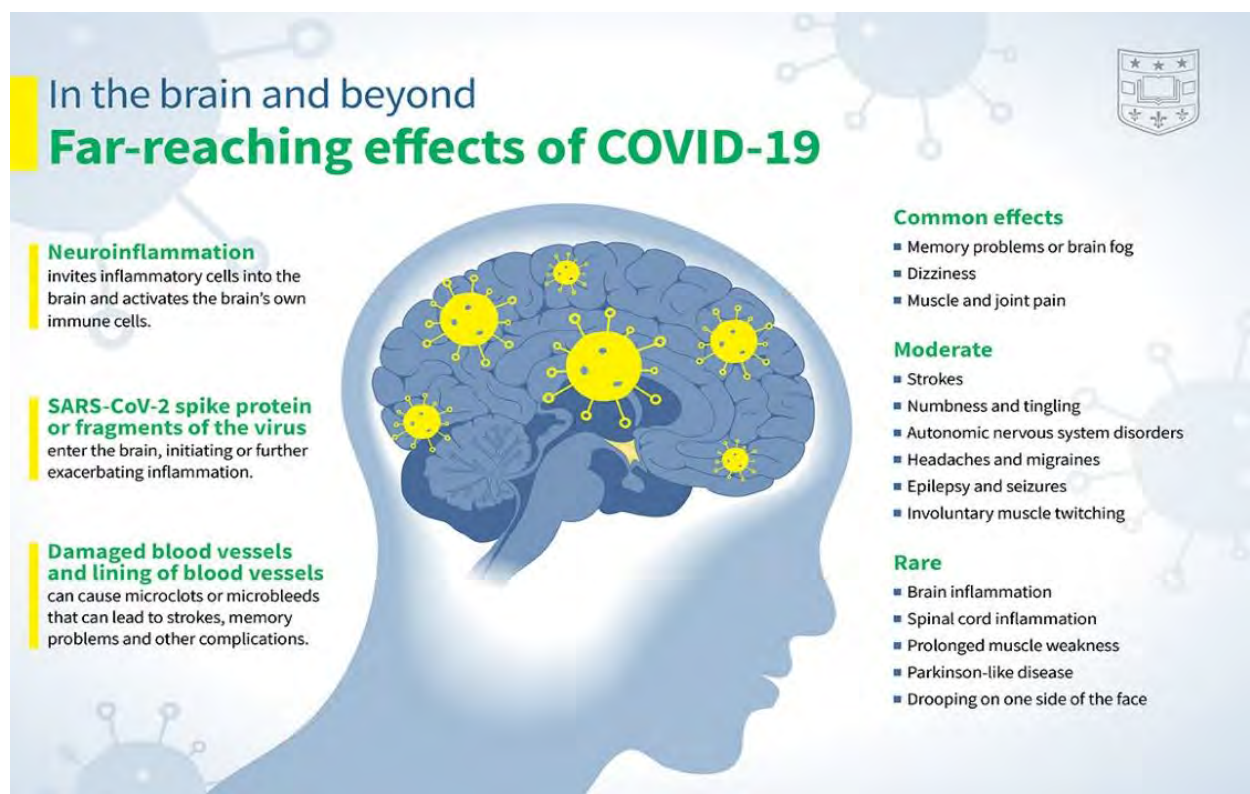

Figure 1: Long term neurological effects of COVID-19 (*COVID-19 Infections Increase Risk of Long-Term Brain Problems – Washington University School of Medicine in St. Louis*, n.d.).

3.3 How covid19 affect the brain:

SAR-CoV-2, which is known to penetrate the olfactory mucosa, is what is causing the loss of smell ability. There is little evidence to support the notion that SARS-CoV-2 enters the brain from the cribriform plate via the olfactory tract, the vagal, or the trigeminal pathways. SARS-CoV-2 might be able to pass the BBB due to the instability that inflammatory cytokines generate in the BBB or because of monocytes. It might be able to reach brain tissue through fenestrated capillaries missing the junctional proteins found in the BBB through circumventricular organs (CVOs), midline structures encircling the third and fourth ventricles. There was evidence of viral RNA in the medulla and cerebellum, which are near to the area postrema, a CVO that controls emetic responses to poisons, but not by in situ hybridization or in situ reverse transcription-quantitative real-time PCR. SARS-CoV-2 protein has not, however, been found in either neurons or glia. If viral RNA was detected there, the Virchow-Robin spaces and leptomeninges may have been polluted by the vasculature. Following histopathologic examination of the complete human brain, microglial nodules and neuronophagia were found in the brain stem, less commonly in the cortex, and limbic structures, both of which were associated by sporadic lymphocytic infiltration. However, there was no association between the quantities of viral messenger RNA in the same brain and these histopathologic findings. While ageusia, nausea, and vomiting may be brought on by CVO and viral invasion of the brain stem, other short- and long-term NPs are more likely brought on by neuroinflammation and hypoxic damage. Brain stem involvement may provide an explanation for anxiety and ongoing autonomic abnormalities (Meinhardt et al., 2020, Al-Dalahmah et al., 2020).

785 participants underwent two magnetic resonance imaging (MRI) brain scans, in a study. In the 401 instances who tested positive for COVID-19 between each scan, researchers discovered alterations in the brain. Changes included:

I.   Reduced gray matter

II. Tissue damage

III. Decrease brain size (Lee et al., 2021).

There are four ways by which COVID-19 may affect the brain. Those are,

3.3.1 Severe Infection:

The first possible way for the virus to spread is through the brain, where it may be able to cause a severe and quick infection. Spinal fluid from instances reported in China and Japan was found to have the virus' genetic material, while brain cells from a case in Florida contained viral particles. To cause this, the virus may enter the bloodstream or nerve terminals. Loss of smell is a symptom that some COVID-19 patients report, and it may indicate that the virus entered the body through the olfactory bulb, which sits directly above the nose and sends information about smell to the brain.

3.3.2 Overreaction of the immune system:

Another idea is that the immune response reacts badly in an effort to fight COVID-19, leading to a "maladaptive" inflammatory response that may be more to blame for most of the tissue and organ damage seen in this illness than the virus itself.

3.3.3 Disorganized functions occur in the body:

According to the third theory, all of the physiological abnormalities caused by COVID-19, including the high fevers, low oxygen levels, and various organ failures, lead to or explain brain dysfunction, including the delirium or coma seen in many of the more severe COVID-19 patients.

3.3.4 Blood clotting abnormalities:

The fourth way COVID-19 may harm the brain in these patients is that they have a higher chance of having a stroke. Patients with the illness have a blood clotting mechanism that is exceedingly abnormal, making clots far more likely to develop in these patients than in healthy people. Clots that form in the deep bodily veins or the lungs might block blood flow. A blood clot may block or restrict arteries that provide blood to the brain, which may cause a stroke (*How Does Coronavirus Affect the Brain? | Johns Hopkins Medicine*, n.d.).

3.4 Effect of the pandemic:

The COVID-19 virus may have a variety of negative effects on people's mental health. The COVID-19 pandemic places a greater strain on patients' close friends and family, secluded or suspicious groups, healthcare workers, and the general public's mental health. Numerous current and upcoming issues with one's mental health may be avoided by being aware of how the COVID-19 pandemic affects a person's mental health.

One of the most populous nations in the world, Bangladesh has a population of over 164 million. The population density is five times higher here than in other large nations. There are numerous elements that affect mental health, including population density, housing, financial situation, employment, life experience, disease burden, and others. The financial status of the general public was harmed once lockdown was implemented starting on March 26, 2020. The Institute of Epidemiology, Disease Control, and Research in Bangladesh first announced the first COVID-19 cases on March 8, 2020. Between 8 March and 27 December 2020, there were 509 148 confirmed cases and 7452 fatalities reported in Bangladesh. It ranks 27th among the countries impacted by COVID-19 and adds 0.64% to the global burden of disease. At the start of the pandemic, a lot of hospitals lacked the tools necessary to treat COVID-19, and diagnostic options were limited. This situation has a negative impact on the mental health of many

Bangladeshis. Some people experienced suicide thoughts as a result of their inability to control this added mental burden. Every area of the country is affected. Mental health-related problems may become more common as a result of the sharp rise in confirmed cases, especially among susceptible populations. Therefore, more thought has to be given to the burden of mental health during and after the COVID-19 epidemic. It also holds true for other low- and middle-income countries, where there aren't enough resources to fight any pandemic illness and the mental health issues that go along with it (Das et al., 2021, Positivity, n.d., *Bangladesh Confirms Its First Three Cases of Coronavirus | Reuters*, n.d., Every-Palmer et al., 2020, Brooks et al., 2020).

Being quarantined was found to be the factor most closely connected with the onset of acute stress disorder symptoms nine days after the quarantine period ended in a study of hospital staff who may have had contact with SARS. According to the same study, staff who were under quarantine were noticeably more likely to feel worn out, isolated from others, anxious when dealing with febrile patients, irritated, sleepless, lack of concentration, indecisiveness, declining working ability, and unwillingness to work or resign on their own volition (Bai et al., 2004). In another study, hospital staff members' experience of being isolated was a predictor of post-traumatic stress disorder symptoms more than three years later. When an equine influenza outbreak forced horse owners to be detained for many weeks, 34% (938 of 2760) of them reported experiencing significant psychological distress, compared to 12% of the overall Australian population (Wu et al., n.d.). When post-traumatic stress disorder symptoms were compared between parents and children who were quarantined and children who weren't, it was found that the mean score for post-traumatic stress disorder syndrome in the children who had been quarantined was four times higher than in the children who hadn't. In this study, there were 28% (27 of 98) of the parents who were isolated, compared to 6% (17 of 299) of the parents who weren't, who had a diagnosis of a trauma-related mental health condition (Sprang

& Silman, 2013). A second assessment of hospital staff conducted three years after quarantine revealed that 9% (48 of 549) of the overall group had significant depression symptoms. Compared to over 60% (29 of 48) of the group with severe depressive symptoms, only 15% (63 of 424) of those with mild depression symptoms had been isolated (Liu et al., 2012).

Only individuals who were under quarantine were included in any other quantitative studies, which generally indicated a considerable prevalence of psychological discomfort and disorder symptoms. Studies have noted a wide range of general psychological symptoms, including emotional exhaustion, insomnia, post-traumatic stress disorder symptoms disruption, stress, and low mood. Particularly prevalent are poor mood and irritability. Of the 1057 respondents, anxiety was experienced by over 20% (230), unease by 18% (187), sadness by 18% (186), and guilt by 10% (101). During the lock-down, persons imprisoned because they had intimate contact with others who might have SARS reported experiencing a range of emotions. Only 5% (48) of participants reported feeling glad or relieved, while 4% (43) reported feeling both. Qualitative study has also noted other psychological responses to quarantine, such as bewilderment, dread, anger, rage, grief, numbness, and anxiety-induced insomnia (Brooks et al., 2020).

3.5 Causes:

3.5.1 Duration of quarantine:

Studies have shown that prolonged periods of solitude are associated with greater mental health issues, such as wrath, addiction behaviors, and post-traumatic stress disorder syndromes. Despite the fact that the duration of the quarantine was unknown or unknowable, a study indicated that people who were isolated for longer periods of time—such as more than 10 days—had significantly more signs of post-traumatic stress disorder than those who were secluded for a shorter amount of time (Hawryluck et al., 2004).

3.5.2 Fears of infection:

People from the trials reported having concerns about their health or spreading infection, and they were more likely to fear doing so than non-participants. They also started to worry more if they had any physical symptoms that might have been caused by the illness, and this worry persisted to have an impact on their psychological well-being months later. In contrast, one study discovered that although only a small number of individuals were severely worried about contracting the virus or spreading it to others, those who were worried tended to be expectant mothers and parents.

3.5.3 Frustration and boredom:

Participants reported feeling severe boredom, irritation, and a sense of separation from the outside world as a result of confinement, disruption of daily routines, also limited physical social contact with others. The inability to do routine daily tasks, such as going shopping for needs or participating in social networking activities over the phone or internet, added to this irritation (Jeong et al., 2016).

3.5.4 Inadequate supplies:

Not having proper range of basic necessities (such as food supplement, water, cloths and accommodation) during confinement was a cause of irritation and persisted for 4-6 months following release as a source of worry and rage. For some individuals, not being able to obtain medical care which necessary for regular use and prescriptions seemed to be the matter of concern. The resources provided by public health authorities were insufficient, according to four research. The face masks and thermometers were either delivered late or not delivered at time, according to the people. Supplies for food took a much time to arrive, and food, water, and other necessities were very occasionally delivered. During the Toronto SARS outbreak, those who were placed in isolation, thanked public health officials for providing first aid for

medical supplies at the start of the pandemic, but they did not find the groceries or other necessary daily necessities.

3.5.5 Insufficient information:

Many participants identified inadequate information as a stressor from public health authorities, citing unclear instructions about what to do and ambiguity regarding the goal of quarantine. Participants felt there was uncertainty following the SARS outbreak in Toronto because there was a lack of adjustment between the many authorities and levels of government involved, which resulted in differences in the tone, strategy, and content of different public health messaging. Participants experienced the worst-case scenario because there was a lack of understanding regarding the various risk levels. Participants also complained that government and health professionals appeared to be hiding information about how serious the outbreak was. Post-traumatic stress symptoms were significantly predicted by perceived difficulty following quarantine protocols, which may be due to the absence of clear instructions or justification (DiGiovanni et al., 2005, Blendon et al., n.d.).

Chapter 4

4.1 Result:

Table 1: Case Summary about Responses Count.

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Before pandemic	127	40.1%	190	59.9%	317	100.0%
After pandemic	180	56.9%	137	43.1%	317	100.0%

Here, N stands for the number of responses we have taken from COVID-19-affected patients (317).

Table 2: Diagnosed with mental health problems by a Professional Before Pandemic Frequencies.

Diagnosed with mental health problems by a Professional Before Pandemic Frequencies				
		Responses		Percent of Cases
		N	Percent	
Diagnosed Before Pandemic	Anxiety	80	38.3%	62.7%
	Depression	78	37.3%	60.9%
	Panic Disorder	28	13.4%	21.8%

			Responses		Percent of Cases
			N	Percent	
	Personality Disorder	15	7.2%		11.8%
	Schizophrenia	8	3.8%		6.4%
Total		209	100.0%		163.6%

This table is for the responses to mental health problems before the pandemic. The total responses were 317. Before the pandemic, 62.7% of the patient from 317 was affected by anxiety disorder, 60.9% of patient were depressed, 21.8% of patient were affected by panic disorder. 11.8% of the patient from 317 responses were facing personality disorders and 6.4% were schizophrenia. Also, some patients were affected by 2 or more than 2 diseases.

Table 3: Diagnosed with mental health problems by a Professional After Pandemic Frequencies.

Diagnosed with mental health problems by a Professional After Pandemic Frequencies					
		Responses			Percent of Cases
		N	Percent		
Diagnosed After Pandemic	Anxiety	119	36.8%		66.0%
	Depression	117	36.2%		64.7%
	Panic Disorder	56	17.4%		31.4%
	Personality Disorder	21	6.5%		11.5%
	Schizophrenia	10	3.1%		5.8%
Total		323	100.0%		179.5%

Now, this table is for the responses about the pandemic effect. In the previous table, 62.7% of the patient from the total response was affected by anxiety disorder but after the pandemic, those numbers get increased to 66.0%. In the same way, affected patients with depression and panic disorder, cases get increased to 64.7% and 31.4%.

There is a slight difference between the result before and after the responses of personality disorder patients and schizophrenia patients.
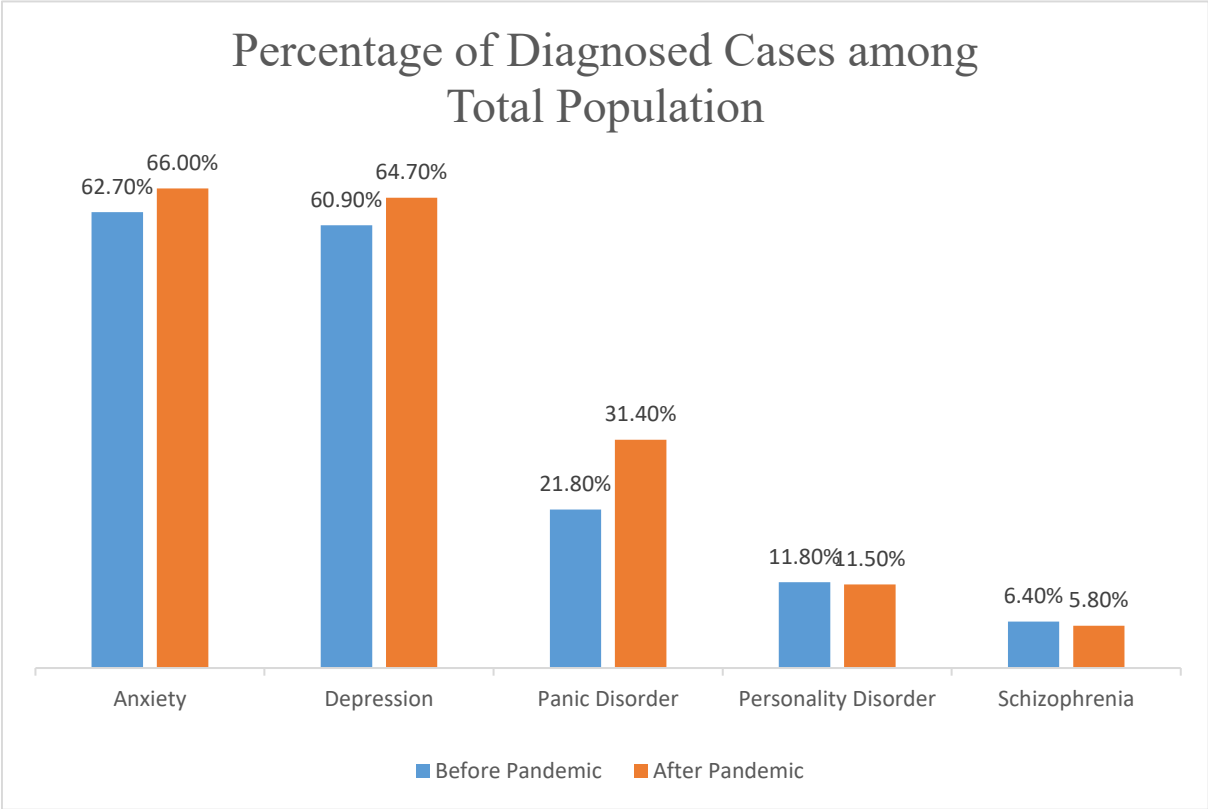

Figure 2: Graphical representation of Before Pandemic and After Pandemic Test Results.

In the chart, there showing a difference between the before and after mental disorder condition case increase.

To see the change in data "Related-samples McNemar test" has been performed.

Null Hypothesis,

H_0: The distribution of different values before the pandemic and after the pandemic is equally likely for a certain mental condition.

Table 4: Related Sample McNemar Test.

Disease	N	DF	Test Statistic	P-value	Decision
Anxiety	317	1	17.565	0.000	Reject H_0
Depression	317	1	23.674	0.000	Reject H_0
Panic Disorder	317	1	14.769	0.000	Reject H_0
Personality Disorder	317	1	1.455	0.228	Accept H_0
Schizophrenia	317	1	0.250	0.617	Accept H_0
Significance: $p<0.01$, $p>0.05$					
If the P-value turns out less than 0.01, then the outcomes will be significant, if the outcome becomes more than 0.05 the result will be not significant.					

Here, we reject the Null hypothesis for anxiety, depression and panic disorder, because the result changed significantly after the pandemic and accept the Null hypothesis for personality disorder and schizophrenia.

Table 5: Assessing the overall situation before the pandemic and after the pandemic:

Diagnosed Before Pandemic * Diagnosed After Pandemic

Cross tabulation

		Diagnosed After Pandemic						Total
		0	1	2	3	4	5	
Diagnosed Before Pandemic	0	127	45	13	0	0	0	190
	1	9	31	27	2	2	0	71
	2	0	4	21	7	7	0	39
	3	0	1	1	11	0	0	13
	4	0	0	0	1	2	0	3
	5	0	0	0	0	0	1	1
Total		136	81	62	26	11	1	317

0= No Disease; 1= One disease; 2= Two diseases: 3= Three diseases; 4= Four diseases; 5=Five disease

This cross-tabulation represents the difference between the number of diseases a patient was affected with before and after the pandemic.

Table 6: Correlation between Before and After Pandemic Results.

Diagnosed with Disease Before Pandemic * Diagnosed with Disease After Pandemic Correlation		
		Value
Interval by Interval	Pearson's R	.723
Ordinal by Ordinal	Spearman Correlation	.699
N of Valid Cases		317

Here, the data is ordinal. That is why Spearman rank correlation is more appropriate.

4.2 Discussion:

In this statistical analysis, are some noticeable differences between the before and after patient's report. For example, 3.3% and 3.8% of patient numbers have increased after the COVID-19 infection for anxiety and depression respectively. Most importantly, 9.6% of new patients are facing panic disorder after being affected by COVID-19.

There was some other research on this topic, for example, research was conducted in China as well as Pakistan after the pandemic. The outcomes were, in China, 35% of the patient from total response experienced stress, 34% anxiety, 30% depression and 25.2% PTSD (Post-traumatic stress disorder). In Pakistan, 27% of stress, 33% of depression, 40% of anxiety and 34.9% of people from total responses experienced PTSD (Shah et al., 2022).

Moreover, in this analytical research, the findings are, the number of people who had 0 diseases before the pandemic, that increased to 58 number of people. 45 people are facing one disease and 13 people facing 2 diseases.

31 people are facing 1 disease, 27 people are facing 2 diseases and 2 people are facing 3 diseases after the pandemic. They were affected by 1 disease before the pandemic. In this way, 4 people are facing 1 disease, 21 people have 2 diseases, 7 people have 3 diseases and 7 people are facing 4 diseases after the pandemic, they are affected by 2 diseases before the pandemic.

1,1 and 11 people are facing 1,2 and 3 types of diseases, who were affected by 3 diseases before the pandemic. 1 people are facing 3 types of diseases and 2 people are facing 4 types of diseases after the pandemic, they were facing 4 types of diseases before the pandemic and 1 person is facing 5 types of diseases after the pandemic.

Chapter 5

5.1 Conclusion:

To conclude, we can say that we have managed to highlight the factors associated with psychological problems and the correlation between psychological disorders and COVID-19 disease. 317 COVID-19 victims participated in a survey that was performed online. It was found that a person may have mental health issues for a variety of reasons, including severe illness, tissue damage, irregular blood clotting, immune system overreaction, shrinkage of tissue, and many more. This type of difficulty, such as intense fear, frustration, etc., may develop as a result of the pandemic. People experience psychological issues such as anxiety, depression, panic attacks, and personality disorders. The COVID-19 impact has a substantial upward trend in panic disorder.

The importance of mental health cannot be underestimated. It has become challenging to concentrate on this area of health because of COVID-19. In all our other concerns, we can unintentionally become stressed out and ignore meditation and mental calm for good mental health. Fear and anxiety are common reactions to a situation of crisis and uncertainty. By eating well, exercising, getting enough sleep, and avoiding any additional stress, we can take care of ourselves. We should steer clear of depressing material and pointless news consumption, and we shouldn't let too much information regarding the pandemic's spread overwhelm us.

Limitations:

During the survey procedure, as we collect the data, there is a probability that we have some limitations with the work. If those limitations could be overcome, we may have more satisfaction with the result. Those limitations are,

Obstacles during data collection: People from our country do not want to share any info about Covid. The cause behind this may be not having proper knowledge about this disease. We had to counsel them first about the topic and then they agreed to be part of this survey by providing information.

Authenticity: There is no medical report attached to the survey to ensure that, their responses are true. For example, some responses were about schizophrenia that they had this disease before the pandemic but not after. But this kind of disease does not cure properly. Those people might have lacings to understand of the disease. If we could receive medical data to prove their responses, might have overcome this kind of limitation.

Number of responses: There are 317 responses, by which we have conducted the statistical analysis. If the number of responses could increase, we may have more satisfaction with the result.

Future Recommendation:

Mental health is as important as physical health. People of our country do not think about or consider it as an important topic. They are not well concerned about this fact also, does not want to talk about any psychological problem with other people.

There should be more publications or announcements throughout the world and every organization, from family, school, and office should discuss the importance of mental health. Different social organizations and also the government should take necessary action, for example, organizing camping about this topic to spread out the importance and try to make everyone talk about any psychological disorder like any other physical disease. There is no shame to discuss it. Rather than it is also an essential part of our life.

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Appendix A:

Are you well concerned about the study and willingly participating in the survey?*

1. Yes

2. No

Have you been infected with novel coronavirus (SARS-COV-2)?*

1. Yes

2. No

Have you ever been diagnosed with one or more of the following mental health problems by a professional before the pandemic?*

1. Depression

2. Anxiety

3. Panic disorder

4. Schizophrenia

5. Personality disorder

6. No

Have you ever been diagnosed with one or more of the following mental health problems by a professional after the pandemic?*

1. Depression

2. Anxiety

3. Panic disorder

4. Schizophrenia

5. Personality disorder

6. No