








Research Article

Description of Potential PTSD in Students Surviving COVID-19 at the Faculty of Medicine, Andalas University

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ABSTRACT

Background: The COVID-19 pandemic has become a potentially traumatic event that can trigger the development of Post-Traumatic Stress Disorder (PTSD), especially in COVID-19 survivors. The study found that college students (aged 16 to 25 years) are at the most significantly risk for exposure to potentially traumatic events. **Objective:** To describe the potential for PTSD in students who survived COVID-19 at the Faculty of Medicine, Andalas University. **Methods:** This research is a descriptive study with a case-control design. A total of 167 student survivors of COVID-19 participate in the study. Data were obtained by the PTSD Checklist for DSM-5 (PCL-5) questionnaire digitally. **Results:** The study found that 18% of COVID-19 survivor students at the Faculty of Medicine, Andalas University had the potential to experience PTSD. The potential for PTSD is more susceptible to being experienced by male COVID-19 survivor students (30.4%), younger age, and experienced clinical symptoms of moderate illness COVID-19 (29,2%). Alterations in mood and cognition symptoms domain are the most dominant symptoms of PTSD experienced by study subjects with potential PTSD. **Conclusion:** Most study subjects with potential PTSD don't experience stressors like life-threatening events, exposure to news about COVID-19, or social isolation.

Keywords: college student, PCL-5, PTSD, stressor, survivor COVID-19

1. Introduction

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has posed a global health threat in many countries causing the 2019 Coronavirus disease (COVID-19) pandemic. COVID-19 was first discovered in Wuhan City, China, in December 2019. Coronavirus, as an RNA virus, has a high mutation rate to adapt to its host cells which allows this virus to become more virulent so that it can cause an increase in cases every day [1]. The spread of this virus is so massive that COVID-19 was declared a pandemic by WHO (World Health Organization) on March 12, 2020 [2].

The COVID-19 disease has affected global health. In addition to the impact on physical, social and economic health, the psychological impact of this pandemic is increasingly being reported [3]. This COVID-19 infection can cause sequelae in COVID-19 survivors even though they have recovered, not only in physical health but also impact mental health, such as excessive anxiety and trauma [4]. Mazza et al. in [4] showed a high prevalence of psychological sequelae in COVID-19 survivors, namely, 28% Post-Traumatic

Stress Disorder (PTSD), 31% depression, 42% anxiety, 20% obsessive-compulsive (OC), and 40% insomnia. These data show that survivors of COVID-19 can still find psychological sequelae, one of which is PTSD.

COVID-19 illness can be considered a traumatic event and a trigger for PTSD. Survivors of COVID-19 will experience severe symptoms of PTSD than those who have never been infected with COVID-19 [5]. Someone who has severe COVID-19 and fears death from the disease is at high risk of developing PTSD. The experience of treatment and witnessing other COVID-19 patients struggling with illness and threats to other people's lives especially loved ones is also a psychological trauma for survivors [6-7]. Vindegaard and Benros in [8] found that COVID-19 patients have high PTSD symptoms (96.2%). Ju et al. in [9] also showed 36% of 114 COVID-19 survivors experienced PTSD one month after returning from hospitalization.

PTSD is a psychological disorder in someone who has directly experienced or witnessed of a traumatic event [10]. This disorder can occur anytime and last long in a person's life span [11]. People with PTSD will experience symptoms, such as feeling the traumatic event they previously experienced as if it were happening again, avoiding places, objects, or people related to the traumatic event experienced, self-blame, and excessive vigilance [12].

Experiencing continuously of PTSD symptoms will have an impact on weakening the patient's social functioning [13]. PTSD can increase the risk of substance abuse. This increase is likely an attempt to overcome the symptoms that are felt. Chronic PTSD experienced for six years can reduce the quality of life [11]. PTSD is related to an increased risk for self-harm or suicidal ideation [14].

Some factors that can increase the risk of PTSD include demographic characteristics, such as gender, age, level of education and employment, and environmental conditions, such as the severity of the disease or traumatic events experienced. People in their late teens or young adults, aged 16 to 25 years, are at the greatest risk of exposure to potentially traumatic events and developing PTSD. Exposure to these traumatic events is common among young adults, which is proven to peak at 16 to 25 years, the average age of college students [14].

The existence of social distancing that was enforced during the COVID-19 pandemic will have an impact on college student's mental health [15]. It's even more difficult for those suspected of having symptoms of COVID-19 must self-isolate to contain the spread of the infection. Reducing social interaction, worrying about infected family members, spreading excessive information on social media, and witnessing people's death and suffering due to COVID-19 can cause mental health disturbances, including PTSD [16]. A meta-analytic study conducted on 2,038 Chinese students by Chi et al. showed a prevalence of PTSD symptoms of 30.8% [15]. Li et al. in [17] found that around 27% of 1,442 health professional students at Sichuan University, China experienced stress during the outbreak COVID-19 and 11% experienced PTSD.

Considering the worrying impact of COVID-19 infection on mental health, especially for COVID-19 survivor students, it is necessary to carry out a psychological assessment to identify psychological disorders that arise after infection, one of which is PTSD. The assessment aims for early intervention so that COVID-19 survivor students don't experience PTSD, which can negatively impact their quality of life. Therefore, researchers are interested in researching the potential for post-traumatic stress disorder in COVID-19 survivor students at the Faculty of Medicine, Andalas University.

2. Methods

This research is a descriptive studies study with a cross sectional design. The population of this study was Medical Students at the Faculty of Medicine, Andalas University, who had been confirmed positive for COVID-19 and had tested negative. The sample for this study included all populations that met the inclusion criteria, namely students who were infected with COVID-19 in March 2020 to March 2022 who were confirmed positive from the PCR test. The exclusion criteria in this study were students who were diagnosed with PTSD. The sampling technique used is total sampling.

Data was collected using the PTSD Checklist for DSM-5 (PCL-5) questionnaire, distributed to respondents using a google form. The data obtained will be processed by univariate analysis to determine the distribution frequency and percentage of the variables. This research has passed an ethical review from the ethical committee of the Faculty of Medicine, Andalas University, with number 856/UN.16.2/KEP-FK/2022

3. Results

Based on the data collected, it was found that 167 respondents met the inclusion criteria and exclusion criteria to be used as research samples. The following is a table of descriptive statistical results about the characteristics of the research subjects.

Table 1. Characteristics of Research Subjects

Characteristics	<i>f</i> (n=167)	%	Total
Gender			
Male	46	27,5	100%
Female	121	72,5	
Age			
17 years old	2	1,2	100%
18 years old	36	21,6	
19 years old	30	18	
20 years old	50	29,9	
21 years old	34	20,4	
22 years old	9	5,4	
23 years old	5	2,9	
25 years old	1	0,6	
Clinical Symptoms of COVID-19			
Asymptomatic	20	11,9	100%
Mild Illness	123	73,7	
Moderate Illness	24	14,4	
Severe Illness	0	0	
Critical Illness	0	0	

Based on table 1, it was found that most respondents were female (72.5%). The youngest respondent is 17 years old, and the oldest is 25, with the most age being 20 (29.9%). Most respondents experienced mild illness clinical symptoms of COVID-19 (73.7%).

Table 2. Distribution Frequency of Potential PTSD Incident Screening Results in COVID-19 Survivor Students at the Faculty of Medicine, Andalas University

Screening	Frequency (<i>f</i>)	Percentage (%)
No Potential PTSD	137	82
Potential PTSD	30	18
Total	167	100

Table 2 shows that 137 respondents (82%) had no potential PTSD, while 30 respondents (18%) had the potential PTSD.

Table 3. Distribution Frequency of the Characteristics of COVID-19 Survivor Students with the Potential PTSD at the Faculty of Medicine, Andalas University

Variable	Potential PTSD		Total
	<i>f</i> (n=30)	%	
Gender			
Male	14	46,7	100%
Female	16	53,3	
Age			
17 years old	1	3,3	99,9%
18 years old	8	26,7	
19 years old	7	23,3	
20 years old	9	30	
21 years old	4	13,3	
22 years old	0	0	
23 years old	1	3,3	
25 years old	0	0	
Clinical Symptoms of COVID-19			

Asymptomatic	1	3,3	
Mild Illness	22	73,3	99,9%
Moderate Illness	7	23,3	
Severe Illness	0	0	
Critical Illness	0	0	

Table 3 shows that of the 30 student survivors of COVID-19 with potential PTSD, 53.3% were female, mostly aged 18 to 20 years, and experienced clinical symptoms of mild illness COVID-19 (73.3%).

Table 4. Distribution Frequency of PTSD Symptoms in COVID-19 Survivor Students with the Potential PTSD at the Faculty of Medicine, Andalas University

PTSD Symptoms	Intrusion		Avoidance		Alteration in Mood and Cognition		Negative Alteration in Arousal and Reactivity	
	<i>f</i> (n=30)	%	<i>f</i> (n=30)	%	<i>f</i> (n=30)	%	<i>f</i> (n=30)	%
No experience	2	6,7	1	3,3	0	0	4	13,3
Experience	28	93,3	29	96,7	30	100	26	86,7
Total	30	100	30	100	30	100	30	100

Table 4 shows that all respondents with potential PTSD experienced negative alterations in mood and cognition symptoms (100%). Most respondents experienced intrusion symptoms (93.3%), avoidance symptoms (96.7%), and alteration in arousal and reactivity symptoms (86.7%).

Table 5. Distribution Frequency of PTSD Symptoms in Intrusion Domain

Intrusion Symptoms	Experience		No Experience		Total
	<i>f</i> (n=30)	%	<i>f</i> (n=30)	%	
1. Disturbing by unwanted memories of the stressful experience while infected with COVID-19 repeatedly.	17	56,7	13	43,3	100%
2. Disturbing by dreams of the stressful experience while infected with COVID-19 repeatedly.	15	50	15	50	100%
3. Suddenly acting or feeling as if the stressful experience of being infected with COVID-19 was happening again	13	43,3	17	56,7	100%
4. Feeling very upset when something reminds you of the stressful experience while infected with COVID-19.	24	80	6	20	100%
5. Having strong physical reaction when something reminds you of a stressful experience while infected with COVID-19 (e.g., palpitations, trouble breathing, sweating).	20	66,7	10	33,3	100%

Table 5 shows that feeling very upset when something reminded of the stressful experience while infected with COVID-19 (80%) was a symptom of PTSD in the intrusion domain, which was most dominantly experienced by COVID-19 survivor students with potential PTSD.

Table 6. Distribution Frequency of PTSD Symptoms in Avoidance Domain

Avoidance Symptoms	Experience		No Experience		Total
	f (n=30)	%	f (n=30)	%	
1. Avoiding memories, thoughts, or feelings related the stressful experiences while infected with COVID-19	26	86,7	4	13,3	100%
2. Avoiding external reminders of the stressful experiences while infected with COVID-19 (e.g., people, places, activities or situations)	23	76,7	7	23,3	100%

Table 6 shows that most of the COVID-19 survivor students with potential PTSD avoiding memories, thoughts, or feelings related the stressful experiences while infected with COVID-19 (86.7%) in the avoidance domain.

Table 7. Distribution Frequency of PTSD Symptoms in Negative Alteration in Mood and Cognitive Domain

Negative Alterations in Mood and Cognition Symptoms	Experience		No Experience		Total
	f (n=30)	%	f (n=30)	%	
1. Trouble remembering important parts of the stressful experience while infected with COVID-19	11	36,7	19	63,3	100%
2. Having strong negative beliefs about yourself, other people, or the world (e.g., having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)	20	66,7	10	33,3	100%
3. Blaming yourself or others for the stressful experience while infected with COVID-19 or what happened after it	20	66,7	10	33,3	100%
4. Having strong negative feelings such as fear, anger, guilt, or shame	25	83,3	5	16,7	100%
5. Loss of interest in activities you used to enjoy	24	80	6	20	100%
6. Feeling distanced or cut off from others	23	76,7	7	23,3	100%
7. Trouble experiencing positive feelings (e.g., being unable to feel happiness or have loving feelings for people close to you)	22	73,3	8	26,7	100%

Based on table 7, it was found that having strong negative feelings such as fear, anger, guilt, or shame (83.3%) and loss of interest in activities you used to enjoy (80%) are dominant symptoms of PTSD in the negative alteration in mood and cognitive domain experienced by COVID-19 survivor students with potential PTSD.

Table 8. Distribution Frequency of PTSD symptoms by alteration in arousal and reactivity domain

Alteration in Arousal and Reactivity Symptoms	Experience		No Experience		Total
	<i>f</i> (n=30)	%	<i>f</i> (n=30)	%	
1. Irritable behavior, angry outbursts, or acting aggressively	18	60	12	40	100%
2. Taking lots of risks or doing things that could harm you	15	50	15	50	100%
3. Being "super alert" or watchful or on guard	19	63,3	11	36,7	100%
4. Feeling restless and easily startled	18	60	12	40	100%
5. Having difficulty concentrating	25	83,3	5	16,7	100%
6. Having difficulty sleeping or frequent awakenings at night	21	70	9	30	100%

Based on table 8, it was found that most of COVID-19 survivor students with potential PTSD having difficulty concentrating (83,3%) on the domain of alteration in arousal and reactivity.

Table 9. Distribution Frequency PTSD Stressor among COVID-19 Survivor Students with the Potential PTSD at the Faculty of Medicine, Andalas University

PTSD Stressor	Life-threatening Events		News Exposure about COVID-19		Social Isolation	
	<i>f</i> (n=30)	%	<i>f</i> (n=30)	%	<i>f</i> (n=30)	%
No Experience	28	93,3	19	63,3	19	63,3
Experience	2	6,7	11	36,7	11	36,7
Total	30	100	30	100	30	100

Table 9 shows that of the 30 respondents with potential PTSD, most respondents don't experience these three stressors. As many as 11 people (36.7%) experienced news exposure about COVID-19 and social isolation, and 2 people (6.7%) experienced life-threatening events.

4. Discussion

This study found that 30 people (18%) of COVID-19 survivor students at the Faculty of Medicine, Andalas University had the potential PTSD. The prevalence of PTSD among COVID-19 survivor students was 38% to Dixit et al. In their study, it was proven that college students experienced traumatic episodes after recovering from COVID-19 [18]. PTSD in COVID-19 survivors can be influenced by feelings of fear of death because some cases of COVID-19 can cause death [19]. A high fear of death during infection with COVID-19 is one of the traumatic stressors that can develop PTSD [6]. Fear of infecting others, stigmatization, and discrimination also trigger PTSD symptoms in COVID-19 survivor students [20].

This study shows that out of 30 COVID-19 survivor students with potential PTSD at the Faculty of Medicine, Andalas University found 46.7% were male and 53.3% were female. Meanwhile, in the ratio of male students with potential PTSD (14 people) and the total of male students (46 people) found that the proportion of male students with potential PTSD was 30.4%. And the ratio of female students with potential PTSD (16 people) and the total of female students (121 people) found that the proportion of female students with a potential for PTSD was 13.2%. These results indicate that male is more susceptible to experiencing PTSD than female. Bellan et al. in [21] found the same result, male is a risk factor for developing moderate to severe post-traumatic symptoms in COVID-19 survivors. Different from other studies show that female is more at risk of experiencing PTSD. However, one study showed that female was no longer significantly related with PTSD risk [22]. This could be due to other factors, such as the coping strategies used when dealing with a traumatic event [23, 24].

Based on age, most COVID-19 survivor students with potential PTSD are 18 to 20 years. However, the most vulnerable age for potential PTSD in this study was 17 years old than other ages. As many as 1 out of 2

people (50%) of 17 years old COVID-19 survivor students were found to have PTSD potential. This shows that younger ages are more susceptible to potential PTSD. Same as the study of Bell et al. in [25], PTSD is more at risk at a younger age. Lorenzo et al. in [26] found that the risk of developing PTSD after COVID-19 is significantly associated with decreased age. The increased risk of developing PTSD at this age can also be because older age having more life experiences, so they have higher resilience to traumatic events, including COVID-19 and can tolerate negative emotions [27]. The maturation helps them develop adaptive coping styles with more excellent resistance to psychological stress than at a younger age [28].

Based on the clinical symptoms of COVID-19 experienced, most of the COVID-19 survivor students with potential PTSD experience mild illness of COVID-19 (73.3%). Even though they are predominately experiencing symptoms of mild illness, COVID-19 survivor students with moderate illness COVID-19 are more susceptible to potential PTSD. This shows that the more severe the clinical symptoms of COVID-19 experienced, the higher the vulnerability of these COVID-19 survivor students to potential PTSD. Liu et al. in [28] found that the severity of clinical symptoms of COVID-19 is a significant risk factor for developing PTSD. Zhang et al. in [29] (2020) stated that psychological distress was more common in symptomatic COVID-19 patients than asymptomatic. Symptomatic COVID-19 patients had higher levels of stress, anxiety, and depression. The symptoms can lead to guilt, uncertainty, and discrimination due to stigma from others [30].

This study shows that most of COVID-19 survivor students with potential PTSD experience all domains of PTSD symptoms. Based on the intrusive domain, the dominant symptom is feeling very upset when something reminds of the stressful experience while infected with COVID-19. Based on the avoidance domain, avoiding memories, thoughts, or feelings related the stressful experiences while infected with COVID-19 was dominantly experienced by student survivors COVID-19 with potential PTSD. In the alterations in mood and cognition domain, the dominant symptoms experienced were having strong negative feelings such as fear, anger, guilt, or shame and loss of interest in activities you used to enjoy. In the alterations in arousal and reactivity domain, the dominant symptoms experienced is having difficulty concentrating. The same results were found by Xiong et al. in [31], most common PTSD symptoms found in COVID-19 survivors with PTSD were feeling upset when reminded about the traumatic event, trying not to think about or talk about the traumatic event, and have difficulty concentrating. In general, PTSD symptoms vary in people according to the nature of the traumatic event they are facing. One of the dominant PTSD symptoms experienced by COVID-19 survivor students with potential PTSD in this study is having difficulty concentrating. This needs attention because if these symptoms are felt continuously, it will greatly affect the academic process and learning outcomes of students who experience these symptoms so that proper handling of these symptoms is needed.

This study found that although some student survivors of COVID-19 experience stressors like life-threatening events, exposure to news about COVID-19, or social isolation, but most COVID-19 survivor students don't experience these three stressors and can still have the potential for PTSD. This shows that the three stressors don't affect the potential occurrence of PTSD in those who don't experience them. Several other stressors have also triggered the development of PTSD, such as having a family member who is infected or has died from COVID-19 infection, online learning during the COVID-19 pandemic, the economic impact of the family due to COVID-19, or the stigma from other people could have influenced the incident potential for PTSD in students who are survivors of COVID-19 [18, 32, 33].

5. Conclusion

There is a potential for PTSD in students who are survivors of COVID-19 at the Faculty of Medicine, Andalas University. Male COVID-19 survivor students, younger age, and experience clinical symptoms of moderate illness COVID-19 are more susceptible to the potential for PTSD. The most dominant PTSD symptoms experienced by COVID-19 survivor students with potential PTSD are symptoms of the domain alteration in mood and cognition. Most student survivors of COVID-19 with potential PTSD don't experience stressors like life-threatening events, exposure to news about COVID-19, or social isolation.

6. Data Availability Statement

The datasets generated and analyzed during the current study are not publicly available due to privacy and ethical considerations but are available from the corresponding author upon reasonable request.

7. Ethical Statement

Sumatera Medical Journal (SUMEJ) is a peer-reviewed electronic international journal. This statement below clarifies ethical behavior of all parties involved in the act of publishing an article in Sumatera Medical

Journal (SUMEJ), including the authors, the chief editor, the Editorial Board, the peer-reviewer and the publisher (TALENTA Publisher Universitas Sumatera Utara). This statement is based on COPE's Best Practice Guidelines for Journal Editors

8. Author Contributions

All authors contributed to the design and implementation of the research, data analysis, and finalizing the manuscript.

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11. Conflict of Interest

Authors declares no conflict of interest.

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