Original article

Psychiatric Symptoms Screening among Patients suffering from COVID-19 infection attending Kasr-Al-Ainy Outpatient clinic: A Cross sectional study

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A R T I C L E I N F O

A B S T R A C T

Background: COVID-19 has a serious impact on mental well-being. The rapid spread of the pandemic, effects of quarantine or isolation, financial and physical burden of the disease caused a general state of anxiety, stress, and depression. This study aimed to screen for anxiety, stress, depression, and insomnia among patients suffering from mild or moderate COVID-19. **Methods:** This observational cross-sectional analytical study was conducted on 203 COVID-19 patients who attended the COVID-19 outpatient clinic in Kasr Al-Ainy hospital, Egypt, in a time frame from July 2020 to February 2021. They were subjected to: full history, examination, imaging and Psychometric tools. **Results:** Majority of the included patients (203) were 30 years of age and less (27.6 %). Most of the patients had extremely severe depression, anxiety and stress (65%, 77.8% & 48.3% respectively), while insomnia was moderate to severe in 36 % of the sample. Myalgia was the most common complaint among all patients. Anxiety, stress and depression were positively correlated with insomnia severity index score (P= 0.014), statistically negative correlation was found between chronic illness and history of chest disease with insomnia severity index (p=0.038). **Conclusion:** Depression, anxiety and stress were remarkably high among our patients, while insomnia was moderate to severe in 36 % of the sample.

Introduction

COVID-19 (coronavirus disease 2019) is respiratory tract infection due to a novel coronavirus, SARS-CoV-2. In March 2020, WHO declared it as a pandemic [1]. The clinical picture of COVID-19 ranges from asymptomatic to severe; symptoms usually include fever, cough, and dyspnea. The course of the disease may deteriorate

very quickly within a week and become catastrophic [2].

According to previous pandemic events, neuropsychiatric symptoms might appear during an acute viral infection or at different times after infection [3]. The pandemic flu of the 18th and 19th centuries was characterized by neuropsychiatric symptoms such insomnia, anxiety, depression, mania, psychosis, suicide, and delirium [4] [5] [6].

Since the start of COVID-19, common side effects include fear, health anxiety, apprehension, uncertainty, loneliness, and mass hysteria [7].

According to reports from numerous countries, the consequences of the lockdown have increased the prevalence of depression, anxiety, and suicidality [8]

A large Chinese survey applied on 56,679 individuals showed depression (27.9%), anxiety (31.6%), stress (24.4%), and insomnia (29.2%) [9]. Also, **WHO, 2020** stated that fear, worry and stress are normal responses to perceived or real threats from COVID-19 pandemic [1].

Since Egypt has been among the most affected countries in the Eastern Mediterranean region with 11,228 confirmed cases and 592 deaths [10], the ministry of health on March the 31st, 2020 has designed a special hotline for Egyptians isolated at home and in quarantine to offer psychological support during the coronavirus [11]. So, in this study, we aim at screening for depressive, anxiety symptoms all with stress symptoms and insomnia among a convenient sample of patients attending COVID-19 outpatient clinic at al Kasr-Al-Ainy hospital.

Such Screening for these symptoms is very important due to their negative impact on the outcome and prognosis [12] and will provide a true chance to offer a good, optimum quality of care for patients infected with COVID-19.

Methods

Study Design:

It is an observational, cross-sectional, analytical study. Adult patients above 18 years old with mild to moderate COVID-19 illness (with or without risk factors) (newly diagnosed or with persistence of symptoms) attending the COVID-19 outpatient clinic in Kasr-Al-Ainy hospital (Cairo University) in the period from July 2020 to February 2021 were included. Patients who refused to participate or had severe COVID-19 illness were excluded. Ethical approval was taken from The Cairo University Research Ethics Committee (ERC) no. 81-2020

All the patients were diagnosed with COVID-19 by nasopharyngeal swab and subjected to: Informed consent; patient history; including; personal history and history of any chronic diseases or comorbidity; examination, which included vital signs (temperature, BP, pulse, RR), oxygen saturation; head and neck, chest and abdominal examination; and necessary laboratory investigations, also computerized tomography (CT) chest imaging and accordingly the presence or absence of ground glass opacities (GGO) in lungs.

Based on all the previous data, triage of patients was done with categorization of the patient into mild, moderate, severe, and critically ill according to the Ministry of Health and Population Management protocol for COVID-19 patients in Egypt in May 2020 (MOHP) and accordingly, patients with mild to moderate severity were recruited into the study.

Patients were assessed by the following Psychometric tools:

1- The Depression Anxiety Stress Scale:

The Arabic version of DASS-21 was used, which consisted of three self-report scales that assessed depression, anxiety, and stress during the past 7 days [13]. The responder had to choose between four answers ranging from (did not apply at all) to (apply very much. Higher scores indicate greater severity .Scores for the three scales are calculated by summing the scores for the relevant items, and the severity of each scale is defined (normal, mild, moderate, severe, or extremely severe) [14]. As regards depression: scores from 0-4 are normal. 5-6 mild, 7-10 moderate, 11-13 severe and 14 or more extremely severe. Anxiety: scores from 0-3 are normal. 4-5 mild, 6-7 moderate, 8-9 severe and 10 or more extremely severe. Stress: scores from 0-7 are normal, 8-9 are mild, 10-12 are moderate, 13-16 are severe and 17 or more are extremely severe.

2- Insomnia severity index:

The Arabic version of ISI was used [15]. It consisted of a 7-item self-report questionnaire assessing the nature, severity, and impact of

insomnia. The usual recall period is the "last month," and the dimensions evaluated are: severity of sleep onset, sleep maintenance, and early morning awakening problems; sleep dissatisfaction; interference of sleep difficulties with daytime functioning; noticeability of sleep problems by others; and distress caused by the sleep difficulties. A 5-point Likert scale is used to rate each item (e.g., 0 = no problem; 4 = very severe problem), yielding a total score ranging from 0 to 28. The total score is interpreted as follows: absence of insomnia (0–7), sub-threshold insomnia (8–14), moderate insomnia (15–21), and severe insomnia (22–28) [16]

Data collection tools:

Demographic & clinical data were collected at the outpatient clinic, while psychiatric assessment questionnaires were gathered through online Google forms (self- administered questionnaires) sent to the patients via their emails or WhatsApp application.

Sample size (number of participants included):

Considering that the expected rate of psychological disorders to be 50% among the whole population, to detect this expected rate at a confidence level of 95% and a margin of error of 10% using the EPIINFO program version 7.2.5, the minimum sample size was 96 subjects, considering the non-response rate is 20% so that the minimum sample size was increased to 116 subjects.

Statistical analysis:

Data was analyzed through the Statistical Package of Social Science Software program, version 25 (IBM SPSS Statistics for Windows, Version 25. 0. Armonk, NY: IBM Corp.). The data was summarized as range, mean, and standard deviation for quantitative variables and frequency and percentage for qualitative ones.

Comparison of qualitative variables between groups was performed through Chi square test of independence while comparison of quantitative variables was conducted through an independent sample t-test or Mann-Whitney test (according to normality of data).

Significance level (alpha error) of 5% was used to reject or accept null hypothesis (H0).

Results

This study was conducted on 203 patients with COVID-19. The demographic and clinical data of the patients were demonstrated in **Table (1).** The mean age was 39.9 ± 12.2, the majority aged 30 or less (27.6 %), 54.7 % were females, and most of the patients (83.7%) attended the outpatient clinic during their infection with COVID-19. Among the symptoms reported, fatigue and myalgia were the most reported (64.5 %).

As shown in **Table (2),** The depression scale of DASS was 17.9 ± 9.5, in which 175 (86.2%) of the sample had either moderate to severe depression, while the anxiety scale was 17.9 ± 10, and 87.2% of the sample had moderate to severe anxiety. 16.4 ± 9.4 was the mean and SD of stress scale, with 148 subjects (72.9 %) having moderate to severe stress. As regards the insomnia severity index, 36 % had moderate to severe insomnia.

As regards correlative data, as represented in **Table (3),** there was a statistically positive correlation between depression score and anxiety, stress, and insomnia severity index score; also there was a statistically negative correlation between chronic illness and history of chest disease with insomnia severity index (0.014 and 0.038 respectively).

Table 1. The demographic and clinical data of the studied population.

Demographic & clinical data	Description (n=203)
Age	
Range	18 – 71
Mean ± SD	39.9 ± 12.2
Age	
30 or less	56 (27.6)
31-40	52 (25.6)
41-50	51 (25.1)
> 50	44 (21.7)
Gender	
Male	92 (45.3)
Female	111 (54.7)
Educational level	
Not educated	14 (6.9)
Basic or secondary	38 (18.7)
Graduate	83 (40.9)
Postgraduate	68 (33.5)
Residency	
Cairo	188 (92.6)
Others	15 (7.4)
Healthcare worker	57 (28.1)
Patient type	
During COVID illness	170 (83.7)
*Post COVID illness	33 (16.3)
Past history [Contact with COVID-19 case]	105 (51.7)
Past history [Admission to chest hospital]	20 (9.9)
History of any psychiatric disorder	23 (11.3)
Comorbidities	
Diabetes Mellitus	34 (16.7)
Hypertension	30 (14.8)
History of chest diseases	14 (6.9)
Symptoms	
[Cough]	162 (79.8)

[Fever]	131 (64.5)
[Headache]	113 (55.7)
[Fatigue & myalgia]	131 (64.5)
[diarrhea]	42 (20.7)
[Loss of smell or taste]	61 (30)
[Running nose & sneezing]	59 (29.1)
[Shortness of breath]	70 (34.5)
[Chest pain]	47 (23.2)
Abnormal examination findings	
[General examination]	14 (6.9)
[Head and neck]	8 (3.9)
[Skin and nails]	4 (2)
[Respiratory]	42 (20.7)
[Cardiovascular]	9 (4.4)
[Abdominal examination]	20 (9.9)
[Neurological]	3 (1.5)
[Musculoskeletal]	6 (3)
CT findings	
GGOs	65 (32)
Patches	32 (15.8)
Disease severity	
Mild	139 (68.5)
Moderate	64 (31.5)

COVID-19: coronavirus disease 2019, CT: computerized tomography, GGO: ground glass opacity. * Post COVID illness: patients with persistence of symptoms attending the clinic.

Table 2. DASS interpretations and subscales and Insomnia severity index among the studied population.

DAAS	Description (n=203)
Depression score	
Range	0 – 40
Mean ± SD	17.9 ± 9.5
Anxiety score	
Range	0 – 41
Mean ± SD	17.9 ± 10
Stress score	
Range	0 – 41
Mean ± SD	16.4 ± 9.4
Depression level	
Normal	20 (9.9)
Mild	8 (3.9)
Moderate	21 (10.3)
Severe	22 (10.8)
Extremely severe	132 (65)
Anxiety level	
Normal	20 (9.9)
Mild	6 (3)
Moderate	8 (3.9)
Severe	11 (5.4)
Extremely severe	158 (77.8)
Stress level	
Normal	41 (20.2)
Mild	14 (6.9)
Moderate	15 (7.4)
Severe	35 (17.2)
Extremely severe	98 (48.3)
Depression level	
Moderate to severe	175 (86.2)
Less	28 (13.8)
Anxiety level	
Moderate to severe	177 (87.2)
Less	26 (12.8)
Stress level	
Moderate to severe	148 (72.9)

Less	55 (27.1)
Insomnia Severity Index	
Range	0 – 26
Mean ± SD	11.8 ± 6.3
Insomnia level	
No clinically significant insomnia	55 (27.1)
Subthreshold insomnia	75 (36.9)
Clinical insomnia (moderate severity)	62 (30.5)
Clinical insomnia (severe)	11 (5.4)
Insomnia level	
Moderate to severe	73 (36)
Less	130 (64)

DASS: Depression Anxiety Stress Scale

Table 3. Correlative data among different parameters in the studied population.

	Depression score		Anxiety score		Stress score		Insomnia Severity Score	
	R	P	r	P	R	P	r	P
Anxiety score	.903**	**0.000**						
Stress score	.933**	**0.000**	.922**	**0.000**				
Insomnia Severity score	.526**	**0.000**	.525**	**0.000**	.521**	**0.000**		
Age	0.091	0.194	0.009	0.904	0.048	0.496	-0.013	0.859
Female Gender	0.006	0.931	0.005	0.946	0.010	0.892	-0.036	0.609
Educational level	-0.084	0.234	-0.031	0.662	-0.055	0.437	0.101	0.153
Live in Cairo	-0.017	0.808	0.007	0.920	-0.026	0.717	-0.003	0.965
Healthcare worker	-0.051	0.466	-0.018	0.799	-0.004	0.951	-0.008	0.905
During COVID illness	-0.057	0.420	-0.071	0.311	-0.034	0.633	-0.135	0.055
Past history [Contact with COVID-19 case]	-0.123	0.081	-0.070	0.320	-0.070	0.324	0.037	0.595
Past history [Admission to chest hospital]	0.071	0.315	0.099	0.160	0.071	0.313	-0.095	0.179
History of any psychiatric disorder	.160*	**0.023**	.182**	**0.009**	.199**	**0.004**	.158*	**0.024**
Chronic illness	0.105	0.135	0.043	0.538	0.049	0.489	-.171*	**0.014**
Diabetes Mellitus	0.120	0.087	0.054	0.447	0.075	0.285	-0.048	0.494
Hypertension	0.051	0.472	0.021	0.763	0.020	0.778	-0.110	0.117
History of chest diseases	0.126	0.073	0.104	0.141	0.076	0.280	-.146*	**0.038**
Disease severity	-.163*	**0.020**	-0.089	0.209	-0.118	0.093	-0.061	0.387
GGOs	0.137	0.052	0.081	0.249	0.109	0.121	0.064	0.364
Patches	0.106	0.132	0.045	0.519	0.080	0.255	-0.023	0.746

*Statistically significant (p value < 0.05)

** Statistically highly significant (p value < 0.01), GGO: ground glass opacities, COVID-19: coronavirus disease

Discussion

Many studies have highlighted the serious impact of COVID-19 (a global pandemic) on the mental well-being [17], [18], and [19]. The unpredictability and rapid spread of the pandemic cause a general state of anxiety and distress [19] [20]. In the current study, we aimed to screen for depressive, anxiety symptoms, stress, and insomnia among people suffering from mild or moderate COVID-19 attending the COVID-19 outpatient clinic in Kasr-Al-Ainy hospital, Cairo University.

The study showed that the majority of the patients were 30 years of age and younger (27.6 %), and this was similar to the results reported by the U.S. Centers for Disease Control and Prevention (CDC), where people under age 30 accounted for more than 20% of COVID-19 cases in United States [21].

Several studies assessed the psychological symptoms of COVID-19 among both the general population and those suffering from it. Patients with COVID-19 had a significantly higher prevalence of anxiety and depression [22]. In the current study, the majority of the sample had extremely severe depression, anxiety and stress (65%, 77.8% & 48.3% respectively) while insomnia was moderate to severe in 36% of the sample.

The prevalence of depression, anxiety, and insomnia among patients with COVID-19 is quite variable. In the international study (which assessed the clinical diagnoses of depression, anxiety, and insomnia across 13 countries during the first wave of COVID-19), the percentages displayed a wide range across countries from 12.5 to 47% for anxiety, 11.7 to 50.7% for depression and 7.5 to 31.4% for insomnia. This wide range of prevalence can be explained by many factors, starting with the assessment tools, where many studies had different cutoff points for their tools. In addition, COVID-19 related factors should be considered, like the time of assessment (first wave was associated with more stress), the severity of the illness, and the restrictive measures (more measures in winter are associated with more insomnia). Another aspect is the healthcare system in each country, where better systems can detect milder or earlier cases and have better outcomes. In their study, they reported a significantly higher prevalence in women and participants aged 18 to 34 years old [23].

Comparatively, many studies were done on Egyptian population to assess the psychological impact of COVID-19. Many studies targeted specific groups like healthcare workers [24], University students [25], or specific symptoms like sexual satisfaction [26], while others tried to cover general population using online surveys. For example, a study by **Arafa et al (2021)** used an online survey to assess sociodemographic characteristics and psychological disturbances (depression, anxiety, stress, and insomnia) and found that 48.1% were aged ≤ 30 years, 42.4% were men. They found that females were more vulnerable to psychological symptoms occurrence and severity, which agrees with our findings. On the other hand, the reported percentages of psychological symptoms were much lower; the majority (67%) suffered from mild to moderate depression, mild to moderate anxiety (53.5%), mild to moderate stress (48.8%), and inadequate sleeping (< 6 h/day) (23.1%) [27]. This can be explained by the type of population; in their study, only 17% were infected with COVID-19 and the survey targeted the public, while our target was more vulnerable group.

Few studies targeted the COVID-19 patients in Egypt due to difficult accessibility. Yet, one study validated a distress measurement tool among COVID-19 patients found that the majority of participants (60%) suffered from significant distress in accordance with our findings [28].

Many studies profiled that females, younger people, students, those with higher educational status, and those suffering from symptoms like myalgia and dizziness were significantly more vulnerable to higher levels of stress, anxiety, and depression among corresponding individuals [29], [30], [31].

This resonates with our sample since the majority were 30 years of age or less, females (54.7%) with higher education (74.4%). Moreover, the majority of the sample were suffering from myalgia (64.5%)

As regards, Myalgia in particular as it was the most common complaint among all patients. It is a typical symptom of viral diseases; it could be the first symptom of COVID-19 in 36% of individuals and is a reflection of generalized inflammation and cytokine response [32].

The effect of COVID-19 on mental health is multifactorial, including stigma, the effects of quarantine or isolation, and the financial and physical burden of the disease [19]. In a systematic umbrella review, quarantine or isolation was

associated with high rate of mental health problems, including depression, anxiety and insomnia [33] [34].

Quarantine can produce wide array of immediate reactions like fear, anger, and depression, or, in extreme cases suicide, while isolation creates a state of uncertainty about health status, anxiety and, even post-traumatic stress disorder (PTSD) [19].

In addition, COVID-19 caused major lifestyle changes such as closure of schools, more education and work online, more exposure to screens, less physical activity and less social interaction for fear of infection. This was reflected on the sleep hygiene and circadian rhythm abnormalities in a recent study assessing sleep during COVID-19 [35]. Insomnia was more pronounced during COVID-19 where 37% suffered from clinical insomnia compared to pre- COVID estimated (3-22%). In their study, women were also more vulnerable to insomnia. Their study found that insomnia can be predicted by anxiety, stress, and depression, which is also a bidirectional relation. This is consistent with our finding that depression, anxiety, and stress were positively correlated with insomnia severity index score (p=0.014).

The research on patients with chronic diseases shows that they are more predisposed to mental health disorders [36], with higher vulnerability to depression, anxiety, or sleep disorders depending on the population studied [37]. Yet, few studies addressed this population and how they are affected by COVID-19. One interesting study found that among different chronic diseases (such as hypertension, diabetes, coronary artery disease, circulatory failure, dyslipidemia, chronic obstructive pulmonary disease, nicotinism, and Hashimoto's disease) only Hashimoto's disease was associated with higher depression, anxiety, and insomnia [37].

In the current study, there was a statistically negative correlation between chronic illness and history of chest disease with insomnia severity index (0.038). Though we did not find clear explanation to this finding, but it could be due to the effect of medications taken by patients due to their chronic illness, which may have a sedating effect.

Previous studies showed that there was a notable relation between prevalence of anxiety, depression, stress [22], insomnia [38] among the affected cases especially those who experienced physical symptoms of COVID-19 [39], as shown in our study.

Strength points

This study highlights the importance of screening of COVID-19 patients for psychiatric symptoms thus gives a glimpse of the clinical profile of COVID-19 mild to moderate cases which can be a starting point for future expansion. It also helps to better understand the psychiatric disorders that can accompany infectious diseases, thus can aid in minimizing the possible psychiatric problems that can occur if any other infectious disease pandemic happens.

Limitations

Being a cross-sectional study, it prevents the follow-up of the development of the symptomatology the patients, but this would let us recommend for longitudinal researches that studies the long-term effects of the pandemic. Although the use of self-rating tools might entail some bias, like recall bias, the ease of use with difficult-to-reach patients (for face to face assessment) and our interest in the subjective experience of the patients made them a feasible tool.

Conclusion:

Depression, anxiety, and stress were remarkably high among the study sample (65%, 77.8%, and 48.3% respectively) while insomnia was moderate to severe in 36% of the sample.

Authors contribution

Mira Atef: editing, finalization of the manuscript and submission.

Hanan Abdel-Haleem: final approval of the version.

Rasha Ahmed Abdalaziz: conception, design of the data and final approval of the version.

Ahmed Ramadan: drafting of the article.

Mohamed Tharwat Hegazy: collection of data and drafting of article.

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Youssef Mohamed Amin Soliman: collection of data.

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Ola Osama: drafting the article.

Mohammed Mustafa Abdel Razik: analysis and interpretation of data.

Manal Mohamed Kamal: collection of data.

Reham Abdelmaksoud: drafting the article.

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