

Ultra-Brief Online Mindfulness-Based Intervention Effects on Mental Health During the Coronavirus Disease Outbreak in Malaysia: A Randomized Controlled Trial

Kai-Shuen Peh^{*1}, Hui-Chien Tan², and Chee-Seng Tan¹

1. Department of Psychology and Counselling, Faculty of Arts and Social Science, Universiti Tunku Abdul Rahman, 31900, Kampar, Perak D. R., Malaysia

2. Department of Psychology, School of Science and Technology, Sunway University, 47500, Selangor, Malaysia

*E-mail pehks@utar.edu.my

Abstract

The federal government of Malaysia recently implemented a nationwide Movement Control Order (MCO) to control the COVID-19 outbreak. However, the MCO has had a negative impact on people's mental well-being. Interventions that can improve people's mental health when their movement is restricted are therefore urgently needed. The present study investigated the impact of an ultra-brief online mindfulness-based intervention on mental health using a two-arm randomized controlled trial design. A total of 161 participants self-reported their distress, anxiety, psychological insecurity, and well-being at baseline and post-treatment, while 61 of them answered the same set of measures and the fear of COVID-19 scale in a follow-up study two weeks later. A multivariate analysis of covariance found the intervention reduced psychological insecurity levels measured during post-treatment. Moreover, gender, the experience of practicing mindfulness, and participants' experiences of undergoing quarantine were found to play a role in post-treatment measures. No significant difference was found between the baseline and follow-up treatment. However, hierarchical multiple regression found that psychological insecurity measured at baseline positively predicted the level of fear after controlling for demographic variables. Overall, the findings suggest that an online mindfulness intervention is a potentially useful tool for alleviating people's mental health difficulties.

Efek Intervensi Berbasis Perhatian Online terhadap Kesehatan Mental selama Penyakit Coronavirus (COVID-19) di Malaysia: Uji Acak Terkendali

Abstrak

Wabah COVID-19. MCO, bagaimanapun, telah ditemukan memiliki dampak negatif pada kesejahteraan mental orang. Oleh karena itu intervensi yang dapat meningkatkan kesehatan mental dalam kondisi pergerakan terbatas sangat diperlukan. Penelitian ini menyelidiki dampak dari intervensi berbasis kesadaran *online* singkat pada kesehatan mental menggunakan rancangan percobaan terkontrol acak dua-lengan. Sebanyak 161 peserta melaporkan sendiri kesusahan, kecemasan, ketidakamanan psikologis mereka, dan kesejahteraan pada awal (*baseline*) dan *post-test* (*post-treatment*), sementara 61 dari mereka menjawab serangkaian tindakan dan ketakutan yang sama dengan COVID-19 skala dalam studi tindak lanjut dua minggu kemudian (*follow-up treatment*). Analisis multivariat kovarians mendukung intervensi dalam mengurangi tingkat ketidakamanan psikologis yang diukur pada *post-treatment*. Selain itu, jenis kelamin, pengalaman berlatih *mindfulness*, dan contoh dari para peserta yang menjalani karantina ditemukan memainkan peran dalam tindakan *post-treatment*. Tidak ada perbedaan signifikan yang ditemukan antara *baseline* dan *follow-up treatment*. Namun, regresi berganda hierarkis menemukan bahwa ketidakamanan psikologis yang diukur pada *baseline* secara positif memprediksi tingkat ketakutan setelah mengendalikan variabel demografis. Secara keseluruhan, temuan ini menyarankan intervensi *mindfulness online* sebagai alat yang berpotensi berguna untuk mengurangi kesehatan mental orang.

Keywords: anxiety, distress, psychological insecurity, fear of covid-19, malaysia, movement control order, well-being, web-based intervention

Citation:

Peh, K. S., Tan, H. C. & Tan, C. S. (2020). Ultra-brief online mindfulness-based intervention effects on mental health during the coronavirus disease outbreak in Malaysia: A randomized controlled trial. *Makara Human Behavior Studies in Asia*, 24(2), 118-128. doi:10.7454/hubs.asia.2140920

1. Introduction

The infectious coronavirus disease (COVID-19) caused by a novel coronavirus was first identified amid an outbreak of respiratory illness in Wuhan City, Hubei Province, China. The WHO declared a global health emergency on 30 January 2020. By 11 March 2020, the WHO announced that COVID-19 was a global pandemic. In response to the COVID-19 pandemic, the federal government of Malaysia implemented a Movement Control Order (MCO) as a nationwide preventive measure on 18 March 2020. Since then, civilians have only been allowed to leave their homes under specific circumstances while practicing personal hygiene and social distancing.

Although the MCO plays an important role in containing the spread of COVID-19, prolonged time in isolation on top of the uncertainty of this global pandemic had inevitably had a negative impact on people's mental well-being. Since the MCO began, the impact has been reflected in the sharp increase in messages and calls received by the Malaysian Ministry of Health's Psychological First Aid (Mercy Malaysia) hotline as well as support groups like Befrienders (Fong, 2020, para.1). A recent Malaysian study (Azuddin, 2020) discovered that almost half of their respondents faced some forms of negative emotional experience, with 22% having severe to extremely severe anxiety, 20% developing depression, and 15% experiencing alarming levels of stress during this MCO period. However, these statistics merely represent Malaysians' mental health states at the beginning of the MCO. Numbers may escalate as the MCO prolongs and even after the MCO has been lifted.

Consequently, interventions that can improve mental health while restricting movement are urgently needed. One feasible intervention would be mindfulness-based strategies which are widely recommended as a treatment for various types of mental distress (Demarzo et al., 2015). The key advantage of mindfulness interventions is their accessibility, affordability, and sustainability. It is believed that incorporating mindfulness practices during uncertain times such as during an MCO can help people develop healthier coping and distress management skills. Therefore, the present study investigated the effects of an online mindfulness-based intervention on people's mental health issues such as anxiety, psychological insecurity, well-being, and distress during the COVID-19 outbreak in Malaysia.

The Negative Impact of COVID-19 on Mental Health.

The COVID-19 outbreak has had harmful effects both socioeconomically and in well-being. For instance, Yang and Ma (2020) conducted a large-scale nationwide study in China and found that the onset of COVID-19 led to a 74% drop in overall emotional well-being. Similarly, Zhang, Wang, Rauch, and Wei (2020) concluded that

adults who did not work during the outbreak had worse mental and physical health as well as poorer life satisfaction. They also found that the severity of COVID-19 in a given locality predicts peoples' life satisfaction.

The Beneficial Effects of Mindfulness. Kabat-Zinn (1994) defined mindfulness as paying non-judgmental attention to the present moment on purpose. Mindfulness emphasizes awareness of internal processes like bodily sensations as well as thoughts and feelings. It encourages one to be attentive to events happening in the moment while letting go of any concerns about the past and future. Therefore, mindfulness is useful for disengaging humans from automatic thoughts, habits, and unhealthy behavior, while enhancing self-regulation and well-being (Ryan & Deci, 2001).

Kabat-Zinn et al. (1992) found that his mindfulness training programs were successful at reducing generalized anxiety and panic disorders. Similarly, when examining the efficacy of an acceptance-based behavioral therapy focusing on mindful behavioral engagement for generalized anxiety disorder (GAD), Roemer et al. (2009) found that 78% of treated participants no longer met the criteria for GAD during a post-treatment assessment. Mindfulness helps to reduce anxiety and depression by enabling one to respond to uncertainties with awareness instead of reacting instinctively (Hofman, Sawyer, Witt, & Oh, 2010; Jacobs & Blustein, 2008).

Apart from reducing distress, mindfulness related practices are also associated with improved life satisfaction, positive affect, and positive mental health (Kong, Wang, & Zhao, 2014; Shier & Graham, 2011). To illustrate, Ding, Tang, Tang, and Posner (2014) found mindfulness training had multiple positive effects on psychological well-being including improved self-control, enhanced positive emotions, and even decreased negative emotions and lowered stress hormones.

The Present Study. Mindfulness was expected to buffer the negative emotional consequences of the COVID-19 pandemic. Indeed, several studies (Behan, 2020; Hedderman, O'Doherty, & O'Connor, 2020; Jiang et al., 2020) have established empirical evidence of the positive effects of mindfulness. The present study went beyond those studies by investigating the effectiveness of an ultra-brief online mindfulness intervention (based on the RAIN protocol) on people's mental health in Malaysia.

The RAIN protocol is an ultra-brief four-step distress transformation protocol originally designed by Michele McDonald (Brach, 2020). The RAIN protocol consists of four steps: (R) recognize what is going on (e.g., distressing feelings); (A) allow the experience to be in a non-judgmental manner; (I) investigate with kindness (e.g., how has this distress developed); and (N) non-

identifying which promotes de-fusion between the individual and their distress. Most recently, Hedderman et al. (2020) proposed the RAIN protocol as part of a comprehensive mindfulness-based intervention for mitigating the risks of psychological distress and burnout in healthcare workers during the COVID-19 pandemic. Based on past studies, this study hypothesized that the ultra-brief online mindfulness intervention would reduce distress (H1), anxiety (H2), psychological insecurity (H3), enhance well-being (H4), and reduce the fear of COVID-19 (H5).

2. Methods

Participants and Design. This study utilized a two-arm randomized controlled trial design to assess the effects of an online mindfulness intervention on mental health. Participants answered the survey before the treatment (baseline), after the treatment (post-treatment), and during the optional two-week follow-up study (follow-up treatment).

A total of 235 cases were recorded using an online survey system. However, 49 cases were removed for not completing the baseline measures resulting in 186 cases. Among them, 25 cases (13.44%) were removed for not completing the manipulation or the post-treatment measures. Therefore, the final sample for analysis consisted of 161 individuals (119 females and 42 males) with a mean age of 28.75 ($SD = 9.01$, ranging from 18 to 70 years old). The majority of the sample were Chinese (80.7%) followed by Indians (11.2%), Malays (6.2%), and others (1.9%). More than half of the participants identified themselves as worshippers of Buddhism (57.76%) followed by Christianity (20.50%), Islam (8.70%), others (8.07%), and Hinduism (4.97%).

Other items revealed that 157 (97.5%) of participants were Malaysians (2.5% were foreigners) of which 20 (12.4%) of them had continued working during the MCO, 51 (31.7%) of them had practiced mindfulness before the MCO, while 1 (0.62%) of them had been tested for COVID-19, and 16 (9.9%) had been either instructed to participate in home surveillance or quarantine. None of the participants had been diagnosed with COVID-19.

The participants were invited to join a follow-up study in the following two weeks. In total, 61 participants (retention rate = 37.89%, 44 females and 17 males, 33 from the treatment group, and 28 from the control group) answered the follow-up-treatment survey. Figure 1 shows a consort diagram.

Study Intervention

RAIN: Ultra-Brief Mindfulness-based Intervention.

We adapted and contextualized the original RAIN protocol to the local pandemic-induced lockdown situation, by using complementary short journaling prompts that engaged participants in self-reflection. Journaling is

known as a creative way to engage people in a therapeutic activity that promotes self-awareness (Utley & Garza, 2011). Creating a visual narration of thoughts, feelings, and experiences helps individuals make internal experiences more tangible and manageable, especially during such uncertain times.

The first step of the protocol involved asking participants to recognize distressing cognitive and affective experiences associated with the COVID-19-induced lockdown. Second, participants were asked to learn to practice radical acceptance of their distress. Third, participants are asked to identify strengths, opportunities, and blessings that they may have encountered during this pandemic crisis. Finally, participants were invited to generate adaptive behavioral strategies to cope with the inconveniences that they were experiencing.

In the present study, participants in the treatment group were asked to indicate a) their present feelings about the MCO, b) three things they could do to make themselves feel better, c) three privileges/benefits they encountered during the MCO, and d) three things they could do for themselves and others during the MCO. Similarly, the control group was asked to answer another four questions indicating a) their feelings about the current COVID-19 situation, b) three actions they were taking to prevent COVID-19, c) three ways they obtained news about COVID-19 during the MCO, and d) three things they wished to do after the MCO had been lifted. See Appendix b for the scripts used in the treatment and control groups.

Measures

Subjective Unit of Distress Scale. The Subjective Unit of Distress Scale is a classic 10-point scale used to assess the intensity of subjective distress experienced by an individual at the present moment (Wolpe, 1973). It is commonly used by therapists as an indication of the progress of therapy. In the present study, participants were assessed on a 10-point scale (i.e., 1: *Feeling great*; 10: *I am exploding out of control*). A sample question was “*How do you feel right now?*”. Participants rated their subjective experience of distress on a sliding scale during the pre- and post-test.

Anxiety. Participants’ anxiety levels were assessed using the Generalized Anxiety Disorder scale (GAD-7; Spitzer, Kroenke, Williams & Löwe, 2006). The GAD-7 consists of seven items rated on a 4-point Likert scale ranging from 0: *Not at all*; 1: *Several days*; 2: *More than half of the days*; to 3: *Nearly every day*. The total score is calculated by summing up the seven items (the score ranges from 0 to 21). An example of an item was “*Being so restless that it is hard to sit still*”. Spitzer et al. (2006) demonstrated that the GAD-7 had good reliability, as well as a good criterion, construct, factorial, and procedural validity.

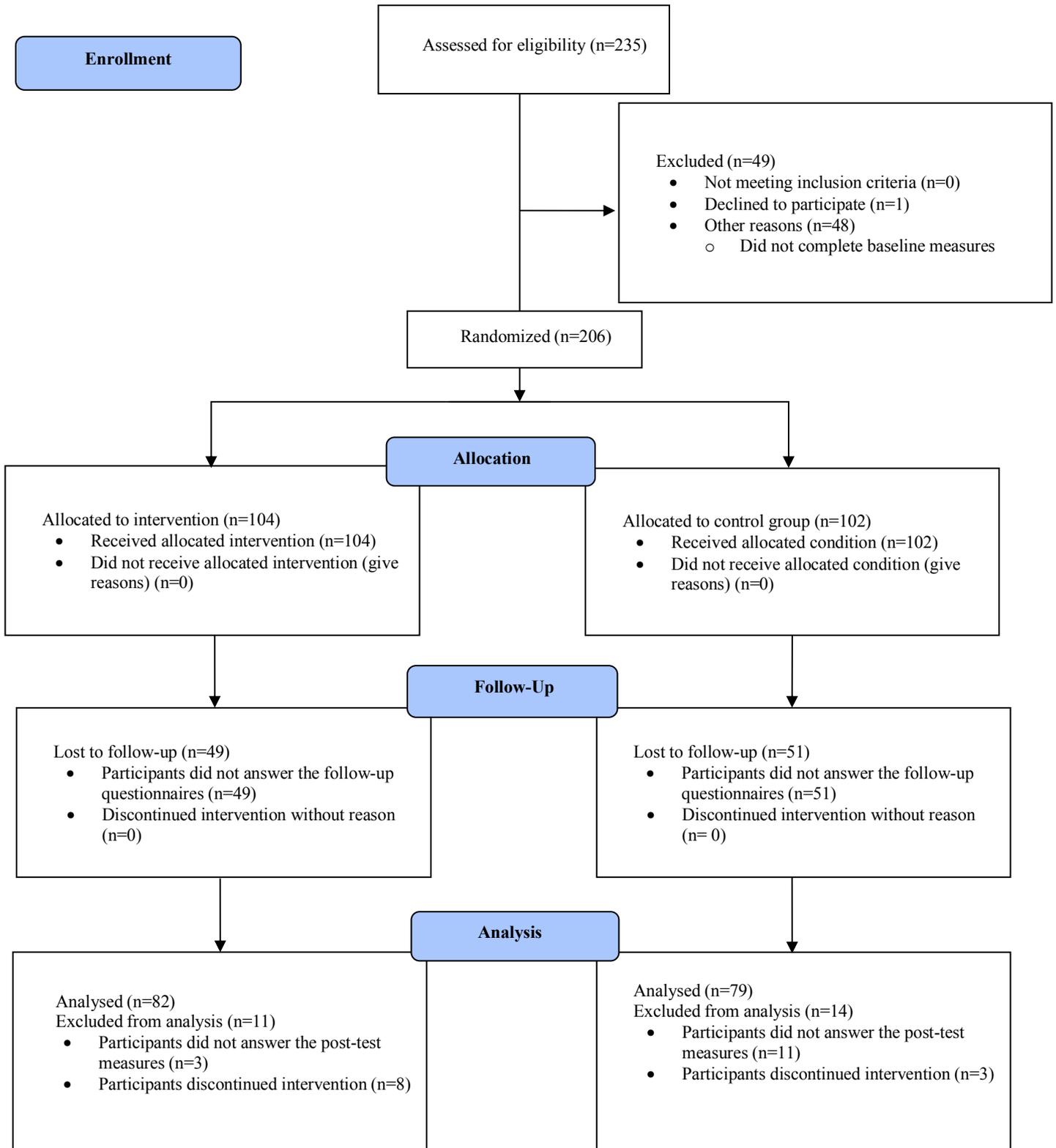


Figure 1. CONSORT 2010 Flow Diagram

Psychological Insecurity. The 10-item Psychological Insecurity Scale constructed by Taormina and Sun (2015) was adapted for the present study. Items were modified to assess psychological insecurity about COVID-19 experienced during the MCO (see Appendix a). For example, the item “*I am emotionally troubled by the suffering of other people*” was revised to “*I am emotionally troubled by the reports of the COVID-19 cases*”. Using a 5-point Likert scale (1: *Strongly disagree*; 5: *Strongly agree*), respondents self-reported their level of insecurity. After reverse scoring item 2, the average score of the 10 items was computed. Individuals who reported a higher score experienced a higher level of insecurity.

General Well-Being. Participants’ general well-being was assessed using the World Health Organization-Five Well-Being Index (WHO-5; WHO, 1998). This is a short self-reported measure of mental well-being in relation to conditions experienced over the past two weeks. The scale consists of five items rated on a 6-point Likert scale from 0 (*At no time*) to 5 (*All of the time*). The total raw score is calculated by summing up the five items (scores range from 0 to 25). The final score was the raw score multiplied by 4, with 0 representing the worst imaginable well-being and 100 representing the best imaginable well-being. An example of an item is “*I have felt cheerful and in good spirits*”. Prior to the present study, item response theory analyses in studies with both younger and elderly populations had indicated good construct validity for the WHO-5 as a unidimensional well-being measurement scale (Topp, Østergaard, Søndergaard, & Bech, 2015).

Fear of COVID-19 Scale (Ahorsu et al., 2020). This scale consists of seven items assessing participants’ fear of COVID-19. Respondents indicated the extent of their agreement with each item using a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) to self-report their fear of COVID-19. Individuals who reported a higher total score were assumed to have a greater fear of COVID-19. An example item is, “I cannot sleep because I’m worried about getting Corona.”

Other Variables. Several demographic and background variables that may have influenced the outcome variables were also measured and included in the analysis to statistically control for their impacts. The variables were age, gender (0: *female*, 1: *male*), number of days of experiencing MCO (“days”), whether participants continued working during the MCO (“working”; 0: *no*, 1: *yes*), whether participants had an experience of practicing mindfulness before the MCO (0: *no*, 1: *yes*), whether participants had been tested for COVID-19 (“Testing”; 0: *no*, 1: *yes*), and whether participants had been instructed to undertake home surveillance or any form of quarantine for COVID-19 (“Quarantine”; 0: *no*, 1: *yes*).

Procedures. The present study was reviewed and approved by the Scientific and Ethical Review Committee of [blacked for blind review]. Participants were recruited using convenience sampling and snowball sampling. An online survey was created, and the survey URL was posted on the authors’ social networking sites to recruit respondents.

After giving their consent, participants answered questions about their demographic and background information followed by the first measures (i.e., baseline) of distress, anxiety, psychological insecurity, and well-being. Then, half of the participants were randomly assigned to the mindfulness intervention condition (i.e., treatment group) and the others were assigned to the control group. The treatment group answered four questions about the mindfulness intervention while the control group answered another four questions. After that, all participants answered the second set of measures (i.e., post-treatment) about distress, anxiety, psychological insecurity, and well-being. Finally, participants were informed about and invited to join the follow-up study in two weeks’ time. Interested individuals provided their email addresses so that researchers could send them invitations and the survey link. Helpline numbers for counseling services (provided by the Ministry of Women, Family and Community Development) were also given to all participants before they exited the survey.

During the follow-up study, participants answered the third set of measures about distress, anxiety, psychological insecurity, and well-being, as well as their fear of COVID-19.

Data Analysis Plan. A Pearson correlation analysis was conducted to investigate the relationships between variables, while the reliability of measurements was examined using the Cronbach alpha coefficient. Then, two multivariate analyses of covariates (MANCOVAs) were conducted to examine the effectiveness of the ultra-brief online mindfulness intervention. In the first MANCOVA, the group condition (treatment vs. control) was treated as an independent variable and the four target variables (i.e., distress, anxiety, psychological insecurity, and well-being) measured post-treatment were included as dependent variables. Moreover, demographic and background variables (i.e., age, gender, days, working, mindfulness experience, testing, quarantine), and the four target variables measured at baseline were entered as covariate variables.

The second MANCOVA was conducted to examine the impact of the mindfulness intervention two-weeks’ later at the follow-up. Similarly, the group condition served as an independent variable alongside the four target variables measured at follow-up, with treatment and the fear of COVID-19 as dependent variables. The covariate variables were age, gender, days, working, mindfulness

experience, testing, quarantine, and the four target variables were measured both pre- and post-treatment.

Furthermore, a hierarchical multiple regression was conducted to examine variables (measured at baseline) that had effects on the fear of COVID-19 (measured at follow-up treatment). Demographic variables such as age, gender, days, working, mindfulness experience, and quarantine were first entered into Step 1, while the four target variables (measured at baseline) were entered into Step 2.

For the sake of clarity, we only reported statistically significant results for the abovementioned analyses.

3. Results

Table 1 presents the descriptive statistics, intercorrelations, and Cronbach alpha coefficients for the measured variables. All measurements indicated good internal consistency. Moreover, there was a significant relationship between all the variables except the fear of COVID-19 measured during follow-up treatment. A similar pattern was observed across the three waves. For instance, well-being was negatively associated with distress, anxiety, and psychological insecurity, while psychological insecurity was positively associated with distress, anxiety, and the fear of COVID-19.

The first MANCOVA compared the scores measured at post-treatment. The multivariate tests indicated significant results for mindfulness experience, Wilk's $\lambda=0.925$,

$F(4,145) = 2.94, p = 0.023, \eta_p^2 = 0.075$, and the four target variables measured at baseline: Wilk's $\lambda=0.555, F(4,145) = 29.02, p < 0.001, \eta_p^2 = 0.445$ for distress; Wilk's $\lambda=0.544, F(4,145) = 30.33, p < 0.001, \eta_p^2 = 0.456$ for anxiety; Wilk's $\lambda=0.395, F(4,145) = 55.62, p < 0.001, \eta_p^2 = 0.605$ for psychological insecurity; and Wilk's $\lambda = 0.251, F(4,145) = 107.89, p < 0.001, \eta_p^2 = 0.749$ for well-being.

Table 2 shows the summary of MANCOVA for between-subjects effects. Results indicated that group condition (treatment vs. control) had a significant effect on psychological insecurity only measured at post-treatment ($p = 0.041$). Specifically, the treatment group reported significantly lower scores than the control group. An inspection of distress measured post-treatment found that quarantine ($p = 0.045$) had a significant effect, as well as distress ($p < 0.001$), psychological insecurity ($p = 0.018$), and well-being ($p = 0.029$) measured at baseline. On the other hand, both anxiety ($p < 0.001$) and psychological insecurity ($p = 0.001$) measured at baseline had a significant effect on post-treatment anxiety. Moreover, mindfulness experience ($p = 0.009$), testing ($p = 0.041$), quarantine ($p = 0.029$), and psychological insecurity measured at baseline ($p < 0.001$) were found to have a significant effect on post-treatment psychological insecurity. Finally, gender ($p = 0.036$), mindfulness experience ($p = 0.022$), psychological insecurity ($p = 0.038$), and well-being ($p < 0.001$) measured at baseline had a significant effect on post-treatment well-being.

Table 1. Descriptive Statistics, Intercorrelations, and Reliability for Measurements used at Baseline, Post-Treatment, and Follow-Up Treatment

Variable	Treatment		Control		Alpha	2	3	4	5
	M	SD	M	SD					
Baseline (N = 161)	(n = 82)		(n = 79)						
1. Distress	4.33	1.52	4.37	1.89	-	0.67***	0.49***	-0.64***	0.20
2. Anxiety	13.43	4.93	13.97	4.81	0.895	1	0.65***	-0.61***	0.33**
3. Insecurity	2.74	0.69	2.82	0.58	0.806		1	-0.59***	0.59***
4. WB	52.34	22.09	53.11	21.68	0.898			1	-0.29*
Post-treatment (N = 161)	(n = 82)		(n = 79)						
1. Distress	4.02	1.58	4.22	1.86	-	0.67***	0.59***	-0.67***	0.25
2. Anxiety	12.59	4.94	12.92	4.80	0.916	1	0.73***	-0.60***	0.22
3. Insecurity	2.57	0.70	2.74	0.66	0.851		1	-0.61***	0.55***
4. WB	54.78	22.26	53.37	22.76	0.918			1	-0.30*
Follow-up (N = 61)	(n = 33)		(n = 28)						
1. Distress	4.52	2.11	3.86	1.98	-	0.74***	0.55***	-0.73***	0.10
2. Anxiety	13.91	5.53	13.31	5.59	0.935	1	0.74***	-0.73***	0.26*
3. Insecurity	2.57	0.81	2.65	0.61	0.861		1	-0.61***	0.61***
4. WB	52.80	24.02	54.00	20.40	0.940			1	-0.16
5. Fear	14.91	4.55	15.79	4.30	0.803				1

Note. The correlation matrix of baseline and post-treatment shows the relationship between the variables measured at the same wave, except for the fear of COVID-19. M = mean; SD = standard deviation; Alpha = Cronbach alpha coefficient; Insecurity = psychological insecurity; WB = well-being; Fear = fear of the COVID-19 measured at follow-up treatment. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2. Summary of MANCOVA Results for Variables Measured at Baseline and Post-Treatment

No.	Variable	Distress_Post		Anxiety_Post		Insecurity_Post		WB_Post	
		<i>F</i> (1,148)	η^2_p						
1	Age	2.507	0.017	0.051	<0.001	0.011	<0.001	0.004	<0.001
2	Gender	2.855	0.019	1.319	0.009	0.028	<0.001	4.485*	0.029
3	Days	0.272	0.002	0.569	0.004	0.040	<0.001	0.325	0.002
4	Working	0.355	0.002	1.067	0.007	0.995	0.007	0.602	0.004
5	Mind_Exp	3.421	0.023	2.932	0.019	7.080**	0.046	5.352*	0.035
6	Testing	0.636	0.004	0.193	0.001	4.264*	0.028	1.246	0.008
7	Quarantine	4.104*	0.027	1.269	0.008	4.839*	0.032	1.288	0.009
8	Distress_Base	111.094***	0.429	2.066	0.014	0.153	0.001	3.057	0.020
9	Anxiety_Base	<.001	<0.001	102.340***	0.409	3.059	0.020	3.426	0.023
10	Insecurity_Base	5.742*	0.037	11.859**	0.074	222.965***	0.601	4.395*	0.029
11	WB_Base	4.889*	0.032	0.098	0.001	1.437	0.010	424.997***	0.742
12	Condition	0.585	0.004	0.162	0.001	4.256*	0.028	2.651	0.018

Note. *N* = 161. Insecurity_Post = psychological insecurity measured at post-treatment; WB_Post = well-being measured at post-treatment, Days = number of days of experiencing movement control order (MCO); Working = continued working during the MCO; Mind_Exp = experience of practicing mindfulness before the MCO; Testing = tested for the COVID-19; Quarantine = instructed to undertake home surveillance or any form of quarantine for COVID-19; Insecurity_Base = psychological insecurity measured at baseline; WB_Base = well-being measured at baseline; Condition = treatment group vs. control group. * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001

Table 3. Summary of MANCOVA Results for Variables Measured at Baseline, Post-Treatment, and Follow-Up

No	Variable	Distress_Follow		Anxiety_Follow		Insecurity_Follow		WB_Follow		Fear	
		<i>F</i> (1,20)	η^2_p	<i>F</i> (1,20)	η^2_p	<i>F</i> (1,20)	η^2_p	<i>F</i> (1,20)	η^2_p	<i>F</i> (1,20)	η^2_p
1	Day	0.003	<0.001	0.561	0.027	0.015	0.001	1.191	0.056	0.198	0.010
2	Age	0.528	0.026	0.181	0.009	1.123	0.053	0.045	0.002	0.494	0.024
3	Gender	2.935	0.128	0.112	0.006	0.753	0.036	0.419	0.021	0.049	0.002
4	Work	2.040	0.093	0.076	0.004	0.975	0.047	0.439	0.021	0.526	0.026
5	Mind_Exp	0.870	0.042	1.896	0.087	0.788	0.038	0.022	0.001	1.186	0.056
6	Quarantine	4.755*	0.192	0.028	0.001	0.016	0.001	0.020	0.001	2.100	0.095
7	Distress_Base	0.028	0.001	0.059	0.003	2.970	0.129	0.087	0.004	0.701	0.034
8	Anxiety_Base	2.112	0.096	1.090	0.052	1.298	0.061	0.976	0.047	<.001	<0.001
9	Insecurity_Base	0.301	0.015	1.281	0.060	0.323	0.016	0.821	0.039	2.401	0.107
10	WB_Base	0.001	<0.001	0.008	<0.001	0.178	0.009	0.914	0.044	1.313	0.062
11	Distress_Post	1.079	0.051	0.006	<0.001	1.042	0.050	0.056	0.003	0.036	0.002
12	Anxiety_Post	2.034	0.092	0.372	0.018	1.092	0.052	0.029	0.001	0.002	<0.001
13	Insecurity_Post	0.075	0.004	0.570	0.028	2.289	0.103	1.822	0.084	0.496	0.024
14	WB_Post	0.320	0.016	0.006	<0.001	0.005	<0.001	0.623	0.030	1.359	0.064
15	Condition	2.216	0.100	0.331	0.016	0.288	0.014	0.289	0.014	0.696	0.034

Note. The analysis was based on 36 cases with complete data collected at baseline, post-treatment, and follow-up treatment. Insecurity_Follow = psychological insecurity measured at follow-up treatment; WB_Follow = well-being measured at follow-up treatment, Fear = fear of COVID-19; Days = number of days of experiencing movement control order (MCO); Working = continued working during the MCO; Mind_Exp = experience of practicing mindfulness before the MCO; Testing = tested for the COVID-19; Quarantine = instructed to undertake home surveillance or any form of quarantine for COVID-19; Insecurity_Base = psychological insecurity measured at baseline; WB_Base = well-being measured at baseline; Insecurity_Post = psychological insecurity measured at post-treatment; WB_Post = well-being measured at post-treatment; Condition = treatment group vs. control group. * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001

The second MANCOVA compared the scores measured at follow-up treatment. The background variable 'testing' was excluded because none of the respondents were tested for COVID-19. No significant effect was found in the multivariate tests. Tests for between-subjects effects (see Table 3) showed that distress (measured at follow-up treatment) was influenced by quarantine ($p = .041$).

Taken together, the MANCOVA results suggested that the ultra-brief online mindfulness intervention was effective at reducing psychological insecurity right after the treatment. The effect, however, did not last for two weeks. The intervention did not have an impact on distress, anxiety, and well-being respectively.

Finally, a hierarchical multiple regression was conducted to identify factors that affected the fear of COVID-19 measured during follow-up. Demographic variables such as age, gender, days, working, mindfulness experience, and quarantine were first entered into Step 1, while distress, anxiety, psychological insecurity, and well-being measured at baseline were entered into Step 2. The model was significant, $F(10,50) = 3.26, p = 0.003$, adjusted $R^2 = 0.274$. Moreover, psychological insecurity was found to predict the fear of COVID-19, (standardized coefficient) $\beta = 0.621, t = 3.71, p = 0.001$, variance inflation factor = 2.31.

4. Discussion

This research explored the use of an ultra-brief mindfulness-based intervention during the COVID-19 pandemic-induced lockdown period to assess people's mental health. The online intervention was developed due to the unprecedented social distancing measures across the globe. We examined the immediate and longer-term effects of the ultra-brief mindfulness-based intervention (RAIN) on subjective units of distress, anxiety, psychological insecurity, and well-being among people in Malaysia. Our primary finding was that despite the brevity of the intervention, participants in the treatment group demonstrated statistically significant lower levels of psychological insecurity than their control group counterparts. In addition, our study found that psychological insecurity measured at baseline predicted the fear of COVID-19 measured during follow-up.

Thus far, previous studies have reported negative impacts of psychological security on well-being (De, Roy, Rashid, & Banik., 2018) and depression (Li et al., 2018). Importantly, our results suggest that the online ultra-brief mindfulness-based intervention is a promising tool for alleviating psychological insecurity in the short term. This result may be explained by the fact that the RAIN protocol emphasizes both mindfulness and the acceptance of difficult emotions. Other studies have found that these key elements of the intervention have reduced psychological symptoms following the exposure to actual critical incidents (Shiphred & Salters-Pedneault, 2018) as well as

laboratory-induced worry (Ainsworth, Bolderston, & Garner, 2017).

Nevertheless, the difference in psychological insecurity between the treatment and control groups was no longer evident during follow-up, implying that the therapeutic benefits of ultra-brief mindfulness-based intervention may not be persistent. This finding contrasts with recent studies that have suggested that the ultra-brief mindfulness-based intervention can have long-lasting effects (Bloom-Foster & Mehl-Madrona, 2020; Shuai, Bakou, Hardy, & Hogarth, 2020). Instead, our finding supports observations in Elefant, Contreras, Muñoz, Bunge, and Leykin, (2017) indicating that ultra-brief interventions often have immediate effects, but no lasting benefits. Despite these short-lived effects, our results suggest the baseline level of psychological insecurity significantly influenced the fear of COVID-19 measured during a two-week follow-up, while participants reported a lower level of psychological insecurity after receiving the treatment. Taken together, these findings suggest the potential of the ultra-brief online intervention to reduce psychological insecurity that may in turn relieve the fear of COVID-19. This mechanism warrants further investigation. Furthermore, previous experience of mindfulness practice was a significant protective factor against distress, anxiety, psychological insecurity, and well-being at baseline. These findings corroborate the overwhelming meta-analytic evidence of the benefits of mindfulness training against various mental health problems across the lifespan (Borquist-Conlon et al., 2019; Li & Bressington, 2019).

Contrary to expectations, this study did not find that the RAIN intervention had any significant effect on anxiety, subjective units of distress, and well-being. Recently, the beneficial effects of mobile app-based mindfulness interventions have been supported by meta-analytic evidence (Linardon, 2019). While online and/or mobile-based mindfulness interventions are viable, we argue that prolonged mindfulness training may be necessary for greater and more sustained psychological benefits.

There were several limitations to the present study. First, participants were recruited from various channels of social media (e.g. Facebook, WhatsApp, Telegram, etc.) While this population represents the intended audience (who has access to the Internet) of the intervention designed, the results may not be generalizable to other recruitment strategies. In addition, the high attrition rates in our study, especially at the two-week follow-up, precluded an indisputable determination regarding the longer-term effectiveness of our intervention. Finally, some items of the psychological insecurity scale were modified to fit the scope of the present study. Unfortunately, the current sample was inadequate for testing the scale's factorial structure. Nevertheless, the scale showed good internal consistency. Moreover, its theoretical relationship with measurements of distress, anxiety, and well-being was duly supported.

5. Conclusions

The present study explored the deployment of an online mindfulness-based intervention to mitigate mental health problems during the COVID-19 pandemic (Hedderman et al., 2020; Behan, 2020; Jiang et al., 2020) and offered preliminary data supporting further research on such interventions. An online ultra-brief mindfulness intervention may offer a highly accessible and affordable means of alleviating psychological distress during the pandemic. However, such effects may not be substantial enough to produce lasting changes in the sense of psychological insecurity and anxiety symptoms. In conclusion, given the devastating effects of the COVID-19 pandemic on mental health, there is an urgent need to create and implement scalable, accessible, and effective mental health intervention tools to alleviate the distress caused by the ongoing global crisis.

Acknowledgments

The authors would like to thank Phang Chen Kar, Alvin Ng Lai Oon, Tay Jia May, Melia Wong and Ravivarma Rao Panirselvam for their valuable input on the intervention protocol and Robert Joseph Taormina for granting us permission to use the psychological insecurity scale. We are indebted to the Malaysian Mindfulness Practice and Research Association for their kind assistance in data collection.

References

- Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: Development and initial validation. *International Journal of Mental Health and Addiction*, 1–9. doi:10.1007/s11469-020-00270-8
- Ainsworth, B., Bolderston, H., & Garner, M. (2017). Testing the differential effects of acceptance and attention-based psychological interventions on intrusive thoughts and worry. *Behaviour Research and Therapy*, 91, 72–77. doi:10.1016/j.brat.2017.01.012
- Azuddin, A. (2020). MCO and mental well-being: Home sweet home? Part 1: Housing and crowding during the MCO. *Centre*. Retrieved from <https://www.centre.my/post/mco-and-mental-health-living>.
- Behan, C. (2020). The benefits of Meditation and Mindfulness practices during times of crisis such as Covid-19. *Irish Journal of Psychological Medicine*, 1–3. doi:10.1017/ipm.2020.38
- Bloom-Foster, J., & Mehl-Madrona, L. (2020). An ultra-brief mindfulness-based intervention for patients in treatment for opioid addiction with buprenorphine: A primary care feasibility pilot study. *Journal of Alternative and Complementary Medicine*, 26(1), 34–43. doi:10.1089/acm.2019.0242
- Borquist-Conlon, D. S., Maynard, B. R., Brendel, K. E., & Farina, A. S. J. (2019). Mindfulness-based interventions for youth with anxiety: A systematic review and meta-analysis. *Research on Social Work Practice*, 29(2), 195–205. doi:10.1177/1049731516684961
- Brach, T. (2020). *Radical compassion: Learning to love yourself and your world with the practice of RAIN*. Ebury.
- Dey, B. K., Roy, K., Rashid, U. K., & Banik, A. (2018). Insecurity and psychological well-being. *Jagannath University Journal of Life and Earth Sciences*, 4(2), 164–175.
- Ding, X., Tang, Y. Y., Tang, R., & Posner, M. I. (2014). Improving creativity performance by short-term meditation. *Behavioral and Brain Functions*, 10(1), article 9. doi:10.1186/1744-9081-10-9
- Demarzo, M. M., Montero-Marin, J., Cuijpers, P., Zabaleta-del-Olmo, E., Mahtani, K. R., Vellinga, A., ... García-Campayo, J. (2015). The efficacy of mindfulness-based interventions in primary care: A meta-analytic review. *Annals of Family Medicine*, 13(6), 573–582. doi:10.1370/afm.1863
- Elefant, A. B., Contreras, O., Muñoz, R. F., Bunge, E. L., & Leykin, Y. (2017). Microinterventions produce immediate but not lasting benefits in mood and distress. *Internet Interventions*, 10, 17–22. doi:10.1016/j.invent.2017.08.004
- Fong, D. R. (2020, March 27). *Worries over MCO see Malaysians searching for a friendly ear*. Free. Malaysia. *Today*. Retrieved from <https://www.freemalaysiatoday.com/category/nation/2020/03/27/worries-over-mco-see-malaysians-searching-for-a-friendly-ear/>
- Hedderman, E., O'Doherty, V., & O'Connor, S. (2020). Mindfulness moments for clinicians in the midst of a pandemic. *Irish Journal of Psychological Medicine*, 1–4. doi:10.1017/ipm.2020.59
- Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78(2), 169–183. doi:10.1037/a0018555
- Jacobs, S. J., & Blustein, D. L. (2008). Mindfulness as a coping mechanism for employment uncertainty. *Career*

- Development Quarterly*, 57(2), 174–180. doi:10.1002/j.2161-0045.2008.tb00045.x
- Jiang, Y., Yang, X., Tong, H., Fang, B., Li, B., Gong, Y., . . . Jia, L. (2020). Meditation-based interventions might be helpful for coping with the coronavirus disease 2019 (COVID-19). *OSF Preprints*. doi:10.31219/osf.io/f3xzq
- Kabat-Zinn, J. (1994). *Wherever you go, there you are*. Hyperion Books.
- Kabat-Zinn, J., Massion, A. O., Kristeller, J., Peterson, L. G., Fletcher, K. E., Pbert, L., . . . Santorelli, S. F. (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *American Journal of Psychiatry*, 149(7), 936–943. doi:10.1176/ajp.149.7.936
- Kong, F., Wang, X., & Zhao, J. (2014). Dispositional mindfulness and life satisfaction: The role of core self-evaluations. *Personality and Individual Differences*, 56, 165–169. doi:10.1016/j.paid.2013.09.002
- Li, S. Y. H., & Bressington, D. (2019). The effects of mindfulness-based stress reduction on depression, anxiety, and stress in older adults: A systematic review and meta-analysis. *International Journal of Mental Health Nursing*, 28(3), 635–656. doi:10.1111/inm.12568
- Li, Y., Li, D., Li, X., Zhou, Y., Sun, W., Wang, Y., & Li, J. (2018). Cyber victimization and adolescent depression: The mediating role of psychological insecurity and the moderating role of perceived social support. *Children and Youth Services Review*, 94, 10–19. doi:10.1016/j.childyouth.2018.09.027
- Linardon, J. (2020). Can acceptance, mindfulness, and self-compassion be learned by smartphone apps? A systematic and meta-analytic review of randomized controlled trials. *Behavior Therapy*, 51(4), 646–658. doi:10.1016/j.beth.2019.10.002
- Roemer, L., Lee, J. K., Salters-Pedneault, K., Erisman, S. M., Orsillo, S. M., & Mennin, D. S. (2009). Mindfulness and emotion regulation difficulties in generalized anxiety disorder: Preliminary evidence for independent and overlapping contributions. *Behavior Therapy*, 40(2), 142–154. doi:10.1016/j.beth.2008.04.001
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52(1), 141–166. doi:10.1146/annurev.psych.52.1.141
- Shier, M. L., & Graham, J. R. (2011). Mindfulness, subjective well-being, and social work: Insight into their interconnection from social work practitioners. *Social Work Education*, 30(1), 29–44. doi:10.1080/02615471003763188
- Shipperd, J. C., & Salters-Pedneault, K. (2018). Do acceptance and mindfulness moderate the relationship between maladaptive beliefs and posttraumatic distress? *Psychological Trauma: Theory, Research, Practice and Policy*, 10(1), 95–102. doi:10.1037/tra0000248
- Shuai, R., Bakou, A. E., Hardy, L., & Hogarth, L. (2020). Ultra-brief breath counting (mindfulness) training promotes recovery from stress-induced alcohol-seeking in student drinkers. *Addictive Behaviors*, 102, article 106141. doi:10.1016/j.addbeh.2019.106141
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092–1097. doi:10.1001/archinte.166.10.1092
- Taormina, R. J., & Sun, R. (2015). Antecedents and outcomes of psychological insecurity and interpersonal trust among Chinese people. *Psychological Thought*, 8(2), 173–188. doi:10.5964/psyct.v8i2.143
- Topp, C. W., Østergaard, S. D., Søndergaard, S., & Bech, P. (2015). The WHO-5 well-being index: A systematic review of the literature. *Psychotherapy and Psychosomatics*, 84(3), 167–176. doi:10.1159/000376585
- Utley, A., & Garza, Y. (2011). The therapeutic use of journaling with adolescents. *Journal of Creativity in Mental Health*, 6(1), 29–41. doi:10.1080/15401383.2011.557312
- World Health Organization. (1998). *Wellbeing measures in primary health care/the depcare project*. Copenhagen: WHO Regional Office for Europe.
- Wolpe, J. (1973). *The practice of behavior therapy*. New York: Pergamon Press.
- Yang, H., & Ma, J. (2020). How an epidemic outbreak impacts happiness: Factors that worsen (vs. protect) emotional well-being during the coronavirus pandemic. *Psychiatry Research*, 289, article 113045. doi:10.1016/j.psychres.2020.113045
- Zhang, S. X., Wang, Y., Rauch, A., & Wei, F. (2020). Health, distress and life satisfaction of people in China one month into the COVID-19 outbreak. *SSRN Electronic Journal*. doi:10.2139/ssrn.3555216

Appendix

Appendix 1. Revised Psychological Insecurity Scale

Answer the following items using a 5-point Likert-type response scale (1 = strongly disagree to 5 = strongly agree) to indicate your condition during the movement control order period.

1. It is very easy for me to become emotionally upset.
2. I feel safe. (R)
3. I worry that I will be infected if I go outdoors.
4. I feel deeply insecure when I go outdoors.
5. I do not feel safe to have social interactions with other people.
6. I do not feel emotionally secure.
7. Staying at home makes me feel insecure.
8. I am emotionally troubled by the reports of COVID-19 cases.
9. I can never be sure what is going to happen to me emotionally.
10. There is no safe place in Malaysia.

(R): Indicated reverse scoring.

Appendix 2. Scripts for the Treatment Group and Control Group

Ultra-Brief Online Mindfulness-Based Intervention

1. Recognize stressful thoughts and feelings. Write how you're feeling at the moment in regard to the Restricted Movement Order and reflect why you feel that way?
2. Accept challenging situations by practicing self-compassion. Write three (3) simple things you can do today to make yourself feel better.
3. Identify why it is a privilege to stay at home. Write three (3) privileges/benefits you encountered during this Restricted Movement Order.
4. Notice what you can do during the Restricted Movement Order. Write three (3) things that you can do for yourself and others during this Restricted Movement Order.

Control Group

1. Write your feelings about COVID-19 at the moment.
2. Write three (3) actions you took to prevent COVID-19.
3. Write three (3) ways you obtain news about COVID-19 during the Restricted Movement Order.
4. Write three (3) things you wish to do after this Restricted Movement Order.

Received date: 31 May 2020

Revised date: 11 August 2020

Accepted date: 14 September 2020