




ORIGINAL ARTICLE

Emotional disturbance and risk factors among COVID-19 confirmed cases in isolation hotels

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ABSTRACT: Patients with coronavirus disease 2019 (COVID-19) has been isolated in hospital-managed isolation hotels under a policy of the Taiwan government. Centrally isolation patients are more likely to experience psychological symptoms. The purpose of the study was to investigate emotional disturbance during their isolation period and then pinpoint the factors during their isolation period associated with the emotional disturbance. We retrospectively analysed the medical charts of the patients confined to a Banqiao isolation hotel between May 28 and July 3, 2021. The 5-item brief symptom rating scale (BSRS-5) was used to evaluate emotional disturbance levels. Descriptive and logistic regression was used for the data analysis. In total, 197 complete medical records were reviewed, and of these 84 (42.6%) showed emotional disturbance. The majority of them reported only minor disturbance ($n = 49$, 58.3%). After controlling for confounding factors, being satisfied about medical information was the only protective factor associated with emotional disturbance ($OR = 0.2$, $P = 0.018$). Being a male patient ($OR = 3.0$, $P = 0.005$), worrying about stigmatization ($OR = 2.2$, $P = 0.041$) and being unable to contact family members ($OR = 2.9$, $P = 0.018$) increased the risk of experiencing emotional disturbance. Patients with clinical symptoms, namely sore throat ($OR = 3.4$, $P = 0.013$) and muscle aches ($OR = 6.3$, $P = 0.005$), were also found to be more likely to report emotional disturbance. Mental disturbance commonly occurs among patient with COVID-19 who are isolated in a hospital-managed hotel. Being a male patient, having symptoms, namely a sore throat and muscle pain, being unable to contact family and/or a failure to receive sufficient medical information were found to be associated with emotional disturbance. In order to help isolated patients, government officials should provide a clear rationale for isolation and recognize the patients' efforts to follow the government's policy, which will help to minimize social stigma.

KEY WORDS: centralized isolation, COVID-19, emotional disturbance.

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INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a novel human coronavirus that has caused the recent global pandemic of coronavirus disease 2019 (COVID-19). Since the first case was identified in December 2019 (Nishiura *et al.* 2020), the world coronavirus tracker has shown that there has been approximately 2.5 billion confirmed cases of the disease, and more than 5 million people have died due to COVID-19 over the period December 2019 to November 2021 (World Health Organization 2021). The abrupt increase in confirmed cases and deaths has severely disrupted healthcare system across the globe and had a major effect on the world economy, while at the same time overwhelming healthcare personnel (Banerjee 2020). World Health Organization (2021) has advocated that COVID-19 vaccination has the best chance at defeating the pandemic. Before a high enough vaccination rate can be reached, quarantine after possible exposure or isolation for a confirmed infection, even without symptoms, was recommended by the Centers for Disease Control and Prevention (CDC) in the US, by the WHO, and by many countries; to block the transmission of SARS-CoV-2 in the general population (Centers for Disease Control and Prevention 2021; Chen *et al.* 2020; Nam *et al.* 2021; World Health Organization 2021).

Once people are confirmed with SARS-CoV-2 infection, they are separated from the general population who are not infected in order to prevent the spread of the virus and to protect the uninfected individuals (Taiwan Centers for Disease Control and Prevention 2021; Chen *et al.* 2020; Nam *et al.* 2021; World Health Organization 2021). In many countries, people with asymptomatic or mild COVID-19 undergo home isolation, which is of lower cost to the state but is at the same time the lowest level of medical utilization. However studies have shown in the US that facility-based isolation is both more successful and effective than home-based isolation when curbing a pandemic; this approach reduces significantly new cases (Chen *et al.* 2021). During 2020, the pandemic had a relatively small impact on Taiwan compared to other countries, only 57 local cases in 1 year (Taiwan Ministry of Health and Welfare 2022). However, an outbreak and sharp surge in cases occurred in mid May 2021 and this flare-up impacted on the healthcare system in Taiwan. The number of confirmed cases increased from the hundreds to near 7000 within 2 weeks during May 2021, mainly in Greater Taipei area; the result was a

high rate of acute respiratory failure, and relatively high mortality rate (5.17%; Taiwan Centers for Disease Control and Prevention 2021). Despite the Taiwan Ministry of Health and Welfare declaring a level 3 epidemic alert on 19 May, 2021, the medical capacity available was not sufficient in response to the spike in cases at that time. In light of this the New Taipei City government ordered that hotels become emergency isolation sites. These were managed by a hospital and used for confirmed asymptomatic cases or for cases with mild symptoms; the aim being to reduce the number of new infections in the general population by isolation (Chen *et al.* 2021).

Despite the physical symptoms any confirmed cases might have, some of them also reported psychological symptoms, such as insomnia, anxiety, and depression, as well as even post-traumatic stress disorder (PTSD) symptoms on occasion (Hamza *et al.* 2021; Huremović 2019). Based on the lessons we have learned in the past, it is clear that without proper management these patients might continue to suffer from their psychological symptoms, including anxiety, depression, and PTSD for 1 to 50 months after the isolation ended even after they have recovery from a traumatic disease such as severe acute respiratory syndrome (SARS) or middle east respiratory syndrome (MERS; Brooks *et al.* 2020; Cheng *et al.* 2004; Lam *et al.* 2009). Past experience has told us that it is very important to assess and manage the mental health of these COVID-19 patients in addition providing appropriate medical treatment and intensive care if required.

According to the anti-epidemic policy of New Taipei City, people who are positive for SARS-CoV-2 RNA, as confirmed by Liat Real-Time RT-PCR, would be admitted to a designated isolation hotel; they would only be discharged when they tested negative for SARS-CoV-2 RNA by either a negative Liat real-time RT-PCR or a PCR result with a cycle threshold of >27. During their isolation time, the patients would be transferred to a hospital if SpO₂ < 94% and their health worsened. The designated isolation hotels were managed by healthcare experts in order to optimize the effect of group isolation by expanding the hospital bed capacity, reducing the healthcare system burden, monitoring changes in health of the confirmed cases, and providing appropriate profession health services as needed. However, a systematic review of 24 studies has clearly found evidence of isolation-related psychological impacts, such as long isolation duration, infection fears, frustration, boredom, inadequate supplies, inadequate information, financial loss, and stigma (Brooks

et al. 2020). Furthermore, 33% to 53% of confirmed COVID-19 patients were found to have experienced emotional disturbance during their isolation (Brooks *et al.* 2020; Sher 2020; Sultana *et al.* 2021; Wang *et al.* 2020). Mondal and Hossain (2021) reported that positive psychological well-being is as important as physical well-being. Anyone can experience emotional disturbance, even if they do not meet the criteria for psychological disorder. Since this is the first time that Taiwan has used group isolation outside of hospitals for confirmed cases, the purpose of this study was to evaluate the emotional disturbance affecting COVID-19 patients and identify the associated stressors experienced during their isolation stay in order to be able to recognize early the patients at risk of emotional disturbance and thus be able to provide appropriate support.

STUDY AIM

The aim of this study was to evaluate the prevalence of emotional disturbance among COVID-19 patients and identify factors contributed to their emotional disturbance during their isolation stay in the hospital-managed isolation hotels.

METHODS

This was a retrospective chart review study. After hospital institutional review board approval (IRB #:110206-E) was granted, the research team examined a total of 623 charts covering the period 28 May to 3 July, 2021, which was the period of time that medical experts managed the designated isolation hotel. The inclusion criterion was that the patient's age was 20 years old and above. Cases with incomplete chart information, such as missing symptom assessment data, incomplete emotional, and disturbance assessment results, were not included, and this yielded a total of 197 cases for analysis.

Patient characteristics, clinical symptoms, and isolation experience

By chart review, the patients' characteristics, clinical symptoms, and isolation experience were recorded. Patient characteristics included gender, age, religion, marital status, children, employee status, living status, financial status, and any chronic diseases (Liu *et al.* 2021; Putri *et al.* 2021; Suleyman *et al.* 2020). The clinical symptoms took the form of dichotomous

variables, the variable being entered as yes if the symptom was documented by either the doctor or nurse progress notes, physical examination findings, and patients' self-reports. The clinical symptoms included fever (body temperature $>38.0^{\circ}\text{C}$ tachycardia; heart rate > 90 bpm/min), hypoxemia ($\text{SPO}_2 < 94\%$), cough, sore throat, diarrhoea, and muscle pain (Bone *et al.* 1992; Lovato & De Filippis 2020; Mazza *et al.* 2020; Putri *et al.* 2021; Suleyman *et al.* 2020; Sultana *et al.* 2021).

Additionally, a self-developed survey questionnaire was developed for patients to rate their experience and satisfaction of their isolation stay. This survey questionnaire was sent electronically within 1 week after patients were discharged from the isolation hotels. Their isolation experience included stigma, medical information sufficiency, family contact availability, and medical team engagement (Brooks *et al.* 2020; Sher 2020; Wang *et al.* 2020). Their satisfaction regarding the sufficient toiletry supplies, sufficient electronic communication measures, and safety during their entire isolation stay was reviewed (Brooks *et al.* 2020; Xiang *et al.* 2020). Patients checked off their experience in each question (Yes vs. No). Their responses were stored in their electronic chart and reviewed later for this study.

Brief symptom rating scale (BSRS-5)

The 5-item brief symptom rating scale (BSRS-5) was used to evaluate emotional disturbance levels. BSRS-5 has five questions that ask patients about their anxiety, depression, hostility, interpersonal sensitivity, and trouble falling asleep (insomnia). Each question score ranged from 0 to 4 points. The cut-off point for severe emotional disturbance was set at a total score of 14 or above, for moderate emotional disturbance was set at between 10 and 13, and for mild emotional disturbance was set at between 6 to 9 (Chen *et al.* 2005; Lee *et al.* 2003). For the present study, patients with a BSRS-5 score of 6 or above were counted as having emotional disturbance because support by non-professionals is able to relieve mild emotional disturbance (Lee *et al.* 2003). We hoped that we will be able to identify patients with emotional disturbance early when they only have mild symptoms, and therefore we used the lower cut-off score for mild emotional disturbance as our study cut-off score. The BSRS-5 scale shows good consistency (Cronbach's alpha = 0.77–0.90) and good test–retest reliability ($r = 0.82$; Lee *et al.* 2003).

Statistical analysis

The data was entered and analysed by IBM SPSS Statistics version 18 (Statistics 2009). Descriptive analysis (frequency and percentage) was performed in order to present the patient demographics, patient characteristics, the range of clinical symptoms, experience during isolation at the isolation hotel, and the prevalence of emotional disturbance. We used t-tests and Chi squared tests to analyse the relationships between the various factors and emotional disturbance. Furthermore, logistic regression analysis was used to identify the statistically significant factors associated with the occurrence of emotional disturbance.

RESULTS

From 28 May, 2021 to 3 July, 2021, 623 patients were diagnosed with COVID-19 and then isolated in one isolation hotel in Banqiao, New Taipei City. After excluding incomplete data on the patients, the number of cases remaining was 197, and of these 84 (42.6%) showed emotional disturbance.

The characteristics of the patients diagnosed with COVID-19 and their relationship with emotional disturbance

Table 1 showed the characteristics of COVID-19 patients with and without emotional disturbance. More than 40% of patients ($n = 84$, 42.6%) experienced emotional disturbance during their isolation. However, the majority of them reported only minor disturbance ($n = 49$, 58.3%). The mean age of patients was 43.7 ± 13.7 years. The majority of them had an education level of college and above, had a religion, had children, had a full-time job, were married, and were relatively healthy (<10% of them had any chronic disease). Patients who reported poor economic status ($X^2 = 11.337$; $P = 0.001$) and who lived alone ($X^2 = 3.903$; $P = 0.048$) were more likely to report emotional disturbance.

Satisfaction and experience during isolation

Table 2 shows the patients' satisfaction and their experience during their isolation. In general, the patients were satisfied with their isolation hotel stay, including sufficient toiletries ($n = 189$, 95.9%), clear communication measures ($n = 143$, 72.6%), and safety during their stay ($n = 180$, 91.4%). Although less than 50% of

patients ($n = 86$, 43.6%) experienced stigmatization due to their confirmed COVID-positive status, 61.7% experienced certain levels of disturbed emotion ($\chi^2 = 22.5$, $P < 0.001$). Furthermore, only 21.2% of patients ($n = 22$) reported receiving insufficient medical management information, but of these patients 68.2% ($n = 15$) experienced emotional disturbance ($X^2 = 6.606$; $P = 0.01$). Among 24.4% of patients ($n = 48$) who had family contact, 66.7% of these patients ($n = 32$) reported emotional disturbance.

The relationship of clinical symptoms and emotional disturbance

Table 3 shows the clinical symptoms of the COVID-19 patients and their relationship with emotional disturbance. The number of emotional disturbance was higher among patients who had a cough ($X^2 = 7.006$; $P = 0.008$), a sore throat ($X^2 = 20.003$; $P < 0.001$), or muscle pain ($X^2 = 12.14$; $P < 0.001$; table 3).

Factors associated with emotional disturbance

Table 4 shows the factors associated with emotional disturbance. Emotional disturbance was dichotomized into yes and no. Males had a three times higher risk of emotional disturbance than females (OR = 3.0, 95% CI = 1.4–6.5). If patients worried about stigmatization (OR = 2.3, 95%CI: 1.0–4.9) and were not in contact with their family (OR = 2.9, 95%CI: 1.2–7.2), they had almost a three times higher risk of experiencing emotional disturbance than their counterparts. Patients who had a sore throat had a three times higher risk of emotional disturbance than patients without a sore throat (OR = 3.4, 95%CI:1.3–9.0). If the patient experienced muscle pain, their risk of reporting emotional disturbance was 6.4 times higher (95%CI: 1.8–23.0) than patients without muscle pain. Among the factors identified above, patients who reported sufficient medical management information were less likely to experience emotional disturbance (OR = 0.2, 95% CI: 0.1–0.8).

DISCUSSION

Centralized isolation is an effective strategy to limit the spread of COVID-19, but its psychological influences should be considered and properly managed (Chen *et al.* 2021; Ju *et al.* 2021). Our study findings show that COVID-19 patients commonly experience emotional disturbance in a hospital management isolation hotel. Nearly six out of ten patients (57.7%)

TABLE 1 The characteristics of and differences between COVID-19 patients with or without emotional disturbance

Demographics	Total <i>n</i> (%)	Emotional disturbance <i>n</i> (%)		<i>t</i>	χ^2	<i>P</i>
		No	Yes			
Patients		113 (57.4%)	84 (42.6%)			
Disturbance severity						
Minor		49 (58.3%)				
Moderate		19 (22.6%)				
Severe		16 (19.1%)				
Gender					6.100	0.014*
Woman	88 (44.7%)	59 (67.0%)	29 (33.0%)			
Man	109 (55.3%)	54 (49.5%)	55 (50.5%)			
Age (mean \pm SD)	43.7 \pm 13.7	43.4 \pm 13.3	44.1 \pm 14.2	-0.338		0.735
Religion					0.157	0.692
No	64 (32.5%)	38 (59.4%)	26 (40.6%)			
Yes	133 (67.5%)	75 (56.4%)	58 (43.6%)			
Marriage					1.112	0.292
Single	93 (39.1%)	57 (61.3%)	36 (38.7%)			
Married	104 (52.8%)	56 (53.8%)	48 (46.1%)			
Children					0.807	0.369
No	87 (44.2%)	53 (60.9%)	34 (38.1%)			
Yes	110 (55.8%)	60 (54.5%)	50 (45.5%)			
Education					3.660	0.454
\leq 12 years	79 (40.0%)	41 (51.9%)	38 (48.1%)			
College and above	118 (60%)	72 (61.0%)	46 (39.0%)			
Working status					1.168	0.280
No job	69 (35.0%)	36 (52.2%)	33 (47.8%)			
Full-time job	128 (65%)	77 (60.2%)	51 (39.8%)			
Economic status					11.337	0.001**
Poor	45 (22.8%)	16 (35.5%)	29 (64.5%)			
Well	152 (77.2%)	97 (63.8%)	55 (36.2%)			
Living status					3.903	0.048*
Alone	43 (21.8%)	19 (44.2%)	24 (55.8%)			
With Family	154 (78.2%)	94 (61.0%)	60 (39.0%)			
Discharge status					0.051	0.822
Hospital	50 (25.4%)	28 (56.0%)	22 (44.0%)			
Home	147 (74.6%)	85 (57.8%)	62 (42.2%)			
Chronic diseases						
Diabetes Mellitus					1.298	0.255
No	187 (94.9%)	109 (58.3%)	78 (41.7%)			
Yes	10 (5.1%)	4 (40%)	6 (60%)			
Hypertension					0.192	0.661
No	178 (90.4%)	103 (57.9%)	75 (42.1%)			
Yes	19 (9.6%)	10 (52.6%)	9 (47.4%)			
Cardiovascular disease					0.015	0.904
No	192 (97.5%)	110 (57.3%)	82 (42.7%)			
Yes	5 (2.5%)	3 (60%)	2 (40%)			
Cancer					1.352	0.245
No	196 (99.5%)	113 (57.7%)	83 (42.3%)			
Yes	1 (0.5%)	0 (0%)	1 (100%)			

P* < 0.05; *P* < 0.001; SD, standard deviation.

BSRS-5 score \leq 5, means no emotional disturbance.

BSRS-5 score 6–9, minor emotional disturbance; BSRS-5 score 10–13, moderate emotional disturbance.

BSRS-5 score \geq 14, severe emotional disturbance.

experienced emotional disturbance at some point during their stay, which is similar to the study findings of Wang *et al.* (2020). Wang *et al.* (2020) used the

depression, anxiety, and stress scale (DASS-21) to evaluate a population who were diagnosed with or were suspected of having COVID-19 and who had been

TABLE 2 Isolation experience of patients with and without emotional disturbance

Demographics	Total n (%)	Emotional disturbance n (%)		t	χ^2	P
		No	Yes			
Satisfaction						
Sufficient toiletries					1.35	0.246
No	8 (4.1%)	3 (37.5%)	5 (62.5%)			
Yes	189 (95.9%)	110 (58.2%)	79 (41.8%)			
Electronic communication measures					0.92	0.337
No	54 (27.4%)	28 (51.9%)	26 (48.1%)			
Yes	143 (72.6%)	85 (59.4%)	58 (40.6%)			
The safety of isolation area					1.99	0.158
No	17 (8.6%)	7 (41.1%)	10 (58.9%)			
Yes	180 (91.4%)	106 (58.9%)	74 (41.1%)			
Isolation experience						
Stigmatization					22.50	<0.001**
No	111 (56.3%)	80 (72.1%)	31 (27.9%)			
Yes	86 (43.7%)	33 (38.3%)	53 (61.7%)			
Sufficient care information					6.61	0.010*
No	22 (21.2%)	7 (31.8%)	15 (68.2%)			
Yes	175 (88.8%)	106 (60.5%)	69 (39.5%)			
Family contacts					14.98	<0.001**
No	149 (75.6%)	97 (65.1%)	52 (34.9%)			
Yes	48 (24.4%)	16 (33.3%)	32 (66.7%)			
Medical team engagement					3.57	0.059
No	8 (4.1%)	2 (25%)	6 (75%)			
Yes	189 (95.9%)	111 (58.7%)	78 (41.3%)			
Length in isolation hotel (Days, Mean \pm SD)	9.7 \pm 3.1	9.8 \pm 2.96	9.52 \pm 3.40	0.68		0.499

* $P < 0.05$; ** $P < 0.001$; SD, standard deviation.

isolated at home. Among these individuals, 53.8% during the isolation period showed middle to severe emotional disturbance, while 16.5% showed middle to severe depression, and 28.8% showed middle to severe anxiety. The percentage of isolated patients who experienced emotional disturbance is higher than the percentage of patients with depression and anxiety, which suggests that emotional disturbance might be an important symptom in addition to common psychological distress. Furthermore, the high occurrence of emotional disturbance needs to receive healthcare providers' attention so that they are able to identify patients at risk at an early stage and this will allow them to develop an effective program to support the mental well-being of such individuals.

Although the definition of isolation and quarantine is different (World Health Organization 2021), studies still use them interchangeably (Brooks *et al.* 2020). Isolation is for people with confirmed COVID-19 infection and quarantine is for undiagnosed people who have been exposed to confirmed cases (Taiwan Centers for Disease Control and Prevention 2021). Both of these approaches involve the separation and restriction of movement of people to reduce the risk of them

infecting others and thus we should be able to obtain information from studies targeting both about factors associated with psychological wellness (Brooks *et al.* 2020). After reviewing a total of 24 studies, Brooks *et al.* (2020) found that the influence of demographic background on psychological wellness was inconsistent, which indicates the necessity of taking the study populations' characteristics into account.

Evidence has shown that the pandemic has adversely impacted women's mental health and women have reported worse mental health symptoms than men because women are usually disproportionately responsible for the bulk of childcare and care of the elderly, particularly during times when there is limited social supports due to physical distancing (Almeida *et al.* 2020; Browning *et al.* 2021; Etheridge & Spantig 2020; Moyser 2020). Interestingly, our study results reveals that men have a three times higher risk (95% CI = 1.4–6.5) than women of reporting emotional disturbance during their isolation. We did not explore the reasons for this inconsistent finding in the literature. Based on our clinical experience and understanding of Chinese culture, adaptation to lifestyle changes, such as working from an isolated hotel, reduced work

TABLE 3 The clinical symptoms of COVID-19 and their relationship with emotional disturbance

Demographics	Total n (%) SD	Emotional disturbance n (%)		χ^2	P
		No	Yes		
Fever				1.485	0.223
No	173 (87.7%)	102 (59.0%)	71 (41.0%)		
Yes	24 (12.2%)	11 (45.8%)	13 (54.2%)		
Tachycardia				3.169	0.075
No	45 (22.8%)	31 (68.9%)	14 (31.1%)		
Yes	152 (77.2%)	82 (54.0%)	70 (46.0%)		
Hypoxia				0.008	0.929
No	133 (67.5%)	76 (57.1%)	57 (42.9%)		
Yes	64 (32.5%)	37 (57.8%)	27 (42.2%)		
Cough				7.006	0.008*
No	124 (62.9%)	80 (64.5%)	44 (35.5%)		
Yes	73 (37.1%)	33 (45.2%)	40 (54.8%)		
Sore throat				20.00	<0.001**
No	158 (80.2%)	103 (65.2%)	55 (34.8%)		
Yes	39 (19.8%)	10 (25.6%)	29 (74.4%)		
Diarrhoea				2.001	0.157
No	178 (90.4%)	105 (59.0%)	73 (41.0%)		
Yes	19 (9.6%)	8 (42.1%)	11 (57.9%)		
Muscle pain				12.14	<0.001**
No	175 (88.8%)	108 (61.8%)	67 (38.2%)		
Yes	22 (11.2%)	5 (22.7%)	17 (77.3%)		

* $P < 0.05$; ** $P < 0.001$; SD, standard deviation.

TABLE 4 Factors associated with emotional disturbance

Factor	OR	95% CI	P
Characteristics			
Male	3.0	1.4–6.5	0.005*
Well economic status	0.5	0.2–1.2	0.112
Living alone	0.6	0.2–1.7	0.404
Isolation experience			
Worry about stigmatization	2.2	1.0–4.9	0.041*
Could not contact family	2.9	1.2–7.2	0.018*
The safety of isolation area	0.2	0.0–1.1	0.062
Satisfaction with medical information supplement	0.2	0.1–0.8	0.018*
Clinical symptoms			
Cough	1.1	0.5–2.7	0.657
Sore throat	3.4	1.3–9.0	0.013*
Muscle pain	6.3	1.8–23.0	0.005*

* $P < 0.05$; OR, odds ratio; 95% CI, 95% confidence interval.

hours or temporary job loss, might be more challenging for men than women. By way of contrast, women had higher childcare and housework demands than men at home during COVID-19 lockdown and reported higher levels of psychological distress than men (Xue & McMunn 2021). Thus, it might be an escape from those unpaid works and psychological distress for women when they are isolated in the hotel.

Additionally, previous studies have shown that patients with a poor economic status or temporary work are more likely to experience mental disturbance during their isolation due to the loss of financial support and increased living costs at the same time (Brooks *et al.* 2020; Fernández *et al.* 2020; Jackson *et al.* 2016). However, socioeconomic level did not have an obvious effect among our patients. A possible reason for this is that the Taiwan government not only paid for the healthcare and hotel fee but also provided a daily allowance if the isolated patient met the anti-epidemic policy criteria no matter what their nationality or their financial background. This obviously eased the patients' financial burdens. Some patients even had commercial isolation insurance for their entire length of isolation. These factors may explain why the length of isolation did not contribute significantly to emotional disturbance (Garipey *et al.* 2016).

Based on the US CDC reports (2021, <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>), fever/chills, cough, shortness of breathing, fatigue, muscle or body aches, headache, loss of taste or smell, sore throat, congestion/runny nose, nausea/vomiting, and diarrhoea are the common symptoms of COVID-19 (Taiwan Centers for Disease Control and Prevention 2021). Browning *et al.* (2021) also found a fair/poor

general health status increased the risk of a psychological impact in the United States. Rogers *et al.* (2021) reported that experiencing pain increased psychological disturbance, particularly among those with higher pain intensity or pain-related interference. In our study, only cough, sore throat, and muscle aches had a negative impact on the patients' emotions. During isolation, patients might pay more attention to their physical discomforts. Patients isolated in a hospital-managed hotel have only minor symptoms or no symptoms at all, and also are relatively younger compared to hospitalized COVID-19 patients. Thus, the hotel patients are less likely to be bothered by chronic diseases. Clinicians in the hospital-based hotel need to properly manage each patient's physical discomforts in order to prevent emotional disturbance.

Patients' isolation experience is a significant factor relative to emotional disturbance. If they worry about stigma after being diagnosed with COVID-19 or they are unable to contact family members, their risk of experiencing emotional disturbance is increased. However, having sufficient medical information was the only factor that minimized the risk of developing mental disturbance. Our study findings support the importance of healthcare professional assessing their patients' needs and providing sufficient ways of contacting the outside world. As Brooks *et al.* (2020) advocated, governments should provide a clear rationale for isolation and the protocols they put in place; they also need to ensure sufficient supplies are provided; this is supported by our study findings. Additionally, the public should be reminded regarding the importance and the necessary of the isolation of diagnosed patients even with minor or without symptoms in order to minimize social stigma. Furthermore, evidence showed that effective strategies to prevent or minimize social stigma should involve all affected people (not limited to diagnosed patients but included their family/friends as well), and the public and communities through consistent media and journalistic information of government COVID-19-isolation policy (Brooks *et al.* 2020; Gariepy *et al.* 2016; Hossain *et al.* 2020). Stigma and discrimination reduction in relation to COVID-19 should strengthen the resolve of entire communities and help them to work together; no single individual should face the disease and isolation alone.

STRENGTHS AND LIMITATIONS

Taiwan officials used centralized isolation to prevent the spread of COVID-19. To our knowledge, this is the first study to address the emotional disturbance among

confirmed patients with no and minor symptoms in hospital-managed hotels in Taiwan. Factors identified in this study should provide clinicians with ways of improving treatment in order to prevent emotional disturbance. "The study was conducted in the hospital-managed hotels in northern Taiwan which might limit its generalizability to other centralized isolation hotels in the world due to the geographic and cultural differences. Thus, our study findings should be interpreted with caution." Additionally, this retrospective chart review design does not identify when the disturbance might have occurred or the severity of physical symptoms associated with emotional disturbance. Clinicians should still use their own clinical knowledge to assess the physical and psychological health of their patients.

RELEVANCE TO CLINICAL PRACTICE

COVID-19-confirmed patients need not only medical treatments for their physical symptoms but also assessment and management for their psychological health during their isolation. Physical symptoms were related to emotional disturbance, so clinicians should provide psychosocial supports when they observe patients with sore throat or muscle aches in order to prevent further emotional distress.

CONCLUSION

Emotional disturbance commonly occurs among patients with COVID-19 who are isolated in a hospital-managed hotel. Healthcare professionals should pay specific attention to male patients and to patients with a sore throat and/or muscle pain, while also providing the means of contacting family. Furthermore, it is important that patients receive sufficient medical information. Government officials should provide a clear rationale for isolation and recognize efforts to follow the policy in order to minimize social stigma.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the supplementary material of this article

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