Original paper

DOI: http://doi.org/10.4038/sljpsyc.v13i2.8375

Psychiatric morbidity among COVID-19 positive persons in Central Province, Sri Lanka: a cross-sectional study

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Abstract

Background

The COVID-19 (SARS-CoV-2) infection has been reported to affect the physical and mental well-being of individuals due to its pathophysiology and associated strict control measures.

Aims

To explore the psychological morbidity and associated factors among the recently diagnosed SARS-CoV-2 infected individuals in Central Province, Sri Lanka.

Methods

A descriptive cross-sectional study was conducted among residents of the intermediate care centres (ICC) for COVID-19 infected patients in the Central Province, Sri Lanka from 06/05/2021 to 04/08/2021. The participants completed a questionnaire on sociodemographic details and were screened for symptoms of depression and anxiety using the Patient Health Questionnaire-9 (PHQ-9) and the Generalized Anxiety Disorder-7 (GAD-7).

Results

Of the 419 participants, 18.6% and 11.2% met cut-offs for depression and anxiety respectively. None of the participants reported self-harm following the diagnosis of COVID-19 infection, but 4.5% reported having experienced suicidal ideas. On bivariate analysis, female sex (P=0.002), being older than 35 years (P=0.04) and the presence of non-communicable diseases in the participant (P=0.04) were significantly associated with symptoms of depression.

Conclusions

The findings of this study indicate that a proportion of people diagnosed with acute COVID-19 infection experience psychological symptoms. This indicates the need for increased awareness about mental health issues associated with COVID-19 and the provision of appropriate psychological support for individuals at risk.

Key words: COVID-19, SARS-CoV-2 infection, depression, anxiety, suicidal ideas

SL J Psychiatry 2022; 13(2): 27-35

Introduction

Globally, the COVID-19 pandemic has been reported to have caused a significant psychosocial impact (1). Predominant psychological symptoms that have been reported to be associated with COVID-19 include, low mood, anxious preoccupation, irritability, lack of attention and concentration, insomnia and ideas of self-harm, while some studies have reported delirium, psychosis, and cognitive impairment (2). Studies from high-income countries (HIC) report that the pandemic is associated with increased levels of psychological morbidity, including depression, anxiety and post-traumatic stress disorder (PTSD) (3). There are only a few studies done in this area in low-income and middle-income countries (LMICs), however, those studies report increased levels of depression and anxiety (4,5). Furthermore, pre-existing psychiatric morbidity has been reported to be associated with increased mortality due to COVID-19 infection (6-8).

Sri Lanka experienced several lockdowns and periods of travel restriction during the pandemic and the consequences of these restrictions and lockdowns may have had an impact on the psychological and socioeconomic status of the people. As has been reported in other LMICs, anxieties about the COVID-19 infection are likely to be significant stressors in a

resource-limited country like Sri Lanka (1,9). Other issues, such as stigma, limited mental health literacy and the difficulties in accessing healthcare during lockdown periods may prevent help-seeking by those who need help. Vulnerable groups, such as those with a history of psychiatric illness, are likely to be at greater risk.

The aim of this study was to describe rates of depression, anxiety, suicidal ideation and self-harm, among recently diagnosed asymptomatic and mildly symptomatic COVID-19 positive persons and to explore factors associated with the increased risk of psychiatric morbidity.

Methods

This descriptive cross-sectional study was conducted during the third wave of COVID-19 infection, from 06/05/2021 to 04/08/2021, among COVID-19 positive patients, who were residing in two selected intermediate care centres (ICCs) in the Central Province, Sri Lanka. The study included all residents above the age of 18 years who were willing to provide written informed consent and if they were a resident in one of the two ICCs in the Central Province for 10-14 days within the study period. We kept the exclusion criteria to a minimum to maintain the naturalistic nature of the study. Therefore, only those who were not able to read or write were excluded. The study was approved by the Ethics Review Committee, Faculty of Medicine, University of Peradeniya, Sri Lanka (2020/EC/64).

The PHQ-9 is a brief, 9-item questionnaire, based on the DSM-IV criteria for the diagnosis of depression (10). The PHQ-9 has been translated to Sinhala and validated for local use, with a cut-off score of ≥10 demonstrating a sensitivity of 0.75 and a specificity of 0.97 for the detection of depression (11). The Tamil adaptation of the PHQ-9 was used for participants who were more fluent in the Tamil language (12).

The GAD-7 is a brief tool for the screening of anxiety, with a sensitivity and specificity of 89% and 82% respectively, at a cut-off of 10 (13). The Sinhala and Tamil translations of the GAD-7 have been previously used in Sri Lanka, with total score cut-offs of 5, 10 and 15 indicating mild, moderate and severe anxiety, respectively (14). Based on this, we considered those with a score of ≥10 as screening positive for moderate or severe anxiety symptoms.

Sociodemographic information and data regarding medical and psychiatric history were collected using a brief questionnaire prepared specifically for this study.

The tools were self-administered. However, the research team was available on site and contactable over the phone, through a screen, for any clarifications to be made at the time of data collection.

The data analysis was conducted using the Statistical Package for Social Sciences (SPSS for Windows, version 26.0). Associations between explanatory variables and the disorders of interest (depression and anxiety) were examined using both bivariate and multivariate analysis techniques. Unadjusted models were performed using the Chi-square test and adjusted models were performed using standard binary logistic regression analysis. Explanatory variables, which were at $P<0.2$ level, were included in the regression analysis.

Results

A total of 419 persons participated in the study and 59.4% were male (Table 1). The median age was 35 years (range 18-78 years), and more than half the sample was married (67.5%) (Table 1). Of the participants, 15.7% indicated that they had at least one type of non-communicable disease.

Among those who completed the PHQ-9 (91.4%, n=383), a total of 18.6% (n=78) screened positive for symptoms of depression. None of the participants reported a history of self-harm following the diagnosis of COVID-19, but 4.5% reported recent suicidal ideation. A total of 11.2% screened positive for anxiety symptoms, with a response rate of 89.9% in the GAD-7 (n=377) (Table 1).

The bivariate analysis showed that those who screened positive for depression were significantly more likely to be female, older than 35 years of age and have an already diagnosed non-communicable disease (Table 2). However, after adjusting for confounding variables in the standard binary logistic regression analysis, a significant association was noted only between the female sex and symptoms of depression (OR=2.06; 95% CI: 1.20-3.38) (Table 3).

In the bivariate analysis, the female sex was a significant predictor of anxiety, but this association was not found when controlled for confounding variables in the standardized binary logistic regression model (Table 4 and Table 5).

Table 1. Sociodemographic characteristics and psychological morbidity of the study participants (n=419)

Variable		N (%)
Age	≤ 35 years	215 (51.3%)
	>35 years	204 (48.7%)
Sex	Male	249 (59.4%)
	Female	170 (40.6%)
Marital status	Married	283 (67.5%)
	Single/Other	134 (32%)
Educational level	Completed Ordinary level or below	237 (56.5%)
	Completed Advanced level or above	174 (41.5%)
Occupation	Unemployed	97 (23.1%)
	Employed	302 (72.1%)
Monthly income	≤ 50,000/- Rs	274 (65.4%)
	> 50,000/- Rs	101 (24.1%)
Comorbid non communicable disease (NCD)	Yes	66 (15.7%)
	No	344 (82.1%)
Family member infected with COVID-19	Yes	175 (41.8%)
	No/don't know	235 (56.1%)
Recent suicidal ideation	Yes	19 (4.5%)
	No	337 (80.4%)
Depression	Scored ≥10 on PHQ-9 indicating symptoms of probable depression	78 (18.6%)
	Scored <10 on PHQ-9	305 (72.8%)
Anxiety	Scored ≥10 on GAD-7 indicating moderate or severe symptoms of anxiety	47 (11.2%)
	Scored <10 on GAD-7	330 (78.8%)

Table 2. Factors associated with screening positive for symptoms of depression (n=383)

Explanatory variables	Screened positive for depression n (%)	Screened negative for depression n (%)	Unadjusted OR (95 % CI)	P value*
Sex				
Female	45 (27.8)	117 (72.2)	2.19 (1.32-3.63)	0.002
Male	33 (14.9)	188 (85.1)	1	
Age category				
35yr >	31 (16.1)	161 (83.9)	0.59 (0.36-0.98)	0.04
35yr ≤	47 (24.6)	144 (75.4)	1	
Marital status				
Married	54 (21.2)	104 (81.31)	1.16 (0.68-1.99)	0.578
Single/Other	24 (18.8)	201 (78.8)	1	
Educational level				
Below A/L	38 (18.3)	170 (81.7)	0.78 (0.47-1.29)	0.324
A/L or above	38 (22.4)	132 (77.6)	1	
Occupation				
Unemployed	18 (19.4)	75 (80.6)	0.98 (0.54-1.78)	0.953
Employed	54 (19.6)	221 (80.4)	1	
Monthly income				
<50,000	56 (22.1)	197 (77.9)	1.35 (0.73-2.50)	0.338
>50,000	16 (17.4)	76 (82.6)	1	
Diagnosed to have a NCD				
Yes	18 (30.5)	41 (69.5)	1.90 (1.02-3.53)	0.04
No	60 (18.8)	259 (81.20)	1	
Has a family member aged <18 yrs				
No	25 (22.5)	84 (77.1)	1.19 (0.68-2.08)	0.542
Yes	42 (20)	168 (80)	1	
Has a family member aged >65 yrs				
No	40 (21.3)	148 (78.7)	1.05 (0.60-1.83)	0.863
Yes	26 (20.5)	101 (79.5)	1	
Has a family member who is COVID-19 positive				
Yes	38 (23.3)	125 (76.7)	1.32 (0.80-2.18)	0.272
No	40 (18.7)	174 (81.3)	1	

*P< 0.05 was considered as statistically significant

Table 3. Binary logistic regression model for factors associated with screening positive for depression among study participants (n=383)

Explanatory variables	Adjusted OR (95% CI)	P value*
Sex		
Female	2.06 (1.20-3.38)	0.008
Male	1	
Age category		
>35 yr	0.75 (0.44-1.29)	0.297
≤35 yr	1	
Presence of NCD		
Yes	1.65 (0.86-3.17)	0.135
No	1	

*Nagelkerke R^2=0.055, Cox and Snell R^2=0.035, Hosmer and Lemeshow test P=0.978, Omnibus Test of model coefficients P=0.004

Table 4. Factors associated with screening positive for symptoms of anxiety (GAD-7) (n=377)

Explanatory variables	Screened positive for anxiety n (%)	Screened negative for anxiety n (%)	Unadjusted OR (95% CI)	P value*
Sex				
Female	28 (17.6)	131 (82.4)	2.23 (1.20- 4.17)	0.01
Male	19 (8.7)	199 (91.3)	1	
Age category				
> 35 yr	25 (13.4)	161 (86.6)	1.19 (0.65-2.20)	0.57
≤ 35 yr	22 (11.5)	169 (88.5)	1	
Marital status				
Married	33 (13.1)	219 (86.9)	1.18 (0.61-2.30)	0.619
Single/Other	14 (11.3)	110 (88.7)	1	
Educational level				
Below A/L	25 (12.1)	182 (87.9)	0.91 (0.49-1.67)	0.75
A/L or above	22 (13.2)	145 (86.8)	1	
Occupation				
Unemployed	16 (17.8)	74 (82.2)	1.88 (0.97-3.67)	0.06
Employed	28 (10.3)	244 (89.7)	1	
Monthly income				
<50,000	35 (14.2)	212 (85.8)	1.78 (0.79-3.98)	0.160
≥50,000	8 (8.5)	86 (91.5)	1	

(Continued)

Explanatory variables	Screened positive for anxiety n (%)	Screened negative for anxiety n (%)	Unadjusted OR (95 % CI)	P value*
Diagnosed to have an NCD				
Yes	10 (17.9)	46 (82.1)	1.64 (0.76-3.52)	0.202
No	37 (11.7)	279 (88.3)	1	
Has a family member aged <18 yrs				
No	14 (13)	94 (87)	1.009 (0.505-2.016)	0.979
Yes	27 (12.9)	183 (87.1)	1	
Has a family member aged >65 yrs				
Yes	23 (12.2)	166 (87.8)	0.88 (0.45-1.72)	0.710
No	17 (13.6)	108 (86.4)	1	
Has a family member who is COVID-19 positive				
Yes	20 (12.8)	136 (87.2)	1.02 (0.55-1.50)	0.940
No	27 (12.6)	188 (87.4)	1	

*P< 0.05 was considered as statistically significant

Table 5. Binary logistic regression model for factors associated with screening positive for anxiety among study participants (n= 377)

Explanatory variables	Adjusted OR (95% CI)	P value*
Sex		
Female	0.58 (0.21 - 1.63)	0.303
Male	1	
Occupation		
Unemployed	0.62 (0.28-1.37)	0.618
Employed	1	
Presence of NCD		
Yes	0.78 (0.32-1.91)	0.586
No	1	
Income		
<50000	0.71 (0.31-1.64)	0.419
≥50000	1	

*Nagelkerke R^2=0.048, Cox and Snell R^2=0.025, Hosmer and Lemeshow test P=0.64, Omnibus Test of model coefficients P=0.142

Discussion

To the best of our knowledge, this is the first study conducted to explore the psychiatric morbidity and its associated factors among COVID-19 infected individuals in Sri Lanka.

We found a substantial prevalence of clinically significant depressive (18.6%) and anxiety (11.2%) symptoms. The prevalence of depressive symptoms was similar to that reported in studies among COVID-19 infected individuals in Nepal (26.3%) and China (14.2%), however, some other studies have reported higher values (2,15-18).

While none of the participants reported self-harm following the diagnosis of COVID-19, 4.5% reported recent suicidal ideation. Previous studies report that compared to the non-infected people those screened positive for COVID-19 have shown an increased association with suicidal and self-harm thoughts (19,20).

We found that the female sex was significantly associated with an increased risk of probable depression, and similar findings have been reported in several other studies (15,21). Previous studies have reported an association between depression and having a family member diagnosed with COVID-19 but this was not observed among our participants (17, 22-25). Contrary to our findings, a study conducted in India reports that employment status was associated with the occurrence of depression (5).

It is also possible that some of the depressive and anxiety symptoms reported were reflective of adjustment difficulties in the context of the recent COVID-19 diagnosis. However, it is not clear why females were more at risk of depressive symptoms compared to males, but this finding is consistent with previous epidemiological studies conducted during the COVID-19 pandemic (2). Disruption of family dynamics and separation from the children may have contributed to this finding, however, we could not find a significant association between having a child below 18 years and the occurrence of depressive symptoms. It could also be argued that men, who are more likely to be the family breadwinners, would have been affected by the loss of income and socioeconomic issues. A study which carried out a one-year follow-up among survivors of SARS infection reports persistent psychological distress such as depression (30%) and anxiety (40.7%) among the participants, with females being affected three times more than males (26).

Limitations

It is possible that when completing the PHQ-9 some participants may have included their experience of the quarantine procedures, which may have led to an over-estimate of the rate of depression in this group. Also, except for a few participants, majority had not answered the question if they were previously diagnosed with a psychiatric illness.

The absence of a control group limits the conclusions that can be made from the study findings. The Tamil adaptation of the PHQ-9, which was used in this study had not been formally validated among the Sri Lankan population.

Given the cross-sectional nature of this study, we are unable to comment on any possible causative associations in the findings. The convenience sampling method may also have influenced our findings. Lastly, the study was limited to two ICCs in the Central Province of Sri Lanka, and therefore, may not be representative of the entire country.

Conclusions

The findings of this study indicate that a proportion of people recently diagnosed to have COVID-19, were experiencing considerable psychological distress and symptoms suggestive of depression and anxiety. This indicates the need for increased awareness about mental health issues that could occur in infections of this nature, both among the general population as well as healthcare practitioners, to facilitate the provision of appropriate psychological support in the future. Given that this study only included those recently diagnosed to have COVID-19, further follow-up studies in the community, to explore psychological morbidity during the post-pandemic period, would also be useful to plan provision of appropriate ongoing mental health support to the public during a pandemic.

Author contributions

All authors participated in the formulation of the research questions and planning of the study. FM, HW and SF conducted data collection, and DR, HW, SF and FM participated in the data analysis. TR and FM wrote the initial draft of the article, and all authors approved the final manuscript.

Conflicts of interest

None declared.

Funding

The study received no funding.

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References

1. Kola L, Kohrt BA, Hanlon C, et al. COVID-19 mental health impact and responses in low-income and middle-income countries: reimagining global mental health. Lancet Psychiatry 2021; 8(6): 535-50.
2. Mazza MG, De Lorenzo R, Conte C, et al. Anxiety and depression in COVID-19 survivors: Role of inflammatory and clinical predictors. Brain Behav Immun 2020; 89: 594-600.
3. González-Sanguino C, Ausín B, Castellanos MÁ, et al. Mental health consequences during the initial stage of the 2020 Coronavirus pandemic (COVID-19) in Spain. Brain Behav Immun 2020; 87: 172-6.
4. Mamun MA, Sakib N, Gozal D, Israfil AKM. The COVID-19 pandemic and serious psychological consequences in Bangladesh: A population-based nationwide study. J Affect Disord 2021; 279: 462-72.
5. Verma S, Mishra A. Depression, anxiety, and stress and socio-demographic correlates among general Indian public during COVID-19. Int J Soc Psychiatry 2020; 66(8): 756-62.
6. Vai B, Mazza MG, Delli Colli C, et al. Mental disorders and risk of COVID-19-related mortality, hospitalisation, and intensive care unit admission: A systematic review and meta-analysis. Lancet Psychiatry 2021; 8(9): 797-812.
7. Castro VM, Gunning FM, McCoy TH, Perlis RH. Mood Disorders and Outcomes of COVID-19 Hospitalizations. Am J Psychiatry 2021; 178(6): 541-7.
8. Jeon HL, Kwon JS, Park SH, Shin JY. Association of mental disorders with SARS-CoV-2 infection and severe health outcomes: Nationwide cohort study. Br J Psychiatry 2021; 218(6): 344-51.
9. Gunnell D, Appleby L, Arensman E, et al. Suicide risk and prevention during the COVID-19 pandemic. Lancet Psychiatry 2020; 7(6): 468-71.
10. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med 2001; 16(9): 606-13.
11. Hanwella R, Ekanayake S, De Silva VA. The validity and reliability of the Sinhala translation of the patient health questionnaire (PHQ-9) and PHQ-2 screener. Depress Res Treat 2014; 2014: 768978.
12. Institute for research and development. National mental health survey: Institute for research and development (Internet). 2015. Available from: https://www.ird.lk/mental-health-survey/(accessed 01/10/2022)
13. Spitzer RL, Kroenke K, Williams JW, Löwe B. A brief measure for assessing generalized anxiety disorder: The GAD-7. Arch Intern Med 2006; 166(10): 1092-7.
14. Jayarajah U, Samarasekera AM, Samarasekera DN. A study of postoperative anxiety and depression among patients with intestinal stomas. Sri Lanka J Surg 2016; 34(2): 6.
15. Khanal P, Paudel K, Mehata S, et al. Anxiety and depressive symptoms among home isolated patients with COVID-19: A cross-sectional study from Province One, Nepal. PLOS Global Public Health 2022; 2(9): e0001046.
16. Mei Q, Wang F, Bryant A, Wei L, Yuan X, Li J. Mental health problems among COVID-19 survivors in Wuhan, China. World Psychiatry 2021; 20(1): 139-40.
17. Cai X, Hu X, Ekumi IO, et al. Psychological distress and its correlates among COVID-19 survivors during early convalescence across age groups. Am J Geriatr Psychiatry 2020; 28(10): 1030-9.
18. Deng J, Zhou F, Hou W, et al. The prevalence of depression, anxiety, and sleep disturbances in COVID-19 patients: a meta-analysis. Ann N Y Acad Sci 2021; 1486(1): 90-111.
19. Sinyor M, Zaheer R, Webb RT, et al. SARS-CoV-2 infection and the risk of suicidal and self-harm thoughts and behaviour: A systematic review. Can J Psychiatry 2022; 67(11): 812-27.
20. Iob E, Steptoe A, Fancourt D. Abuse, self-harm, and suicidal ideation in the UK during the COVID-19 pandemic. Br J Psychiatry 2020; 217(4): 543-6.
21. Guo Q, Zheng Y, Shi J, et al. Immediate psychological distress in quarantined patients with COVID-19 and its association with peripheral inflammation: A mixed-method study. Brain Behav Immun 2020; 88: 17-27.
22. Nie XD, Wang Q, Wang MN, et al. Anxiety and depression and its correlates in patients with coronavirus disease 2019 in Wuhan. Int J Psychiatry Clin Pract 2020; 25(2): 1-6.
23. Rahman MH, Banik G, Ahmed A, et al. Anxiety and depressive symptoms among COVID-19 patients admitted to three isolation facilities in Bangladesh. Heal Psychol Open 2021; 8(2): 1-10.

24. Islam S, Ferdous Z, Islam U, Mosaddek A, Potenza M, Pardhan S. Treatment, persistent symptoms, and depression in people infected with COVID-19 in Bangladesh. Int J Environ Res Public Health 2021; 18(4): 1-16.

25. Hamadani JD, Hasan MI, Baldi AJ, et al. Immediate impact of stay-at-home orders to control COVID-19 transmission on socioeconomic conditions, food insecurity, mental health, and intimate partner violence in Bangladeshi women and their families: an interrupted time series. Lancet Glob Heal 2020; 8(11): e1380-9.

26. Lee AM, Wong JGWS, McAlonan GM, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. Can J Psychiatry 2007; 52(4): 233-40.