

Depression, Anxiety and Stress Levels during Covid-19 Pandemic among Frontliners of IIUM Hospital and Kuantan-Campus, and its Associated Factors

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ABSTRACT

INTRODUCTION: Psychological burden of frontliners increased during the COVID-19 pandemic, leading to psychiatric illnesses reducing productivity. Assessing their mental health status is vital in providing effective care. Our aim was to investigate the levels of depression, anxiety, stress, and associated factors among frontlines of International Islamic University Malaysia (IIUM), Sultan Ahmad Shah Medical Centre (SASMEC) and Kuantan-Campus during the recent COVID-19 pandemic. **MATERIALS AND METHODS:** Cross-sectional study among 261 SASMEC@IIUM and 125 Kuantan-campus IIUM frontliners from March 2021 to June 2022 using self-administered validated DASS-21 questionnaire. Descriptive statistics, Chi-Square and Fisher's Exact tests were used for data analysis. Frontliners with severe and very severe DASS scores were offered psychoeducational counselling for intervention. **RESULTS:** Out of 386 respondents, 82.1% were clinical frontliners, 65.8% were female, and 65.8% were married. The prevalence was 15.8%, 29.5% and 9.3% for depression, anxiety and stress, respectively. This study showed no statistical differences between the clinical and non-clinical, and between SASMEC@IIUM and Kuantan-campus frontliners on depression, anxiety and stress levels. Those with post-traumatic events had significant association with depression ($p < 0.001$) and anxiety ($p < 0.001$), while anxiety significantly associated with chronic diseases ($p = 0.034$). **CONCLUSION:** Over one-fourth of frontline staff suffered from anxiety during the COVID-19 pandemic, whereas 9-15% experienced depression and stress. Frontliners with post-traumatic events or chronic diseases required additional support in coping with their mental health burden. No significant difference was found in anxiety, depression and stress levels between clinical and non-clinical or between hospital-based and on-campus frontliners, suggesting a comprehensive mental health screening and timely intervention to all frontliners regardless of their post or area of service.

Keywords

DASS-21, Frontliners, Clinical, Non-clinical, IIUM

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INTRODUCTION

A workplace is a key environment affecting the mental well-being and health of personnel. Although it is difficult to compute the impact of work alone on individual psychological and social behaviour, most mental health professionals have reached a consensus that the workplace environment can significantly influence an individual's mental well-being. The recent COVID-19 pandemic, which had affected all communities globally,

was found to have had an impact on the mental health of many people. COVID-19 illness is an infectious disease caused by the causative coronavirus. The spectrum of illness caused ranged from a self-limiting flu-like illness to a life-threatening multi-organ involvement. People in extreme age groups, such as older people, neonates, or those with co-morbidity, are more likely to develop complications when contracting this virus. ¹

During the major virus outbreak in the 21st century, the Coronavirus disease 2019 (COVID-19) pandemic led to significant risks and hazards to mental health capacity globally. The pandemic was associated with high levels of psychological distress that stretched the threshold of clinical intervention globally. Most countries across the globe have implemented public health and social measures, including movement restrictions, partial or full closure of schools and businesses, physical quarantine in specific geographic areas and worldwide travel restrictions, which in turn caused further increased mental and physical burden. Reducing the negative impact of COVID-19 towards mental well-being had to be a global health priority. A recent systematic review of the general population during the COVID-19 pandemic in China, Spain, Italy, Iran, the US, Turkey, Nepal, and Denmark, reported the prevalence of anxiety (6.33% to 50.9%), depression (14.6% to 48.3%), post-traumatic stress disorder (7% to 53.8%), psychological distress (34.43% to 38%), and stress (8.1% to 81.9%).²

Risk factors associated with mental distress were found to include female gender, younger age groups (≤ 40 years), presence of chronic/psychiatric illnesses, unemployment, student status, and frequent exposure to social media/news concerning COVID-19.² Working under challenging and stressful circumstances, with shift work likely, to continue for longer potentially exacerbates existing risk factors such as occupational stress and anxiety, especially for the frontliners. Therefore, supporting the well-being of healthcare workers is crucial to sustaining the healthcare systems during and beyond the current crisis.³ Additionally, almost all COVID-19 cases were screened and treated in the healthcare setting by healthcare staff who had received little to no mental health training. For this reason, it is essential for the assessment and intervention of mental health concerns to be administered in those settings.⁴

Hence, it is essential to revisit the mental health status assessment of personnel involved in providing effective and efficient mental health care. Clinical frontliners provide direct patient care of any type and often have face-to-face contact with patients to diagnose, treat and

continue ongoing care. Non-clinical frontline workers interact with the public and patients but do not provide medical care support to the patient, such as securities, receptions and administrative officers.⁵ This study aims to determine levels of depression, anxiety, and stress and their associated factors among the frontliners working at the International Islamic University Malaysia (IIUM) hospital, which is known as the Sultan Ahmad Shah Medical Centre or SASMEC@IIUM and the IIUM Kuantan-Campus during the COVID-19 pandemic.

MATERIALS AND METHODS

Data collection for this cross-sectional study was conducted from September 2021 to Jun 2022 during the COVID-19 pandemic among the clinical frontliners from SASMEC@IIUM and non-clinical frontliners from IIUM Kuantan Campus. The clinical frontliners were doctors, nurses and assistant medical officers, whereas the non-clinical frontliners were administrative officers, drivers and security officers. The sample size of this study was based on the Krejcie and Morgan table, where the calculated sample size, including a 10% non-response rate for the SASMEC@IIUM, was 200, while for IIUM Kuantan Campus was 102.⁶

A structured self-administered questionnaire was used for data collection. Eligible participants were recruited based on convenience sampling. The questionnaire contained two domains: 1) The socio-demographic characteristics of the respondents, including smoking status, family history of psychiatric illness, chronic diseases, and traumatic events within the previous six months, and 2) The DASS-21 questionnaire.⁷ The DASS-21 is a set of three self-report domains with the Likert scales of 'almost always', 'often', 'sometimes' and 'never', designed to measure the emotional states of depression, anxiety and stress over the past week. The total scores for each domain of DASS-21 were categorized into normal, mild, moderate, severe and very severe.⁷ The reported Cronbach's alpha for the reliability of the Malay version of the DASS-21 questionnaire in the Malaysian population were 0.84, 0.74 and 0.79 for the depression, anxiety and stress domains, respectively.⁸

Academicians of IIUM and subjects with known psychiatric illnesses were excluded from this study. The preliminary data were entered into IBM SPSS version 26.0 and analyzed using descriptive statistics and Chi-Square or Fisher's Exact test if the assumptions were not met for the Chi-Square test. The expected frequency of less than five should not be more than 20% of the cells for the assumption of the Chi-square test to be satisfied. Ethical approval was obtained from the IIUM Ethics Committee (IREC 2021-116). The participants voluntarily responded to the questionnaires after giving written consent. The participants remained anonymous, and their responses were kept confidential. A psycho-educational group intervention and stress-coping skills workshop was organized for those found to have moderate to severe levels of depression, anxiety and stress. In addition, those with severe to very severe levels were offered medical treatment.

RESULTS

From all the questionnaires distributed to the subjects, only 261 frontliners from SASMEC@IIUM and 125 frontliners from IIUM-Kuantan Campus consented to participate and responded to the questionnaires. Out of

Table 1: Sociodemographic Characteristics of the Frontliners at International Islamic University Malaysia Hospital (SASMEC@IIUM) and On-Campus (IIUM-Kuantan) (N=386)

Bio-Demographic	SASMEC (n=261) n (%)	IIUM Kuantan (n=125) n (%)	Total N (%)	"p"
Gender				
Male	79 (30.3)	53 (42.4)	132 (34.2)	0.019
Female	182 (67.9)	72 (57.6)	254 (65.8)	
Age Group years				
20-30	183 (70.1)	32 (25.6)	215 (55.7)	<0.001*
31-40	74 (28.4)	60 (48.0)	134 (34.7)	
≥ 41	4 (1.5)	33 (26.4)	37 (9.6)	
Marital Status				
Single	101 (38.7)	30 (24.0)	131 (33.9)	0.015*
Married	157 (60.2)	94 (75.2)	251 (65.0)	
Divorce/Widow	3 (1.1)	1 (0.8)	4 (1.0)	
Ever Smoking				
- Yes	25 (9.6)	20 (16.0)	45 (11.7)	0.066
- No	236 (90.4)	105 (84.0)	341 (88.3)	
Traumatic Event**				
Yes	16 (6.1)	11 (8.8)	27 (7.0)	0.336
No	245 (93.9)	114 (91.2)	359 (93.0)	
Chronic Disease/s				
Yes	11 (4.2)	21 (16.8)	32 (8.3)	<0.001
No	250 (95.8)	104 (83.2)	354 (91.7)	

* Comparisons were analyzed using Fisher's Exact Test

**Traumatic event for the past six months, such as terminal diseases, disaster, divorce or death.

the total 386 participants, majority of them were clinical frontliners (82.1%), female (65.8%), and married (65.8%). Those aged 31 years and above, married and having chronic diseases were found higher among on-campus frontliners than those from the hospital ($p < 0.001$, 0.015 and < 0.001 , respectively), as shown in Table 1.

A total of 61 responders (15.8%) were depressed, whereas 114 responders (29.5%) had anxiety, and 36 responders (9.3%) had stress. A total of 31 (8%), 42 (10.9%) and 18 (4.6%) participants were noted to have moderate to very severe levels of depression, anxiety and stress, respectively. The results also indicated that depression, anxiety, and stress levels between the frontliners from SASMEC @IIUM and IIUM Kuantan Campus were not statistically different, as shown in Figure 1.

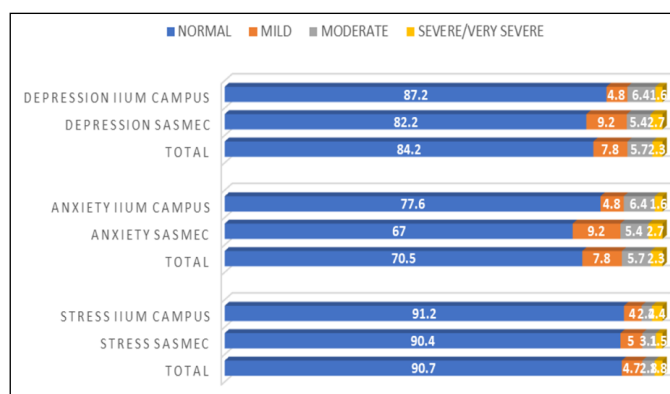


Figure 1: Depression, Anxiety and Stress Levels Between the International Islamic University Malaysia Hospital (SASMEC@IIUM) and On-Campus (IIUM- Kuantan) (N=386)

This study also showed no statistical difference between the clinical and non-clinical frontliners on depression, anxiety, and stress levels, as given by the p-values of 0.781, 0.326 and 0.714, respectively. On the other hand, as shown in Table 2, the percentage of those with depression and anxiety was significantly higher in those with post-traumatic events such as terminal disease, disasters like floods and accidents, divorce or death ($p < 0.001$ and 0.001, respectively). It can also be seen that those with chronic diseases had a significantly higher percentage of anxiety compared to those without chronic diseases ($p = 0.034$).

DISCUSSION

Mental health disorders are considered an "invisible illness" which has been on the escalation, from 10.5% in

Table 2: Association between Depression, Anxiety and Stress with Sociodemographic Characteristic among Frontliners (Chi-Square Test, N = 386)

Demographic	Depression (n=61)			Anxiety (n=114)			Stress (n=36)		
	Yes (n=61) n (%)	No (n=325) n (%)	p-value	Yes (n=114) n (%)	No (n=272) n (%)	p-value	Yes (n=36) n (%)	No (n=350) n (%)	p-value
Gender									
Male (n=132)	19 (31.1)	113 (34.8)	0.826	44 (38.6)	88 (32.4)	0.104	15 (41.7)	117 (33.4)	0.900
Female (n=254)	42 (68.9)	212 (65.2)		70 (61.4)	184 (67.6)		21 (58.3)	233 (66.6)	
Marital Status									
Single (n=131)	27 (44.3)	104 (32.0)	0.382	47 (41.2)	84 (30.9)	0.644	8 (22.2)	123 (35.1)	0.697
Married (n=255)	34 (55.7)	221 (68.0)		67 (58.8)	188 (69.1)		28 (77.8)	227 (64.9)	
Age Group									
20-30 (n=215)	35 (57.4)	180 (55.4)	0.142*	72 (63.2)	143 (52.6)	0.174	18 (50.0)	197 (56.3)	0.403*
31-40 (n=134)	22 (36.1)	112 (34.5)		34 (29.8)	100 (36.8)		14 (38.9)	120 (34.3)	
≥ 41 (n=37)	4 (6.6)	33 (10.1)		8 (7.0)	29 (10.7)		4 (11.1)	33 (9.4)	
Ever Smoking									
Yes (n=45)	5 (8.2)	40 (12.3)	0.532*	13 (11.4)	32 (11.8)	0.674	4 (11.1)	41 (11.7)	0.365*
No (n=341)	56 (91.8)	285 (87.7)		101 (88.6)	240 (88.2)		32 (88.9)	309 (88.3)	
Traumatic Event**									
Yes (n=27)	9 (14.8)	18 (5.5)	<0.001	10 (8.8)	17 (6.3)	0.001	9 (25.0)	18 (5.1)	0.460
No (n=359)	52 (85.2)	307 (94.5)		104 (91.2)	255 (93.7)		27 (75.0)	332 (94.9)	
Chronic Diseases									
Yes (n=32)	6 (9.8)	26 (8.0)	0.066	9 (7.9)	23 (8.5)	0.034	7 (19.4)	25 (7.1)	0.990
No (n=354)	55 (90.2)	299 (92.0)		105 (92.1)	249 (91.5)		29 (80.6)	325 (92.9)	
Working place									
Hospital (n=261)	45 (73.8)	216 (66.5)	0.921	86 (75.4)	175 (64.3)	0.309	25 (69.4)	236 (67.4)	0.652
Campus (n=125)	16 (26.2)	109 (33.5)		28 (24.6)	97 (35.7)		11 (30.6)	114 (32.6)	
Post									
Clinical (n=317)	52 (85.2)	265 (81.5)	0.781	97 (85.1)	220 (80.9)	0.326	31 (86.1)	286 (81.7)	0.714
Non-clinical (n=69)	9 (14.8)	60 (18.5)		17 (14.9)	52 (19.1)		5 (13.9)	64 (18.3)	

* Fisher's Exact Test **Traumatic event for the past six months, such as terminal diseases, disaster, divorce or death.

2005 to 29% in 2015 of the population in Malaysia suffering from it.⁹ A workplace is one of the main environments that could affect mental well-being and health. The COVID-19 pandemic is anticipated to cause a psychological impact on the frontliners with regard to depression, anxiety and stress, which can be either mild, moderate or severe.

Demographic data showed that more females work both on-campus and in the SASMEC@IIUM hospital. The increasing burden of women who have jobs and still shoulder the bulk of the house chores at home may have led to stress and burnout. Women continue to bear a heavier burden when it comes to balancing office work and family responsibility, despite progress in years to bring about gender equality in the workplace.¹⁰ Although in this study, a deterioration in good mental health was more commonly seen in female respondents (69%) than in male respondents (31%), it was not significant; hence both gender was likewise affected. SASMEC@IIUM Hospital is a new hospital, which reflects that the majority of the frontline workers are in the younger age group (20-30 years old). More married couples with family (75%) are on the campus working site. Nurses accounted for the

majority of clinical frontliners.

Although traumatic events and chronic disease/s were small in proportion (7% and 8%), they greatly impacted depression, anxiety and stress levels among the frontliners. Table 2 shows that frontliners with post-traumatic events such as terminal disease, disasters like floods and accidents, divorce or death were associated with anxiety and depression. In addition, frontliners who suffer from chronic disease/s are also significantly associated with anxiety. Recent traumatic events can tether to post-traumatic stress disorder (PTSD), a mental health condition triggered by a terrifying event-either experiencing or witnessing it. Depression and anxiety are the main symptoms, among other symptoms, such as flashbacks, nightmares, and uncontrollable thoughts about the event. This study showed a significant association between depression and anxiety with traumatic events among frontliners during the COVID-19 pandemic.

As stated in a previous study of depression and early traumatic events in adults, it is vital to consider long-term multimodal therapy that integrates pharmacotherapy, social support, and interpersonal psychotherapies with

trauma-focused interventions,¹¹ in this group of patients, especially during the COVID-19 pandemic. Multimodal therapy is perhaps also needed for those frontliners with chronic diseases to curb the anxiety symptoms before they progress to mental health problems. In the first year of the COVID-19 pandemic, the global prevalence of anxiety and depression had increased by 25%, released by the World Health Organization (WHO).¹² In this study, the depression, anxiety and stress prevalence were 15.8%, 29.5% and 9.3%, respectively. Except for a slightly higher anxiety proportion, this study's results were similar to a study done in Vietnam that showed 18%, 11.5%, and 7.7% of participants had symptoms of depression, anxiety, and stress in the second wave of COVID-19, respectively.

The majority of those who had depression, anxiety, and stress were at mild and moderate levels.¹³ Loneliness, fear of infection, suffering and death for loved ones, grief and financial uncertainties have also been cited as stressors that may lead to anxiety and depression. It is important to note that no matter how low the percentage is, they significantly impact the behavioural and psychosocial of the frontliners, which can give rise to the consequences of mental health disorders such as major depression, anxiety disorder, severe stress, burnout and suicide. What is worrisome is that among health workers as frontliners, exhaustion or overtiredness has been a major trigger for suicidal thoughts.¹² One previous study showed a higher percentage of depression symptoms among front-line non-medical workers, 50.3%, compared to our study (14.8%).¹⁴ The previous study used different questionnaires to assess depression and was conducted in different settings, whereby the respondents were non-medical volunteers as frontliners during the pandemic covid-19 with various backgrounds, for example, from state organisations, company employees, services personnel, biopharmaceutical-related industries workers, farmers, pensioners, individual practitioners and students with more than half were younger individuals.¹⁴

In our study, we found that depression, anxiety, and stress levels of the frontliners between clinical and non-clinical staff were not statistically different. When dealing with the public during the pandemic, non-clinical and clinical

frontline workers face similar work burdens, placing them under enormous and incomparable pressure, putting their physical, mental and social well-being at high risk.¹⁵ Both groups are exposed to excessive and unwarranted stress for prolonged periods, which can have many harmful consequences on their emotional and mental well-being.

Brief Psychoeducational Group Intervention and Stress-Coping Skills workshop was offered for those with moderate to severe depression, anxiety or stress scores. It was voluntarily and conducted by a clinical psychologist, occupational health physician and family medicine specialist (FMS). Those who still scored severe and very severe DASS levels four weeks post-Brief Psychoeducational Group Intervention and Stress Coping Skills workshop were offered medical consultation at the IIUM Family Health Clinic (FHC).

LIMITATION

Convenience sampling was used in this study instead of random sampling. This might affect its external validity or the generalizability of the results to frontliners from other facilities or areas. On the other hand, the depression, anxiety and stress levels used in this study were not clinical diagnoses. They were just based on the perception of the respondents from the questionnaire. However, with good Cronbach alpha as confirmed by previous research data, where the DASS-21 used in this study was developed based on the assumption that there are different degrees of depression, anxiety and stress experiences by different people, the reliability of the results is expected to be good.^{8,16}

CONCLUSION

Over one-fourth of the IIUM frontline staff suffered from anxiety during the COVID-19 pandemic, whereas 9-15% experienced depression and stress. Frontliners with post-traumatic events (such as a terminal disease, disaster, divorce, and death) and chronic diseases may require early and additional intervention to cope with their depression and anxiety. There was no difference in anxiety, depression and stress levels among the clinical and non-clinical frontliners either at hospital-based or university campus, suggesting a comprehensive mental health

promotion and timely intervention for all frontliners, regardless of their post or area of services, is highly recommended.

RECOMMENDATIONS

Further exploration of the association between physical symptoms experienced by frontliners may guide interventions to improve mental health outcomes. Hence, those with a high risk of depression, anxiety and stress should be urgently offered psychoeducational therapy. More regular stress-coping skills workshops among health workers could alleviate motivation and reduce anxiety and stress. Employers need to ensure that the frontliners have access to basic stress-coping skills training before initiating work, and intermittent psychoeducational therapy for mental health support during the pandemic should be regulated.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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