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Residual Symptoms of Moderate COVID-19 Cases after 3 Months of Diagnosis in Al Badaa and Al Khawaneej Fever Clinics in Dubai Health Authority

Nermeen Awad Alkarim Nurredeen Saleh[1*], Ola Abdulsamea Aldafrawy[2], Darine Helmy Saad[3], Fawzia Ahmed Mohamed Abdouli[4], Shamsa Mohammad Abdulla Saif Al Suwaidi[5], Amani Salem Abdul Kader AlZubaidi[6], Badr Mahmoud Hassan Elshamy[7]

[1]Specialist Family Medicine Umm Suqeim Health Center, Dubai Health
[2]Specialist, Health Affairs Department, Dubai Health
[3]Specialist Radiology, PHC, Dubai Health
[4]Director and Consultant Family Medicine, PHC, Dubai Health
[5]Acting Head of Office and Consultant Family Medicine, PHC, Professional Development Office, Dubai Health
[6]Head of AlMizhar Health Center and Consultant Family Medicine, Dubai Health
[7]Specialist Family Medicine AlQusais Health Center, Dubai Health

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***Corresponding author:** Nermeen Awad Alkarim Nurredeen Saleh
Specialist Family Medicine Umm Suqeim Health Center, Dubai Health

Abstract

Background*:** The COVID-19 pandemic has significantly impacted health, social life, and economies, with effects that are still unfolding globally. While much research has been devoted to understanding the acute phase of the virus, there's limited insight into the lingering symptoms that can affect people's well-being long after initial recovery, particularly in cases with moderate severity. Recognizing and addressing these persistent issues is essential to fully support patient recovery. ***Objective: This study focuses on understanding the residual symptoms experienced by patients three months after a moderate COVID-19 diagnosis. The study is centered on individuals who sought care at Dubai Health Authority's Fever Clinics in Al Badaa and Al Khawaneej, aiming to pinpoint symptom patterns and provide insights into patient recovery trajectories. ***Methods***: In this retrospective study, we analyzed records from 394 individuals diagnosed with moderate COVID-19 between June and December 2020. To qualify for inclusion, patients needed a confirmed moderate diagnosis, characterized by a fever above 38°C or mild-to-moderate pneumonia as observed in chest X-rays. Patients completed an 18-question survey about lingering symptoms, and data were analyzed using Chi-square and T-tests to assess patterns across different demographics and clinical characteristics, with $p < 0.05$ as the threshold for significance. ***Results***: Out of the 394 participants (68% male, 32% female), 22.1% reported ongoing symptoms three months after their initial diagnosis. The most frequently cited issues were body pain (24.1%), sleep disturbances such as insomnia (21.8%), breathing difficulties (dyspnea) and fatigue (both 20.7%), and feelings of anxiety (19.5%). These symptoms were more common among patients aged 31-49 and those with chronic conditions, especially hypertension, highlighting specific groups that may require additional post-recovery support. ***Conclusion*:** Persistent symptoms are common among individuals recovering from moderate COVID-19 infections, varying according to age, existing health conditions, and marital status. Screening and targeted support measures may help address these lingering effects, aiding recovery and quality of life for affected individuals.

Keywords: COVID-19, residual symptoms, moderate COVID-19, long COVID, post-COVID syndrome, Dubai.

INTRODUCTION

The global challenges brought about by the COVID-19 pandemic caused by the SARS-CoV-2 virus have significantly affected healthcare systems and economies worldwide as our day, to day routines [1, 2]. This respiratory illness typically presents as mild or

moderate in cases with individuals experiencing recovery without needing extensive medical treatments [3]. Nevertheless the elderly and those with preexisting health conditions like heart disease, diabetes, respiratory disorders and cancer are at risk of facing consequences such, as hospitalization and intensive care requirements [3, 4].

Some of the most serious issues included cases of pneumonia that demanded intensive care, kidney failure, and heart complications, notably heart failure due to myocardial infarction [5, 6]. These studies, however, focused predominantly on patients experiencing severe forms of the disease. Most of the studies concentrated on individuals facing manifestations of the illness though there is still understanding about the lasting impacts on patients with mild, to moderate conditions [7]. Studies, on coronavirus outbreaks like the SARS epidemic in 2003 have shown that survivors often experience long term health issues such as reduced ability for activity and a slower recovery, in terms of overall health and returning back to work even two years after being infected [8, 9].

Identifying and understanding lingering symptoms in moderate COVID-19 cases is essential to support those affected and streamline care. Early identification of post-COVID symptoms allows healthcare providers to manage these effects proactively, helping to avoid redundant tests and improve patient outcomes [10]. Additionally, a clearer understanding of these residual symptoms enables clinicians to distinguish between post-viral effects and unrelated health conditions, resulting in more tailored, accurate care [11]. This study examines long-term symptoms in individuals recovering from moderate COVID-19, specifically those who attended Fever Clinics within the Dubai Health Authority. By analyzing demographic and clinical data, the research aims to identify key factors influencing persistent symptoms and to explore opportunities for early intervention and rehabilitation.

MATERIALS AND METHODS

Study Design

This study follows a retrospective design. The calculated sample size was 394 people diagnosed with moderate COVID-19 cases. They were recruited from Fever Clinics operated by the Dubai Health Authority (DHA) in Al Badaa and Al Khawaneej, between June and December 2020.

Objectives

The main objective was to document long-term symptoms in patients with moderate COVID-19 infection who attended Fever Clinics in DHA. Secondary objectives included analyzing demographic factors and risk factors associated with post-COVID symptoms.

Participant Selection

The inclusion criteria utilized in the study included adults 18 years old or above who have had a documented COVID-19 infection in the form of a positive PCR swab with symptoms indicating moderate severity. We excluded all participants below 18 years of age, or those with no documentation of a COVID-19 infection despite suggesting symptoms. In addition, we excluded all confirmed COVID-19 cases that were categorized as mild or severe cases. The definition of moderate COVID-19 in this study is the presence of fever above 38 and/or mild to moderate pneumonia on chest x-ray.

Data Collection

Ethical approval for the study was obtained from the Dubai Scientific Research Ethical Committee (reference number DSREC-09/2020_17). Data was retrieved from electronic medical record system, called Salama. We selected patient who have been diagnosed with moderate infection in the time period of June 2020 till December 2020 subjects were contacted by phone and interviewed using an 18-item questionnaire (Appendix A) and asked for their consent to use their data in the study. We then contacted participants in the time period of September 2020 till March 2021 (after 3 months of infection date) by telephone and screened them for the presence of any symptoms. Verbal consent was taken from all participants. Participants were assured that their participation is completely voluntary and that their data is confidential and will be stored privately.

Data Analysis

Descriptive and inferential statistical analyses were performed using SPSS software (version 21). Categorical variables were reported as frequencies and percentages. Associations between demographic or clinical variables and symptom prevalence were assessed using Chi-square and T-tests, with statistical significance set at a p-value of <0.05.

RESULTS

The study included 394 patients diagnosed with moderate COVID-19. Among these patients, 268 (68%) were male, and 126 (32%) were female. Most patients were married (81.7%), with a minority being single (16%) or divorced/widowed (2.3%). The age distribution showed that 53 patients (13.5%) were 30 years or younger, 190 patients (48.2%) were between 31–49 years, and 151 patients (38.3%) were aged 50 or older as given in Table 1.

Table 1

Variable	Total (n, %)	Residual symptoms	P value
Gender			
Male	268 (68%)	58 (21.6%)	0.759
Female	126(32%)	29 (23%)	
Age categories			
Less than and equal 30	53 (13.5%)	9 (17%)	0.408
31-49	190 (48.2%)	47 (24.7%)	
50 or more	151 (38.3%)	31 (20.5%)	
Marital status			
Single	63 (16%)	17 (27%)	0.052
Married	322 (81.7%)	65 (20.2%)	
Divorced & Widowed	9 (2.3%)	5 (50%)	
Testing center			
BDHC	50 (12.7%)		0.136
KWHC	344 (87.3%)		
Nationality			
UAE	26 (6.6%)		0.048
Non UAE	368 (93.4%)		
Chronic diseases			
HTN	95 (24.2%)	28 (29.5%)	0.127
DM	87 (22.1%)	14 (16.1%)	
Asthma	15 (3.8%)	5 (33.3%)	
Residual symptom			
Yes	87 (22.1%)		0.284

Chronic Conditions and Demographics

Coexisting chronic diseases were observed among the patients: 87 (22.1%) had diabetes mellitus, 95 (24.2%) had hypertension, and 15 (3.8%) had bronchial asthma. Nationality data indicated that 26 patients (6.6%) were UAE nationals, while the majority (93.4%) were non-UAE residents.

Post-COVID Residual Symptoms

A total of 87 patients (22.1%) reported experiencing at least one residual symptom three months after their COVID-19 infection. The frequency and distribution of residual symptoms are given in Table 2.

Table 2

Frequency of residual symptoms		
residual symptom (n=87)	**no**	**%**
Fever	2	2.30%
Cough	13	14.90%
Dyspnea	18	20.70%
Nasal congestion	2	2.30%
Loss of smell and taste	7	8%
Abdominal pain, Nausea, Vomiting	8	9.20%
Diarrhea	6	6.90%
Hair fall	6	6.90%
Anxiety	17	19.50%
Body pain	21	24.10%
Fatigue	18	20.70%
Headache	10	11.50%
Loss of concentration	4	4.60%
Dizziness	6	6.90%
Insomnia	19	21.80%
Depression	9	10.30%

The majority of patients reported only one symptom (14%), with a decreasing prevalence for multiple symptoms: 2 symptoms (3.3%), 3 symptoms (2.3%), 4 symptoms (1.5%), and 5–9 symptoms (0.9%).

Symptom Distribution by Demographics

Residual symptoms varied based on age and marital status. Symptom prevalence was highest in patients aged 31–49 years (24.7%) compared to those 50 years or older (20.5%) and those 30 years or younger (17%). Additionally, 50% of divorced or widowed participants experienced residual symptoms, compared to 27% of single and 20.2% of married participants. This finding suggests a potential impact of social isolation on recovery.

Chronic Disease Associations

The presence of residual symptoms was also evaluated in relation to chronic conditions. Among patients with bronchial asthma, 33.3% experienced residual symptoms, followed by 29.5% of those with hypertension and 16.1% of those with diabetes. A statistically significant association was observed between hypertension and residual symptoms ($p = 0.048$).

DISCUSSION

This study examined residual symptoms persisting three months after moderate COVID-19 infection among patients attending Fever Clinics under the Dubai Health Authority. Our findings indicate that a significant proportion of these patients experienced lingering symptoms, with body pain, insomnia, dyspnea, and fatigue being the most commonly reported issues. This aligns with findings from other studies on post-COVID-19 conditions, underscoring the substantial burden of residual symptoms even in non-severe cases.

Our results are consistent with prior studies in other settings, though with notable differences. For instance, a study conducted at Hull University Teaching Hospitals in the UK [12], which focused on more severe cases requiring oxygen therapy, identified breathlessness as the most frequently reported symptom (60%). In contrast, our study found body pain to be most common (24.1%), followed by insomnia (21.8%) and dyspnea (20.7%). This discrepancy may be attributed to the different patient populations, as our study focused on moderate cases treated in outpatient settings rather than hospitalized cases.

Another study from Milan, Italy, with a shorter follow-up period, focused predominantly on hospitalized patients and highlighted malnutrition as a prevalent issue, affecting 62.7% of their sample [13]. In contrast, malnutrition was not reported among our patients, likely due to the milder disease severity in our cohort. Additionally, psychiatric disturbances, including anxiety and insomnia, were more prevalent in the Milan cohort, possibly due to the psychological impact of hospitalization. Our outpatient setting sample reported lower rates of these symptoms, suggesting that symptomatology may be influenced by both the severity of the disease and the care setting.

Another study from Pakistan, published on February 11, 2022, evaluated 331 COVID-19 survivors, with 42.0% of participants assessed within 1–3 months post-diagnosis [14]. The most commonly reported residual symptoms in this cohort were body aches (39.9%), low mood (32.6%), and cough (30.2%). Notably, our findings also highlighted body pain as the most frequent symptom, mirroring the Pakistan study. However, key differences emerged: while the second most common symptom in the Pakistan cohort was low mood, affecting 32.6% of participants, our study identified insomnia as the second most reported symptom, present in 21.8% of our sample. Other differences included a higher prevalence of symptoms such as dyspnea, fatigue, and anxiety in our cohort, whereas the Pakistan study reported a greater incidence of hair loss, headache, and loss of appetite.

Furthermore, only 16.3% of participants in the Pakistan study were asymptomatic, compared to a significantly higher percentage in our cohort (77.9%), suggesting variability in symptom resolution timelines and recovery rates between populations and highlighting potential differences in health status, care setting, and patient demographics [14].

Our analysis identified demographic factors and comorbidities associated with an increased likelihood of residual symptoms. The age group 31-49 years demonstrated the highest symptom prevalence (24.7%), which is notable as older age groups are generally assumed to be at higher risk for severe outcomes. Marital status also appeared to play a role, with divorced or widowed individuals showing a higher rate of residual symptoms, potentially reflecting the influence of social support on recovery.

Chronic conditions, particularly hypertension, were significantly associated with residual symptoms, supporting evidence from other studies that highlight chronic disease as a risk factor for prolonged recovery. Although asthma showed a high symptom prevalence, the association was not statistically significant, which may warrant further investigation with larger sample size.

These findings underscore the importance of ongoing monitoring and support for patients recovering from moderate COVID-19, even months after their initial diagnosis. Early identification of at-risk individuals based on age, comorbidity, and social factors may enable targeted interventions, potentially reducing the duration and severity of residual symptoms. Screening tools and follow-up programs could be particularly beneficial in primary care settings to address post-COVID complications efficiently.

Limitations

This study has several limitations. The retrospective design and reliance on self-reported data may introduce recall bias, and the use of English-only questionnaires may have affected comprehension for some non-native speakers. Additionally, the study's focus on moderate cases may limit the generalizability of findings to other severity levels. Nevertheless, our study is one of the few examining post-COVID-19 symptoms in moderate cases within the UAE, providing valuable insights into this population.

Recommendations

1. **Longitudinal Follow-Up Studies**: It would be helpful to conduct long term research by tracking individuals with moderate COVID for an extended timeframe, of possibly up to five years, in order to understand better how post COVID symptoms progress and potentially resolve over time. Additionally it would be beneficial to investigate how symptoms change over the course of time which could offer a detailed understanding of recovery trends in the long run.
2. **A Comparison of Vaccinated and Unvaccinated Groups:** To examine the lasting effects of vaccination, on symptom occurrence over time, research should contrast the post COVID symptoms experienced between vaccinated and unvaccinated individuals. This comparison may offer valuable information on the protective effects of vaccination against lingering symptoms and could help refine public health strategies.
3. **Implementation of Post-COVID Clinics in Primary Care**: Given the notable prevalence of post-COVID symptoms, establishing dedicated post-COVID follow-up clinics in primary healthcare settings may facilitate early identification and management of residual symptoms. These clinics can provide targeted support and resources, improving outcomes for patients recovering from moderate COVID-19.
4. **Enhanced Support for Vulnerable Groups**: Based on the observed association between demographic factors (such as marital status) and residual symptoms, there is a need for tailored support programs for vulnerable groups, particularly those who may lack social support networks. Addressing social determinants of health could be a key factor in mitigating post-COVID complications and enhancing overall patient recovery.
5. **Multilingual Patient Resources and Questionnaires**: To improve study accuracy and inclusivity, especially in diverse populations, future studies should provide questionnaires and informational resources in multiple languages. This approach can help mitigate language barriers and ensure clearer communication of health information across different demographic groups.

CONCLUSION

This study highlights the significant prevalence of residual symptoms in patients three months post moderate COVID-19 infection, even among those managed in outpatient settings. Symptoms such as body pain, insomnia, dyspnea, and fatigue were common, impacting the quality of life and potentially influencing long-term health. Key demographic factors, including age, marital status, and certain comorbidities, were associated with an increased risk of persistent symptoms.

These findings underscore the need for follow-up care and targeted screening for moderate COVID-19 survivors, particularly those with underlying health conditions or limited social support. By identifying and managing lingering symptoms early, healthcare providers can improve recovery outcomes and potentially mitigate the long-term burden of COVID-19.

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Ethical Statement

This research was done following the guidelines for human studies and conducted ethically in accordance with the World Medical Association Declaration of Helsinki. Ethical approval was obtained from the Dubai Scientific Research Ethical Committee, reference number DSREC-09/2020_17, dated 21st of September 2020.

Conflict of Interest: The authors have no conflicts of interest to declare.

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Author Contributions: All authors contributed to this research equally.

Data Availability Statement

The data cannot be provided publicly in view of patients' confidentiality and privacy. However, the data can be provided by the corresponding author upon request with appropriate justification.

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Appendix A (Questionnaire)

1.Do you have any of the following chronic diseases?
a. Diabetes Mellitus
b. Hypertension
c. Bronchial Asthma
d. others (kindly specify)

2.Do you suffer from fever (temperature 37.5 or more) now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

3.Do you suffer from cough now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

4.Do you suffer from runny nose and /or nasal congestion and/or sneezing now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

5.Do you suffer from difficulty of breathing now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

6.Do you suffer from abdominal pain now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

7. Do you suffer from nausea and or vomiting now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

8.Do you suffer from loose motion now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

9. Do you suffer from loss of smell and/or taste now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

10. Do you suffer from Body or muscle pain now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

11.Do you suffer from easy fatiguability now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

12. Do you suffer from headache now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

13.Do you suffer from lack of concentration and easy forgetness now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

14. Do you suffer from dizziness now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

15.Do you suffer from sleeping difficulties now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

16.Do you suffer from constant low mood and sadness now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

17.Do You suffer from constant extreme anxiety(worry) now?
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis

18.Do you have any other complaint now? (please specify)
a. No
b. yes, same as at time of diagnosis
c. Yes but better than at time of diagnosis
d. Yes and worse than at time of diagnosis
e. Yes but it was always there even before the time of diagnosis