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Literature Review

Meta-Analysis: Why Many patients with COVID-19 reporting Neurological symptoms and Psychoneurotic Complaints, Clinical Case Reports in Khartoum, Sudan

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Abstract

It is well-perceived that Corona Virus has many hazards to human beings all over the world, despite the development of health systems, cure, and preventive measures. This met-analysis and current research attempts to explore the incidence of neurologic symptoms and spreading of psychoneurotic disorders among patients with COVID-19 in Sudan. To fulfil that aim, the researcher adopted mixed approaches including data collection, analysis, and procedures. The sample selected based on survey, of which (170) patients were reached: (90) men, and (80) women purposively. Clinical case report including a list of psychoneurotic and psychological complaints was accordingly implemented, and the collected data were analyzed by employing relevant statistical tests. The results revealed that the most common neurologic symptoms found in patients with COVID-19 in Khartoum State were consecutively, Headaches, Dizziness, Cerebral Palsy, Multiple Sclerosis, Alzheimer's Disease, Parkinson's Disease, Tremors and Seizures. Moreover, the most common psychoneuroses among CORONA patients were, Anxiety, Depression, Obsessional Compulsive, Phobia, Somatization, Panic, and Personality Disorders. These results were discussed, and the study was concluded by some recommendations and suggestions for further studies as well.

Keywords: *COVID-19; Patients; Neurologic symptoms; Psychoneuroses; Khartoum; Sudan*

Introduction

In March 2020, the World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) a pandemic and highlighted its implications on mental health and psychosocial well-being. Clearly, the pandemic can act as a major stressor similar to other well-known stressors such as stressful live events or traumas, which will according to the diathesis–stress model lead to psychological disorders among vulnerable individuals [1]. In line with this, recent studies on the impact of the COVID-19 pandemic on mental health have demonstrated increased prevalence rates of generalized anxiety disorder, depressive symptoms, PTSD, and sleep disturbances among both the general population and patients with mental illness [2]. A Chinese study reported high prevalence rates of mental health problems following the COVID-19 outbreak: 25.5% symptoms of anxiety disorders, 16.9% depression, and 26.2% for insomnia in persons seeking professional psychiatry outpatient support. Additionally, 20.9% of patients diagnosed with psychological disorders reported deteriorating mental health and limited access to psychiatric care as a result of travel restrictions, isolation at home, and fear of coronavirus infection in hospitals [3].

An Austrian online survey investigating the effects of the pandemic showed that 4 weeks into the lockdown prevalence rates of depression (21%) and anxiety symptoms (19%) were increased compared to epidemiological data before the lockdown. Further, the results of

this study revealed that younger age (< 35 years), female gender, unemployment, and low income are significant risk factors for mental distress during the COVID-19 lockdown. Particularly younger individuals and healthcare workers are at a higher risk for depressive symptoms or poor sleep quality [4,5]. Further risk factors are presence of chronic/psychiatric illness, student status, and frequent exposure to social media/news related to COVID-19 [6,7] suggested that alongside the COVID-19 pandemic there is a parallel epidemic of fear, anxiety, and depression since patients with mental disorders had restricted access to outpatient psychiatric care.

Furthermore, findings from US studies hypothesize that COVID-19-related negative emotional and social consequences are linked to past-month suicidal ideation and attempts in adults. Besides research on the impact of the pandemic on mental health status and care, it is also hypothesized that psychiatric illness may be a potential risk factor for the COVID-19 disease [8].

The negative effects of the COVID-19 pandemic on the economic situation and individuals' financial well-being and financial worries is well established. Financial hardship caused by unemployment and decreasing revenues are likely involved in the psychosocial effects of the pandemic. There is plenty of evidence that a low socio-economic status is associated with mental disorders. Since, people with mental health issues have lower incomes, they are more likely to experience the consequences of the COVID-19 pandemic [9].

Many European countries implemented severe restrictions on the social, economic, and public life for the entire populations. Austria was early to implement its first lockdown from March 13th to April 30th 2020. During this first lockdown all rehabilitation clinics in Austria, were closed and consequently the treatment of people with high burden of psychological disorders was severely limited.

The present study is part of a large-scale longitudinal research project investigating the consequences of the COVID-19 pandemic for people with mental and physical diseases in Sudan. In the present study we investigated the psychological impact of the COVID-19 pandemic on patients pertaining to both neurologic and mental consequences.

Statement of the research's problem

It has been observed that among organic and different physical complications associated with CORONV infection, there are also some remarkable neurologic as well as psychoneurotic disorders that many patients have been suffering. This current research, therefore, endeavors to seek an answer to the following two inquiries:

1. What are the most common neurological symptoms among COVID-19 patients' in Khartoum-Sudan?
2. What are the most common psychoneuroses among COVID-19 patients' in Khartoum-Sudan?

Significance

The current study highlights the potential psychological burden on patients as a result of CORONA pandemic all over the globe, and whether this disease has an impact on patients' mental health. The importance of this study lies in detecting the prevalence of neuropsychological disorders in patients suffering from COVID-19 pandemic.

Objectives

1. To determine the extent of spreading of neurologic symptoms connected with CORONA.
2. To investigate the prevalence of psychological disorders among COVID-19 patients in Sudan.

Definition of terms

Neurologic symptoms

hey are classified as the common diseases of the brain and the nervous system, such as Epilepsy, Stroke, and Brain Tumors. Neurological symptoms may occur due to CORONA infection, its complications affecting directly both the central nervous and peripheral systems; causing other disorders such as cerebrovascular diseases [10].

Psychoneuroses

Neuroses are opposite of psychoses, they are considered as psychological disorders associated with chronic distress, without existence of delusions and hallucinations. The term was coined by Scottish doctor William Cullen in 1769, indicating to disorders of sense and motion. Neuroses include a wide variety of mental disorders, such as anxiety, phobias, obsessional compulsive disorder, and hypochondria [11].

Literature Review

Specialists report that the impact of COVID-19 will continue and affect mental health, causing other psychological complications [12]. The Sudanese, like other societies, were exposed to psychological influence during the pandemic. The majority of the studies that have been conducted worldwide during COVID-19, recorded the impact of an infection on the human nervous system, and thus its damage on other parts of the body. The impact on mental health included all members of society and the recovered were not an exception. The end of the basic symptoms of the virus and the negative result of the examination is a watershed point that transfers the person from illness to recovery, but in some cases there are physical and psychological consequences following recovery, including what [13] had pointed out. In a study conducted on those recovering from Covid 19 after six months of recovery, symptoms such as: fatigue, sleep disturbances, shortness of breath, digestive disorders, lack of memory, signs of depression and anxiety were common among them. Studies have indicated that some patients infected with COVID-19, after recovery and discharge from hospital, report symptoms of PTSD, poor memory and concentration, deterioration in quality of life, and anxiety [14]. With mild and severe Covid-19 virus they cannot think, and doctors have reported suffering from depression and anxiety. The recovery response has been affected by various health and physical factors, such as age, weight, and chronic disease incidence [15,16]. The effect of personality traits on recovery is not certain, but it has been observed that people's responses to the pandemic differ according to personality traits, such as those with a high degree of extroversion who have better coping skills during an epidemic, and introverts who are free from social pressures [17].

The coronavirus disease 2019 (COVID-2019) and the consequences of the pandemic on individuals' social, economic, and public lives are assumed to have major implications for the mental health of the patients already diagnosed with neurologic and psychological disorders as well.

CORONA pandemic has caused many damages that negatively affected the mental health of the population in various countries of the world, and one of the most prominent psychological effects is that many people suffer from anxiety disorder, whether they are infected with the virus or not. According to a study of the general population, [18] reported that 29% of Chinese suffer from anxiety due to the outbreak of the Corona virus in the country. Also, adults in the United States of America reported 4 out of 10 of them about symptoms of anxiety [19], The result of a survey conducted in Saudi Arabia showed that about 19.6% of the sample had a moderate to severe level of anxiety during the pandemic. [20]. About 36% of Hispanics reported moderate to severe psychological distress, 25% showed mild to severe levels of anxiety, 41% reported symptoms of depression, and 41% felt stressed [21]. Moreover, the impact of the pandemic was more severe on people who had contracted the virus, as COVID-19 patients faced life-threatening and anxiety-inducing fears, such as prolonged hospital stays away from loved ones. The hospital was infected with that 60% of them showed psychological symptoms, primarily anxiety

and depression. A systematic review was conducted for more than 10 studies that examined psychological disorders in a sample of 900 patients, and it was found that they feel confusion and lack of awareness, which are some of the manifestations of anxiety disorder [22]. The result of the study conducted on 144 patients in the United Kingdom showed that 35% suffer from anxiety, and 28% of them suffer from depression [23].

Not only did anxiety suffer during the stage of infection with the virus and exposure to medical quarantine, but the effect extended to the stage after recovering from the virus, and returning to normal life, the effects resulting from infection cannot be ignored, as 58% of patients described their experience with the Corona virus as the worst stage of their lives and 20% of them reported that it was the most terrible time of their lives [24]. Anxiety and depression are common reactions in the context of a diagnosis of COVID-19, especially with people who have experienced illness and hospitalization, due to concerns about health, isolation, and the possibility of death [25,26] reported that patients develop sleep problems, depression, and anxiety during treatment, while anxiety persists even after recovery. Studies of patients hospitalized with acute respiratory syndrome and assessed after recovery from 3 to 46 months indicated that anxiety, depression, and PTSD were highly prevalent [27]. The current study showed that 76% of the recovered reported symptoms of anxiety, and the degree of their harm varies from moderate to severe. The researchers believe that this result is logical given the harsh experience of the injured, as death awaited them and they almost died, in addition to the following physical symptoms of recovery from the virus that will enhance the feeling of anxiety. In addition, everything that the experience leaves behind may raise fear for health, the future, and the family. COVID-19 patients have faced life threatening and anxiety-inducing fears, such as prolonged hospital stays away from loved ones [28]. A meta-analysis reported that depressed mood, difficulty sleeping, anxiety, irritability, and distressing memories were the most common complaints in the post-disease stage. It was also confirmed that there is a link between the persistence of physical symptoms and anxiety and depression [29].

Many studies from China, France, Italy, Brazil, India, and the USA, have investigated the prevalence of neurological symptoms in patients with COVID-19 pandemic. These studies pointed out that many patients reporting neurologic symptoms and psychological disorders similarly, and majority of these patients have attributed such complaints to COVID-19 pandemic.

Furthermore, as a matter of fact, during COVID-19 patients may experience stress, anxiety, fear, sadness, loneliness, mental health disorders, including anxiety and depression. Along with, CORONA itself, can cause neurological and the nervous system complications such as delirium, agitation, and strokes, consequently, COVID-19 infection requires intensive mental health services in most countries.

Some researchers have emphasized that many patients infected with COVID-19 undergo either isolated hospital stay or are home quarantined, this isolation has been found to have a huge impact on the psychological state of mind. Patients staying in isolation rooms for a prolonged duration with limited social interaction, lack of stimulation, and loss of freedom, which may result in anger, fear, restlessness, and irritability. Staying in isolation rooms can negatively impact psychological wellbeing, in addition to depression, anxiety, fear, and loneliness [30].

Regarding the status of COVID-19 in Sudan, infections are increasing as it has been reported recently. There have been 53.959 infections and 3.393 Coronavirus related deaths reported in Sudan since the pandemic appeared. In an attempt to contain the disease, federal ministry of health administered at least 3.642.188 doses of COVID-19 vaccines so far. Assuming every person needs 2 doses, which seems enough to have vaccinated about 4.3% of the country's population. Vaccination against CORONA infection is considered as the best prevention, therefore, it is less likely to occur among fully vaccinated individuals than for those who are absolutely unvaccinated. Not only this, but also there are some preventive measures adopted by the Sudanese health authorities; such as social distancing, hands washing, in addition to wear a mask frequently and properly [31].

Methodology and procedures

Research methodology

In this study, meta-analysis, descriptive, and mixed approaches were employed in designing the research's methodology.

Instruments

Data collection based on the clinical case reports of the COVID-19 patients. Clinical case reports are detailed reports underlying the symptoms, sings, diagnosis, treatment, and follow-up of the patients suffering from COVID-19. They are considered as bench marks that can be utilized for both medical and scientific research purposes, as far as they often contain complete psychological profile that provide feedback for patients [32].

The sample

The sample size was 170 patients; they were diagnosed with COVID-19 in Khartoum state hospitals as appeared on the records (Table 1).

Variables	Gender	Age	Education	Marital status
	Male (90) **53%**	Less than 20 (20) **11%**	university (50) **29%**	Married (110) **64%**
	Female (80) **47%**	20-40 (40) **24%**	Secondary (30) **18%**	Widow (30) **18%**
		41-60 (50) **30%**	High (90) **53%**	Divorce (15) **9%**
		Over 60 (70) **35%**		Single (15) **9%**

Table 1: *Descriptive statistics summary of the selected sample (N = 170).*

Statistical processing

Parametric tests were used for analysis and descriptive statistics such as t-test, frequencies, means, and standard deviation.

Results

Regarding the first research's question: What are the most common neurological symptoms among COVID-19 patients' in Khartoum-Sudan?

Result is shown as follows (Table 2).

Symptoms	Affected	Mean	S.D	T-value	Sig.
Headaches	45	6.55	8.76	55.65	0.05
Dizziness	40	4.98	6.51	32.31	0.05
Cerebral Palsy	30	5.56	7.76	19.56	0.05
Multiple Sclerosis	20	4.10	5.55	26.38	0.05
Alzheimer's Disease	15	4.13	5.59	27.78	0.05
Parkinson's Disease	10	4.87	7.55	26.78	0.05
Tremors and Seizures	10	4.58	7,52	28.25	0.05

Table 2: *List of the most common Neurologic Symptoms among COVID-19 patients in Khartoum State.*

It is clear that the prevalence of neurologic symptoms among COVID-19 patients in Khartoum was significant.

Regarding the second research's question: What are the most common psychoneuroses among COVID-19 patients' in Khartoum-Sudan?

Result is shown as follows (Table 3).

Disorders	Affected	Mean	S.D	T-value	Sig.
Anxiety	55	6.33	8.55	55.44	0.05
Depression	40	4.98	6.51	32.30	0.05
Obsessional Compulsive	25	5.22	7.66	19.40	0.05
Phobias	20	4.15	5.49	27.25	0.05
Somatization	10	4.77	7.25	26.78	0.05
Panic	10	4.58	7.42	26.92	0.05
Personality	10	4.11	7.22	26.64	0.05

Table 3: *List of the most common Neuroses among COVID-19 patients in Khartoum State.*

It is clear that the prevalence of psychoneuroses among COVID-19 patients in Khartoum was significant.

Discussion

This study assessed the neurologic and psychological aspects of the COVID-19 pandemic patients in Sudan with regard to some other demographic variables, during rehabilitative inpatient treatment. COVID-19 patients were more affected by pandemic related psychological stress, such as anxiety, depressive symptoms, panic attacks, and hypochondriasis [33].

The results of the present study show that patients with mental illness are strongly impacted by the COVID-19 pandemic, much more than people with physical illness. It is therefore crucial that psychological/psychotherapeutic treatment, including inpatient treatment for people with mental illness is available throughout the current pandemic. Besides, data from the present study also highlight the need for psychological/psychotherapeutic support among patients with physical illness. Particularly for pain and cancer patients, the relevance and positive impact of psychological interventions have been widely established [34].

These findings of the previous researches maintained that there was an increased need for psychological care among patients with mental illness during the COVID-19 pandemic. Further, to face the long-term consequences of the pandemic, access to psychotherapeutic care is important for all patients with mental or physical diseases, in order to prevent the development of chronical psychological distress, anxiety, and mood disorders. Besides the mental health impact of the COVID-19 pandemic, patients with severe mental illness have a two to three times higher mortality rate than the general population due to unhealthy life style behaviors like smoking or obesity which are related to cardiovascular diseases, type 2 diabetes, and respiratory tract diseases. Approximately 14.3% of deaths worldwide are related to mental disorders – thus, mental disorders are one of the most considerable causes of deaths worldwide. Furthermore, these physical health conditions are well known risk factors for a severe COVID-19 disease course. Several studies reported a relationship between mental disorders and an increased risk of COVID-19 infection [35].

Conclusion

The result of this study is that anxiety is prevalent among 76% of those recovering from the Corona virus, 42% at a moderate level, and 11.7% at a severe level. Also, women are the most anxious, that divorced and married women report a high level of anxiety, and smoking has a role in increasing anxiety among the sample members, especially women.

The study results emphasize the importance of monitoring the psychological impact of the COVID-19 pandemic on patients with mental or physical illness. From a public health perspective access and supply of sufficient psychological/psychotherapeutic services will be crucial to counter the negative consequences of pandemic.

The Sudanese society, majority of its people live in poverty, illiteracy, and have no health awareness regarding COVID-19 pandemic. This fact has made the Sudanese the most relaxed people as being not fear the disease itself, in addition to, they belief that they have strong immunity against such pandemic.

Recommendations

1. To increase patients' awareness concerning the potential complications of neurologic symptoms connected with CORONA.
2. To change the patterns and manners of patients' behavior during COVID-19 pandemic.
3. To provide and develop psychiatric services for patients with COVID-19.
4. Health professionals and practitioners should observe the existence of both neurologic and psychological disorders among COVID-19 patients.

Suggestions for Further Studies

1. To investigate the long-term effects of the COVID-19 crisis in longitudinal designs and control for other physical or mental health.
2. To evaluate changes on specific symptoms and diagnoses like anxiety, depression, or somatic symptoms during the COVID-19 pandemic
3. To conduct an intensive cross-sectional study on the effect of COVID-19 on patients' personality traits.
4. Neurological diseases such as Parkinson's, Cerebrovascular, and Brain Tumors; should be investigated together with COVID-19 infection.

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