Recovery in Physical Function, Fatigue and Quality of Life in Post-Mild COVID-19 Infection

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Abstract
Mild COVID-19 patients are either asymptomatic or present with mild respiratory symptoms, but as high as 5-10% may experience prolonged symptoms. Insufficient knowledge on mild-COVID-19 recovery poses uncertainties among healthcare professionals and patients, potentially causing treatment delays and may lead to a cluster of people not recovering from post-COVID-19 infection. This study aims to determine changes in respiratory symptoms, physical function, dyspnoea and fatigue, and Quality of Life in mild COVID-19 patients up to 3 months after the onset of symptoms. The results showed significant improvements in all outcomes at 3 months, but the scores were below normal.

Keywords: Physical function; Post-mild COVID-19; Quality of life; Recovery

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1.0 Introduction
The coronavirus disease outbreak in December 2019 (COVID-19) began in China and rapidly spread worldwide. On March 11, 2020, the World Health Organization declared the COVID-19 outbreak a global pandemic. After three years, the COVID-19 crisis has transitioned towards its endemic phase, where the trend of moderate to severe cases has been lowered, suggesting the effectiveness of vaccination programs worldwide in achieving vaccine-induced herd immunity. In 2023, the number of new COVID-19 cases in Malaysia was, on average, 700/day in June and 3000/day in December. Although the number of new cases doubled in December, it is essential to note that patients requiring hospital admission were 216 (31%) in June and 246 (8%) in December (Ministry of Health Malaysia, 2023). This data suggested that more than 90% of those infected with COVID-19 today are in the mild category (i.e., not requiring hospital admission).

In mild COVID-19, infected people are either asymptomatic or develop mild respiratory symptoms such as fever, cough, fatigue, malaise, and breathlessness. To date, the management for those infected with mild COVID-19 only includes house surveillance orders (HSO) and self-monitoring (Ministry of Health Malaysia, 2022). No monitoring from healthcare professional was provided during their
acute infection, and no follow-ups were offered post-infection. This is despite some, especially those with chronic comorbid conditions or older age, experiencing persistent symptoms. It has been estimated that approximately 5–10% of the people infected with mild COVID-19 experience prolonged symptoms (Crook et al., 2021; Greenhalgh et al., 2020).

Post-mild COVID-19 patients are usually expected to return to work as soon as their HSO ends, with no assessment taken on whether these patients have recovered from their acute infection and are fit to work. Hence, the aims of this study were i) to determine the physical function, dyspnoea and fatigue symptoms, and Quality of Life (QoL), and ii) to identify changes in physical function, dyspnoea and fatigue symptoms, and Quality of Life (QoL) of mild COVID-19 patients up to 3 months after the onset of their COVID-19 symptoms.

2.0 Literature review
The COVID-19 outbreak has been transitioned to endemic and can be classified into five categories based on the presentation of the symptoms in each individual (Jebri, 2020). A recent meta-analysis of 6375 patients showed that almost 60% of the study participants were under mild infection (Ng et al., 2022). Initial symptoms include fever, cough, fatigue, and breathing difficulties, which are common across the severity of the infection, and in certain individuals, they remain asymptomatic. However, during the recovery, impairments in physical functionality (endurance and strength), body system function (fatigue and dyspnoea), and mental function (anxiety) were commonly present and, in continuity, may influence the quality of life among the COVID-19 survivor (Badniou et al., 2023), or in some instances, the symptoms tend to worsen over the time if they are not adequately monitored.

The recovery process from COVID-19 involves distinct phases influenced by the impairment presented. Following this consideration, a classification for post-COVID-19 symptoms was proposed. The proposal includes the Transition Phase, symptoms linked to acute COVID-19 that last for four to five weeks; the acute post-COVID-19 phase, symptoms may be persistent from five to 12 weeks, long-post-COVID-19; symptoms extending from week 12 to week 24 and persistent-post-COVID-19; symptoms lasted beyond 24 weeks (Fernández-De-las-peñas et al., 2021). According to this information, the calculated timeline is essential to ensure a comprehensive and staggered monitoring process, allowing for evaluating the progress of recovery and minimising the risk of complications. To better understand each symptom, guidelines for post-COVID-19 assessment were recommended using specific outcome measures (BTS, 2020; Ministry of Health Malaysia, 2021). For a comprehensive evaluation of symptoms (dyspnoea and fatigue), modified Medical Research Council (mMRC) for dyspnoea and Fatigue Assessment of Chronic Illness Therapy-Fatigue (FACIT-F) was proposed in evaluating the level of dyspnoea and fatigue. The physical function is evaluated using a simple six-minute walk test (6MWT) to evaluate the exercise capacity and a one-minute sit-to-stand test (1MSTST) to evaluate the lower limb endurance strength in providing status of musculoskeletal current status and improvement. As for the quality of life, EuroQoL 5 Dimension 5 Level (EQ-5D-5L) is recommended for assessing the impact of COVID-19 infection on quality of life and providing a holistic perspective for individuals recovering from COVID-19 infections. However, there are no clear clinical guidelines for managing mild COVID-19 individuals except for house isolation and self-monitoring (Ministry of Health Malaysia, 2021), even though evidence shows mild COVID-19 individuals may experience prolonged symptoms.

With limited information on the recovery of mild COVID-19 patients, there is uncertainty among healthcare professionals about whether to call these patients for post-acute infection assessment, as well as among patients on whether they need to seek medical help or wait for the symptoms (if present) to disappear. If treatment is needed, but no proper follow-up is done, this knowledge gap may cause a delay in delivering the required treatment to these patients and consequently lead to a cluster of people who did not recover post-COVID-19 infection.

3.0 Methodology

3.1 Study design and ethical consideration
This is a prospective consecutive cohort study of the healthcare workforce at Hospital Al-Sultan Abdullah (HASA) infected with mild COVID-19 between June and December 2022. Patients were assessed at 1-week post onset of symptom (range 8 to 10 days) at t₁, four weeks (range 4 to 5 weeks) at t₂, and 12 weeks (range 12 to 13 weeks) at t₃. Assessments include a respiratory symptoms checklist (Ministry of Health Malaysia, 2021), the six-minute walk test (6MWT) and 1 min Sit-to-Stand Test (1MSTST) for exercise capacity, the modified Medical Research Council Scale (mMRC) for dyspnoea, FACIT-F for fatigue and EQ-5D-5L for health-related Quality of Life (HRQOL). This study was approved by the Human Research Ethics Committee of Universiti Teknologi MARA (REC/06/202[ST/FB/6]) and HASA (200 – HUitm [TPK 3/1]), and all participants gave written informed consent.

3.2 Participants
Potential participants were invited to participate in the study during their house surveillance orders (HSO). A text explaining the purpose and design of the study was sent to the registered mobile number in the HASA Occupational, Safety, and Health (OSH) list of healthcare workers under HSO due to COVID-19 infection by the UiTM OSH officer. Those interested in participating in this study were then given an appointment with the Principal Investigator (MNK) between 2-3 days upon returning to work (i.e., between 8-10 days after onset of symptoms).

3.3 Measurements
Demographic data were collected from the participants at the first session \( (t_1) \). Respiratory symptoms, physical function \( (6\text{MWT and 1MSTST}) \), dyspnoea and fatigue symptoms and HRQOL were measured three times at \( t_1, t_2 \) and \( t_3 \), and the sequence of assessments was arranged for participants to have proper rest between two physical tests.

For physical function assessment, the 6-minute walk test \( (6\text{MWT}) \) was conducted according to international guidelines \( (\text{Holland et al., 2014}) \) with a modified track length of 20m \( (\text{Klein et al., 2021}) \) due to space constraints. Participants were instructed to walk briskly, covering as much distance as possible within 6 minutes and allowed to rest if necessary. The distance covered was reported during each session. The 1-minute sit-to-stand test \( (1\text{MSTST}) \) involved participants transitioning between sitting and standing for 60 seconds using a standard (45 cm high) chair without armrests. The arms were folded across the chest, and the number of transitions performed within the allotted time was recorded, with participants allowed to rest if necessary and no verbal encouragement provided \( (\text{Mirza et al., 2020}) \).

The modified Medical Research Council \( (\text{mMRC}) \) dyspnoea scale assessed functional limitations resulting from dyspnoea. This scale comprises five statements, each assigned a grade ranging from zero to four. The participant selects the statement that best describes their limitation level in daily activities due to breathlessness \( (\text{Celli et al., 2004}) \).

Fatigue symptoms were assessed using the FACIT-F \( (\text{Hartung et al., 2022}) \). The questionnaire consists of 13 items related to fatigue, and participants were required to self-evaluate all the items by choosing between "not at all" to "very much," which later converted to a score of zero to four. With a maximum score of 52, the lower score indicates greater fatigue.

HRQOL was examined using the EuroQol 5 Dimension 5 Level \( (\text{EQ-5D-5L}) \). The questionnaire consists of five questions that include five dimensions of HRQOL: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each score in every dimension is then transformed into a numerical scale ranging from -0.59 (worst possible health state) to 1 (best possible health state) \( (\text{Garratt et al., 2023}) \) and general health was also evaluated by scoring the visual analogue scale \( (\text{VAS}) \) from zero to one hundred; higher score represents greater health \( (\text{Sullivan et al., 2020}) \).

3.4 Data Analysis
Statistical analyses were performed using the Statistical Package for the Social Sciences software \( (\text{SPSS version 29, SPSS Inc., Chicago, IL, USA}) \). A repeated measures Analysis of Variance \( (\text{ANOVA}) \) was used to analyse the changes in physical function, dyspnoea, fatigue symptoms, and HRQOL variables. Post hoc tests \( (\text{Bonferroni}) \) were used to pinpoint group differences. Additionally, paired sample t-tests were conducted for pairwise comparisons and provided information on significant differences in data collected each time.

4.0 Findings

4.1 Study population
Of the 127 healthcare workforce reported being infected with COVID-19 from June to December 2022, 84 (66%) responded to the invitation to the study, 61 (48%) consented and attended all assessments at \( t_1 \), 58 (46%) completed all assessments at \( t_1, t_2, \) and \( t_3 \) (Fig 1).
4.2 Participant characteristics
A summary of the participants’ demographic is presented in Table 1. Of the 61 study participants, 13 (21%) reported having comorbidities; nine (15%) had asthma, two (3%) had hypertension, and two (3%) had diabetes mellitus. At the time of the assessment, all participants had at least two doses of COVID-19 vaccination (complete dose), and 55 (90%) had received their booster dose.

4.3 Physical function, dyspnoea, and fatigue symptoms, and HRQOL at t1, t2, and t3
All participant was assessed at mean±SD (range) of 11±2 (7 to 15) days after the onset of infection for t1, followed by 44±6 (35 to 62) days for t2 and 103±6 (90 to 120) days for t3. Participants’ responses for respiratory and fatigue symptoms and HRQOL were tabulated in Table 2.

Table 1. General characteristics of participants.

<table>
<thead>
<tr>
<th>Gender, n (%)</th>
<th>All participants (n=61)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>15 (25%)</td>
</tr>
<tr>
<td>Female</td>
<td>46 (75%)</td>
</tr>
<tr>
<td>Age, yr., M (SD)</td>
<td>34.0±7.0</td>
</tr>
<tr>
<td>Weight, kg, M (SD)</td>
<td>68.7±18.4</td>
</tr>
<tr>
<td>Height, m, M (SD)</td>
<td>1.6±0.1</td>
</tr>
<tr>
<td>BMI, kg/m², M (SD)</td>
<td>26.7±7.1</td>
</tr>
</tbody>
</table>

Data were presented as mean (standard deviation) and n (percentage) unless stated otherwise.
Abbreviation: kg; kilogram, m; meters, yr.; years old

4.4 Recovery in respiratory symptoms, physical function, dyspnoea, and fatigue symptoms, and HRQOL

The 6MWD significantly improved over time: mean increased by 42m (95% CI, 26m to 57m) from t1-t2 and by 16m (95% CI, 8m to 23m) from t2-t3, representing a 12% (95% CI, 45% to 100%) and 4% (95% CI, 22% to 64%) difference from baseline, respectively (Fig. 2a). The 1MSTST also showed significant improvement: mean increased by 6 repetitions (95% CI, 5 repetitions to 7 repetitions) from t1-t2 by and 5 repetitions (95% CI, 4 repetitions to 7 repetitions) from t2-t3 (Fig. 2b). Percentage differences from baseline were 27% (95% CI, 100% to 140%) for t1-t2 and 19% (95% CI, 80% to 140%) for t2-t3. F-ratios for ANOVA were 54.488 and 181.866 for 6MWD and 1MSTST, respectively, showing significance (p < 0.05).

The FACIT-F score significantly improved over time, with a mean increase of 16 (95% CI, 11 to 21) from t1-t2 and 6 (95% CI, 3 to 8) from t2-t3 (Fig. 2b). Percentage differences from baseline were 27% (95% CI, 100% to 210%) for t1-t2 and 13% (95% CI, 43% to 143%) for t2-t3. The F-ratio for ANOVA was 74.285, indicating significance (p < 0.05). Dyspnoea symptoms reduced from 45% at t1 to 5% at t3 and zero at t3 (Fig. 2c).

EQ-5D-5L responses at baseline (t1): 16 participants reported having mobility issues, 26 participants having issues with usual activities, 40 participants having issues with pain/discomfort, and 17 participants having issues with anxiety/depression. Following session (t2), issues responses were reduced by 17% in mobility, 62% in usual activities, 53% in pain/discomfort, and 18% in anxiety/depression, and at the third session (t3), reductions of each dimension were 88% for mobility, 92% for usual activities, 78% for pain/discomfort, and 59% for anxiety/depression, respectively, compared to baseline (Fig. 3a). The EQ-5D-5L VAS mean±SD improved significantly, with a 5% increase (95% CI, 2% to 9%) at t2 and 6% increase (95% CI, 3% to 8%) at t3-t4. The F-ratio for ANOVA was 41.430, indicating significance (p < 0.05). The EQ-5D-5L VAS score significantly improved over time, with a mean increase of 5 (95% CI, 2 to 9) from t1-t2 and 6 (95% CI, 3 to 8) from t2-t3. The F-ratio for ANOVA was 41.430, indicating significance (p < 0.05). Participants responding regarding issues in each dimension over the three assessments are displayed in Fig. 3b.

Table 2. Physical function, fatigue level, and health-related quality of life at three assessment points and changes between the sessions.

<table>
<thead>
<tr>
<th>Physical function test</th>
<th>t1</th>
<th>t2</th>
<th>t3</th>
<th>Mean difference (\text{t1} - \text{t2}) (95%CI), p-value</th>
<th>Mean difference (\text{t2} - \text{t3}) (95%CI), p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>6MWT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6MWD, m</td>
<td>360±57</td>
<td>402±36</td>
<td>417±27</td>
<td>42 (26 to 57) *</td>
<td>16 (8 to 23) *</td>
</tr>
<tr>
<td>%Pred distance, %</td>
<td>66±14</td>
<td>73±12</td>
<td>75±10</td>
<td>8 (5 to 10) *</td>
<td>3 (1 to 4) *</td>
</tr>
<tr>
<td>Nadir SpO2, %</td>
<td>95±3</td>
<td>97±2</td>
<td>98±2</td>
<td>2 (1 to 2) *</td>
<td>1 (3 to 2) *</td>
</tr>
<tr>
<td>Peak HR, bpm</td>
<td>106±13</td>
<td>101±10</td>
<td>101±10</td>
<td>-2 (-4 to 4) *</td>
<td>-4 (-6 to -1) *</td>
</tr>
<tr>
<td>1MSTST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repetition, n</td>
<td>22±5</td>
<td>27±5</td>
<td>33±6</td>
<td>6 (5 to 7) *</td>
<td>5 (4 to 7) *</td>
</tr>
<tr>
<td>%Pred repetitions, %</td>
<td>48±11</td>
<td>62±11</td>
<td>74±12</td>
<td>13 (10 to 16) *</td>
<td>12 (9 to 14) *</td>
</tr>
<tr>
<td>Nadir SpO2, %</td>
<td>95±3</td>
<td>97±2</td>
<td>98±2</td>
<td>1 (.4 to 2) *</td>
<td>.5 (-1 to 1) *</td>
</tr>
</tbody>
</table>
Peak HR, bpm

<table>
<thead>
<tr>
<th></th>
<th>106±13</th>
<th>101±10</th>
<th>101±10</th>
<th>-4 (-7 to -1) *</th>
<th>-4 (-6 to -1) *</th>
</tr>
</thead>
</table>

Dyspnoea

<table>
<thead>
<tr>
<th>Grade</th>
<th>n (%  )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 0</td>
<td>32 (55)</td>
</tr>
<tr>
<td>Grade 1</td>
<td>22 (38)</td>
</tr>
<tr>
<td>Grade 2</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Grade 3</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Grade 4</td>
<td>0</td>
</tr>
</tbody>
</table>

Fatigue

<table>
<thead>
<tr>
<th>FACIT-F Score, %</th>
<th>38±10 (73±20)</th>
<th>46±7 (89±14)</th>
<th>50±3 (85±6)</th>
<th>16 (11 to 21) *</th>
<th>6 (3 to 10) *</th>
</tr>
</thead>
<tbody>
<tr>
<td>No fatigue, n(%)</td>
<td>0</td>
<td>7 (12)</td>
<td>14 (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild fatigue, n(%)</td>
<td>28 (48)</td>
<td>46 (79)</td>
<td>43 (74)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate fatigue, n(%)</td>
<td>26 (45)</td>
<td>4 (7)</td>
<td>1 (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe fatigue, n(%)</td>
<td>4 (7)</td>
<td>1 (2)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EQ-5D-5L

<table>
<thead>
<tr>
<th>Health-related VAS, %</th>
<th>84±12%</th>
<th>90±11%</th>
<th>95±6%</th>
<th>5 (2 to 9) *</th>
<th>6 (3 to 8),</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>9 (15)</td>
<td>1 (2)</td>
<td>2 (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-care</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usual Activities</td>
<td>15 (26)</td>
<td>6 (10)</td>
<td>1 (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain/discomfort</td>
<td>23 (40)</td>
<td>11 (19)</td>
<td>5 (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety/depression</td>
<td>10 (17)</td>
<td>8 (9)</td>
<td>4 (7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data were presented as mean (standard deviation) and n (percentage) unless stated otherwise. Abbreviations: bpm; beat per minute, EQ-5D-5L; EuroQOL 5 Dimension 5 Level, FACIT-F; Functional Assessment of Critical Illness Therapy-Fatigue, HR; heart rate; m; meter, 1MSTST; one minute sit to stand test, %Pred; percent predicted, 6MWD; six-minute walk distance, SpO2; spontaneous oxygen saturation *, p-value<.05

a) 6MWD over three time of assessment

b) 1MSTST repetitions over three time of assessment
However, this assumption remains subjective due to the absence of data pre-counterparts, as indicated by previous studies still reported fatigue at t12 weeks after the onset of infection included weekends and public holiday. Of the 127 healthcare workforce participants, ii) difficulties in synchronising mutually convenient time slots and dates with the participants (healthcare workers), iii) the intensive work commitment among the healthcare workforce and iv) the calculation on the infection onset included weekends and public holiday.

For physical function assessment at t3, all participants could only cover a mean distance of 360±57m and performed by a mean of 22±5 repetition of 1MSTST. However, these scores only projected about 66%±14% and 48%±11% from the normative data even after 12 weeks of infection onset. These findings could be related by i) none from this sample undergoing any exercise training to increase their loss of muscle mass, and ii) some could have reduced their physical activity level to cope with their remaining symptoms (e.g., 76% still reported fatigue at t3). However, recovery levels remained below predicted values compared to age-sex-matched healthy counterparts, as indicated by previous studies (Berentschot et al., 2022). Despite positive changes, exercise capacity and lower limb strength persisted below normal predicted values or the possibility of pre-infection performance levels being below predicted values. However, this assumption remains subjective due to the absence of data pre-infection.
Assessments of dyspnoea from the mMRC (Table 2) showed that most participants do not have issues with dyspnoea as early as 4 weeks from the onset of infection. Following that, the percentage of fatigue score also improved, where a significant improvement was noticed between t1 and t2. However, 74% of the participants reported at least mild fatigue at t1, which might be because their physical recovery did not meet their normal prediction. As for quality of life, most of the participants reported having issues concerning their usual activities (28%), pain/discomfort (40%), and anxiety/depression (17%). After 12 weeks, the percentage of participants who reported having issues within these three dimensions reduced to 2%, 9%, and 7% as they had already returned to work and needed to adjust their current physical performance to match their working environment.

5.3 6MWD and 1MSTST recovery
The recovery in the physical function test for both 6MWD and 1MSTST shows a statistically significant improvement over time. For 6MWD, the analysis revealed an improvement of 42m±48m between the t1-t2 session and 15m±23m of improvement between t2-t3. This data showed that improvement in walk distance significantly occurred between t1 and t2. As for the 1MSTST repetition, the improvement between t1-t2 and t2-t3 displayed almost identical improvement by a mean of 6±4 and 5±4. The data projected from these analyses shows that the 6MWD distance improved more during the earlier session (t1-t2) compared toward the end session (t2-t3); as discussed earlier, they do not have any specific exercise program for their recovery. As for the 1MSTST, we can only assume that the muscle endurance is below normal.

5.4 Magnitude of change in physical function, dyspnoea, and fatigue symptoms
To calculate the change of variable, we employed repeated measures ANOVA to analyse the variation of improvement in physical function, dyspnoea, and fatigue symptoms over three times of assessments (7 days, 4 weeks, and 12 weeks from the infection onset). After identifying a significant overall effect, Bonferroni correction was applied to control Type I errors in multiple comparisons to ensure the reliability of our findings.

For 6MWD, the analysis revealed a statistically significant increase of 42m (95% CI, 29m to 54m) from t1 to t2 and 16m (95% CI, 9m to 22m) from t2 to t3 (both p < 0.001). The greater improvement observed from t1-t2 suggests enhanced exercise capacity during recovery from the acute phase. Analysis for the 1MSTST demonstrated a statistically significant improvement, with an average increase of 4 repetitions (95% CI, 5 to 7) from t1-t2 and 4 repetitions (95% CI, 4 to 6) from t2-t3 (both p < 0.001). The slight improvement may indicate lower limb functional muscle strength during recovery from the acute phase than the later phase. The improvement in physical performance within one week post-mild COVID-19 infection suggests a notable recovery in individuals’ physiological capacities. Typically, individuals recovering from mild cases of COVID-19 experience a range of symptoms that may affect physical well-being, such as fatigue, respiratory issues, and muscle weakness. The positive change observed within this short timeframe could be attributed to the body’s natural healing processes, including resolving inflammation, repairing damaged tissues, and restoring normal physiological function. Essential consideration required that individual responses to COVID-19 can vary, and factors such as age, overall health, and underlying conditions may influence the rate and extent of recovery. Monitoring physical performance over time is crucial to understanding the recovery trajectory and identifying any persistent challenges that may require further attention or intervention.

The analyses using the repeated measure ANOVA for mMRC scores presented an improvement from t1-t2 was 0.55 (95% CI, 0.93 to 0.02), and t2-t3 was 3 (95% CI, 2 to 5), indicating recovery from the acute phase and a return to routine (p < 0.001). The greater improvement observed from t2-t3 suggests a positive impact on lower limb strength and exercise capacity during recovery. For FACIT-F and mMRC scores between different time points, revealing significant improvements. As for FACIT-F, the scores increased by 8 (95% CI, 6 to 10) from t1-t2 and 3 (95% CI, 2 to 5) from t2-t3, signifying the improvement of the fatigue symptoms that occurred more within the earlier sessions.

Compared to the normative data, the patient’s scores were used in the present study to indicate recovery. We anticipated these patients’ scores could have been reduced even before COVID-19 infected them. However, screening a large sample and waiting for some to be infected by COVID-19 would require higher costs and more extended study duration.

6.0 Conclusion & Recommendations
In summary, this study focused on the recovery of post-mild COVID-19 among the healthcare workforce over 12 weeks. Despite positive improvements in physical function, symptoms and HRQOL, the gains remained below the normative value, most likely due to a lack of monitoring and specific interventions. To enhance the outcome, we propose a properly targeted follow-up session, tailored intervention for individuals with post-mild COVID-19 infection.

Acknowledgement
The authors would like to acknowledge Hospital Al-Sultan Abdullah to everyone who contributed to this research.
Paper Contribution to Related Field of Study
This study comprehensively examines the recovery outcomes in the healthcare workforce post-mild COVID-19 infections over 12 weeks, and the recovery trajectory was highlighted throughout the study. Significantly, it highlights aspects of recovery that did not attain normal, potentially indicating specific areas for targeted interventions in post-mild COVID-19, hence creating awareness among medical professionals regarding the need for proper guidelines in managing individuals with mild COVID-19 and the awareness among the public on what to do and when to seek for help during recovering from mild COVID-19 infection.

References