The COVID-19 Pandemic: Role of Coping Humor and Internal Health Locus of Control on Social Dysfunction and Anxiety & Depression

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Abstract

The concerns about the impact of social distancing on mental health have been widely discussed. This study aimed to know the predictive effect of coping humor and Internal Health Locus of Control (Internal HLoC) on social dysfunction and anxiety & depression during the implementation of the COVID-19 social distancing agenda. This study was also intended to assess the effect of humor content on coping humor. A quantitative approach was used as the method of the study with 243 online-recruited participants, and a PLS-SEM analysis was applied to find out the predictive effect in this study. The results and conclusions showed that anxiety & depression predict social dysfunction ($\beta = 0.584$, t-value = 11.93, f² = 0.563). It was found that coping humor was able to directly increase the Internal HLoC ($\beta = 0.187$, t-value = 2.60, f² = 0.036) and indirectly decrease social dysfunction ($\beta = -0.144$, t-value = 2.85) and anxiety & depression ($\beta = -0.070$, t-value = 2.42). Humor content unrelated to the issue of COVID-19 directly increase the coping-humor level ($\beta = 0.266$, t-value = 4.13, f² = 0.076), and indirectly increase Internal HLoC ($\beta = 0.050$, t-value = 2.07), and decrease anxiety & depression level ($\beta = -0.046$, t-value = 2.20). On the other hand, Internal HLoC directly decrease levels of social dysfunction ($\beta = -0.233$, t-value = 4.126, f² = 0.089) and anxiety & depression ($\beta = -0.373$, t-value = 7.84, f² = 0.161).

Keywords: coping humor, depression, locus of control, social distancing, social dysfunction

Introduction

The President's speech on Sunday, March 15, 2020, at Bogor Palace,¹ has become a signal for the implementation of social distancing agenda in Indonesia to prevent the spreading of the coronavirus disease 2019 (COVID-19). Social distancing has been widely applied not only in Indonesia but also in many other countries. Even the use of the term "social distancing" was responded to by the World Health Organization (WHO), where WHO suggested using the term "physical distancing" because it refers explicitly to the restrictions of physical contact, not social contact.¹ However, regardless of the term used, the advantages and effectiveness are believed to exist in the practice of social distancing. Also, worries about its impact on mental health have surfaced. Social distancing is strongly suspected to be the potential cause of stress, panic, anxiety, and depression, especially in individuals with history of anxiety disorder, compulsive disorder, or paranoia.²

The study from Sibley, et al.,³ in New Zealand

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revealed that the participants in lockdown (surveyed during pandemics) had higher mental stress levels than participants in pre-lockdown (surveyed before the pandemic status was established). People have shown more stressful experiences concerning health problems and job insecurities, work-family conflicts, and even discrimination during the pandemic.⁴⁻⁶ Furthermore, Zacher & Rudolph,⁷ in Germany, conducted a study at the early stage of pandemic (December 2019-May 2020) and showed that the COVID-19 pandemic has not only an impact on medical and economic crises but also psychological dimensions; the main aspects of society on subjective well-being have been decreased. This matter needs further scientific research to provide additional literature about physical/social distancing when applied to pandemic situations.

Anxiety and depression are highlighted by a series of remembered and believed negativity, affecting someone's social function. Social factors, social disorder, and impaired social function are often associated with depression.⁸ Social disorders have also been proved to

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be positively correlated with anxiety symptoms.⁹ Close relationships (with spouses, families, or colleagues) and superficial interactions as the elements that support social function are also associated with humor.¹⁰⁻¹² In cross-cultural studies, it has been proved that subjects with a high level of humor show a higher level of wellbeing and lower level of anxiety, depression, or negative emotions.¹³⁻¹⁵ Many studies also underlined that humor has a positive effect on social, emotional, and physical well-being.¹⁶ In particular, laughter is believed to reduce the impact of stress on daily life,¹⁶ and give a positive energy when individuals try to cope with traumatic events.¹⁷ A study of humor from Martin & Lefcourt,¹⁸ featured an interesting term known as coping humor. Coping humor is different from situational humor response and sense of humor that do not focus on stressful experiences. Coping humor acts as a cognitive appraisal strategy,¹⁹ it sees the extent to which individuals use humor (present situation) in stressful situations or events (stressful experiences). By looking at the context of this study, the coping humor variable can show the level (quality) of individuals' use of humor during the implementation of the COVID-19 social distancing agenda.

Besides coping humor, the authors included Internal Health Locus of Control (Internal HLoC) which aimed to see how individuals engage themselves (believing that they have control) to establish healthy behavior. The implications of locus of control in health are certainly not new. Previous studies stated in Jacobs-Lawson, Weddell, and Webb's study have found many correlations between locus of control with health outcomes, demographic variables, and many other psychological variables.²⁰ Individuals with an internal locus of control tend to be more resistant to psychological pressure and depression.²¹ It is interesting to know the dynamics of Internal HLoC effectiveness amid a pandemic situation, especially for authors. In this study, the authors also examined the effect of humor content: Humor Non-COVID Effect/HNCE (level of entertainment from humor contents on social media unrelated to COVID-19 problems) and Humor COVID Effect/HCE (level of entertainment from humor contents on social media related to COVID-19 issues). During this pandemic, memes and jokes about the coronavirus have spread massively on the internet. Emphasizing the social distancing context, the purpose of this study was to answer the question, "Do coping humor and Internal HLoC can predict social dysfunction and anxiety & depression due to the implementation of social distancing?". Therefore, the study objective was to find out the predictive effect of coping humor and Internal HLoC on social dysfunction and anxiety & depression in the implementation of social distancing, as well as the effect of humor content on coping humor.

Method

The data collection in this study was carried out through a Google Form (study questionnaire link) spread on social media, starting from April 8 to April 15, 2020. The sample size estimation was based on the inverse square root method, which suggested using a minimum of 160 participants when using a Partial Least Square-Structural Equation Modeling (PLS-SEM).²² The total sample in this study was 243 social media users like Instagram, Facebook, Twitter, TikTok, WhatsApp, and YouTube (age 16-64 years, $M_{age} = 27.9 \text{ SD}_{age} = 8.477$; Male = 70, Female = 173), meaning that the minimum sampling has been fulfilled. All of the scales used were translated into Bahasa Indonesia and then translated back into English to harmonize. Some items have been adjusted so that participants could understand better without reducing the true meaning of the scale (concept and semantic equivalent).

The authors modified the SFQ scale,²³ to describe a person's social functions (good or bad) over the past two weeks by randomizing the item number and applying a reflective format to measure seven areas; work and homework, finances, social contacts, relationships with family, sexual activity, isolation, and me time. The SFQ is a powerful short instrument and serves to assess social functions in various situations. Then, the authors adapted the Patient Health Questionnaire (PHQ)-4 scale,²⁴ a combination of the PHQ-2 and Generalized Anxiety Disorder (GAD)-2 scales. PHQ-4 scale was used to measure the anxiety & depression levels in the last two weeks. Coping Humor scale,¹⁸ was also distributed to see how often individuals use humor to cope with stressful experiences during social distancing.

On the other hand, the HLoC scale,²¹ was applied to calculate participants' internal locus of control. Last but not least, HNCE and HCE were constructed by authors to specify the effect of humor content on participants. The HNCE and HCE were composed of one item; as for HNCE, "How much are you entertained by funny contents that are not related to the COVID-19 issues on social media?". For HCE, "How much are you entertained by funny contents that are related to the COVID-19 issues on social media?". Both of which have a response ranging of five choices (1 = never feel entertained).

The demographic categorization in this study was sex which consisted of female and male, education which consisted of Diploma III and Bachelor Degree up to Doctoral Degree, and marital status, which consisted of single, married, and widow/widower. As for the anxiety & depression variable, the categorization was based on related journals,²⁴ ranging from minimal, mild, moderate, and severe. As for the variables of social dysfunction, coping humor, Internal HLoC, humor content (HNCE and HCE), the authors determined three categories (low, moderate, and high). The variable categorization follows the calculations and guidelines that have been applied.²⁵

The authors used a Partial Least Square-Structural Equation Modeling (PLS-SEM) approach through SmartPLS software (v.3.2.8 Single-User Licenses) to analyze the relationship between variables.²⁶ In addition to the data categorization values obtained through Microsoft Excel, all variables in this study were also analyzed using SmartPLS software. As for the descriptive analysis in the worksheet, the Validity and Reliability Tests were conducted through PLS algorithm calculation by eliminating several items (coping humor (CH)1, CH4, CH5, locus of control (LOC)5, LOC6, LOC7) based on the outer loading values before direct and indirect testing (presented in Figure 1 and Table 1). The direct and indirect effects (mediation) were obtained through bootstrapping analysis (presented by Figure 2, Table 2, and Table 3). Besides simultaneously analyzing constructs formed with reflective and formative indicators, PLS can estimate large/complex models with various construct latent variables and indicators.²⁷

Results

A descriptive analysis and data categorization were performed (Table 1) before the PLS algorithm was conducted to overview of participants' characteristics and the tendency of subject scores in general. Table 1 points out that the majority of the participants were females (71.2%), have Diploma IV/Bachelor Degree (64.2%), and single/not married (69.1%). It is shown that 17.7% of them have a high level of social dysfunction while the other 67.9% have a moderate level. The participants have a mild (44.9%), moderate (7.4%), and severe (2.1%) level of anxiety & depression. It is also

Table 1	. Descriptive	Analysis and	l Data	Categorization	(n =	243)
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Variable	Category	n	%
Gender	Female	173	71.2
	Male	70	28.8
Education	High school/vocational		
	high school	19	7.8
	D3/associate degree	21	8.6
	D4/bachelor	156	64.2
	Master	44	18.1
	Doctoral	3	1.2
Marriage status	Single/not married	168	69.1
	Have marriage	70	28.8
	Widow/widower	5	2.1
Anxiety & depression	None-minimal	111	45.7
(Mean = 3.02; SD = 2.047)	Mild	109	44.9
	Moderate	18	7.4
	Severe	5	2.1
Social dysfunction	High	43	17.7
(Mean = 6.08; SD = 3.498)	Moderate	165	67.9
	Low	35	14.4
Coping humor	High	42	17.3
(Mean = 24.17; SD = 4.521)	Moderate	160	65.8
	Low	41	16.9
Internal health locus of control	High	42	17.3
(Mean = 33.73; SD = 6.777)	Moderate	163	67.1
	Low	38	15.6
Feel amused about humor content	High	69	28.4
that related to the COVID-19 issues	Moderate	137	56.4
(Mean = 2.82; SD = 1.091)	Low	37	15.2
Feel amused about humor content	High	63	25.9
not related to the COVID-19 issues	Moderate	127	52.3
(Mean = 4.02; SD = 0.741)	Low	53	21.8

Note: SD: Standard Deviation



Figure 1. Structural Model (Inner and Outer Model, Path Coefficients)

Construct	Items	Scale	Loadings/t-value Weights	Cronbach's alpha	CR/VIF	AVE
Social dysfunction	DF1	Formative	3.320	-	1.149	-
	DF2		2.959		1.147	
	DF3		2.176		1.364	
	DF4		2.635		1.112	
	DF6		5.223		1.249	
	DF7		4.349		1.377	
Anxiety & depression	ANX1	Reflective	0.654	0.702	0.816	0.527
	ANX2		0.753			
	DEP1		0.684			
	DEP2		0.803			
Coping humor	CH2	Reflective	0.688	0.725	0.824	0.541
	CH3		0.680			
	CH6		0.811			
	CH7		0.753			
Internal health locus of control	LOC1	Reflective	0.660	0.785	0.855	0.598
	LOC2		0.769			
	LOC3		0.795			
	LOC4		0.857			
Effect of humor content	HNCE	Formative	1.000	-	1.000	-

Table 2. Validity and Reliability	y Test (Inner and Outer Model)
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Notes: CR: Composite Reliability; VIF: Collinearity Statistics; AVE: Average Variance Extracted; t-value>1.96; DF1, DF2, DF3, DF4, DF6, DF7: Items of Social Dysfunction; ANX1, ANX2, DEP1, DEP2; Items of Anxiety & Depression; CH2, CH3, CH6, CH7; Items of Coping Humor; LOC1, LOC2, LOC3, LOC4; Items of Internal HloC; HNCE; Humor Content Contents that are not related to COVID-19 issues



Figure 2. Structural Model (Inner and Outer Model, t-values)

revealed that 17.3% of them have high coping humor and Internal HLoC. In terms of humor content, 28.4% of the participants were highly entertained with funny content related to the COVID-19 issues. In comparison, the other 25.9% were entertained with funny content unrelated to the COVID-19 issues. Figure 1 and Table 2 below show a series of variables involved in this study and have been tested internally and externally.

The reflective scale was evaluated based on the value of AVE (>0.5), outer loadings (>0.6), Cronbach's alpha (>0.6), and composite reliability (>0.7). The item with

an outer loading value of < 0.6 (CH1, CH4, CH5, LOC5, LOC6, LOC7) must be eliminated by the model before direct and indirect tests. Table 1 illustrates that the overall reflective scale has met the convergent validity requirements. The discriminant validity conditions, which were set based on Fornell-Larcker criteria and cross-loading values, also have been fulfilled. On the one hand, the formative scale 28 was assessed based on outer weight bootstrap value (p-value<0.05), where the calculation results made item DF5, DF8, and HCE (p-value>0.05) eliminated from the model. Figure 2 shows

Variable Relationship	Std. Beta	Std. Error	t-value	p-value	f ²
Anxiety & depression -> Social dysfunction	0.584	0.049	11.933	0.000**	0.563
Internal HLoC -> Social dysfunction	-0.233	0.056	4.126	0.000**	0.089
Internal HLoC -> Anxiety & depression	-0.373	0.048	7.843	0.000**	0.161
Coping humor -> Anxiety & depression	-0102	0.060	1.699	0.089	0.012
Coping humor -> Social dysfunction	0.029	0.047	0.626	0.531	0.002
Coping humor -> Internal HLoC	0.187	0.072	2.600	0.009**	0.036
Humor content -> Coping humor	0.266	0.064	4.133	0.000**	0.076

Notes: **p-value<0.01, *p-value<0.05; f²: Effect Size; HLoC: Health Locus of Control

Table 4.	Indirect	Effect	(Mediation)
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Table 3 Direct Effect

Variable Relationship	Std. Beta	Std. Error	t-value	p-value
Coping humor -> Internal HLoC -> Social dysfunction	-0.144	0.050	2.859	0.004**
Coping humor -> Internal HLoC -> Anxiety & depression	-0.070	0.029	2.424	0.015*
Humor content -> Coping humor -> Internal HLoC	0.050	0.024	2.076	0.038*
Humor content -> Coping humor -> Anxiety & depression	-0.046	0.021	2.208	0.027*
Internal HLoC -> Anxiety & depression -> Social dysfunction	-0.218	0.035	6.225	0.000**

Notes: **p-value<0.01, *p-value<0.05; HLoC: Health Locus of Control

an image of the final bootstrap result (5,000 subsamples, CI Method: Bias-Corrected and Accelerated Bootstrap), and blindfold calculations.

Table 3 and Figure 2 indicates anxiety & depression ($\beta = 0.584$, M = 0.591, 95% CI BCa = 0.473; 0.666, t-value = 11.93, p-value<0.01, f²= 0.563) and Internal HLoC ($\beta = -0.233$, M = -0.233, 95% CI BCa = -0.336; -0.113, t-value = 4.126, p-value<0.01, f² = 0.089) predicts social dysfunction (R2 = 0.494). Internal HLoC predicts anxiety & depression ($\beta = -0.373$, M = -0.379, 95% CI BCa = -0.457; -0.267, t-value = 7.84, p-value<0.01, R2 = 0.164, f² = 0.161). Coping humor predicts Internal HLoC ($\beta = 0.187$, M = 0.198, 95% CI BCa = 0.025; 0.313, t-value = 2.60, p-value<0.01, R2 = 0.036). Humor content predicts coping humor ($\beta = 0.266$, M = 0.271, 95% CI BCa = 0.124; 0.380, t-value = 4.13, p-value<0.01, R2 = 0.071, f² = 0.076).

Table 4 and Figure 2 indicate that coping humor predicts social dysfunction (β = -0.144, M = -0.153, 95% CI BCa = -0.231; -0.031, t-value = 2.85, p-value<0.01) and anxiety & depression (β = -0.070, M = -0.075, 95% CI BCa = -0.123; -0.012, t-value = 2.42, p-value<0.05) through Internal HLoC (mediator variable). Humor content predicts Internal HLoC (β = 0.050, M = 0.054, 95% CI BCa = 0.009; 0.100, t-value = 2.07, pvalue<0.05) and anxiety & depression (β = -0.046, M = -0.048, 95% CI BC a = -0.089; -0.009, t-value = 2.20, pvalue<0.05) through coping humor. Internal HLoC predicts social dysfunction (β = -0.218, M = -0.224, 95% CI BCa = -0.283; -0.148, t-value = 6.22, p-value<0.01).

Discussion

Based on Table 1, it is known that many participants of this study have experienced social function problems. anxiety, or depression. Previous studies showed that anxiety and depression have a negative impact on social function.^{8,9} Likewise, the analysis results (see Table 3) strengthen the assumption that anxiety and depression can reduce people's social function (work and homework, finances, social contacts, sexual activity, sense of belonging) during the implementation of social/physical distancing program. In this section, it is necessary to review that anxiety and depression can grow sequentially and even simultaneously on a subject. The symptoms can also be said to overlap like two sides of a coin. However, the difference in question can be seen from the measurement items. Anxiety accentuates the feeling of "nervous, anxious, or on edge," while depression features the feeling of "sad, depressed, or hopeless." The most striking differences are described by Glasofer.²⁹ based on a mental marker (symptoms or expressions of the conditions). It is explained that suicidal tendency in anxiety is still limited to the fear of death, whereas, in mild to severe depression, suicidal thoughts will appear to be more specific. From there, it can be said that the impact of depression will be much riskier on social function compared to anxiety.

Concerning humor, the results of this study (see Table 3 and Table 4) support all arguments from every person who suggests having some humor during the implementation of social distancing.^{30,31} This finding is also in line with results from other studies in different situations and conditions.³²⁻³⁵ Based on the results of the analysis in this study, coping humor is known to have a direct posi-

tive effect on the Internal HLoC variable and an indirect negative effect on social dysfunction and anxiety & depression. This condition indicates that collaborating those two variables can positively impact people's health during difficult situations (e.g., the COVID-19 pandemic). However, it should be emphasized that the effect size found in this study is relatively small. Referring to Fessell.¹⁵ 70% of humor occurs spontaneously in everyday life. This result is in line with the unique concept of coping humor that happens in the current situation. It is suitable for people to focus on building positive emotions in the current situation rather than feeling sad to think about what happened in the past or being excessively worried about something that has not happened in the future. Some simple things can be done to improve the quality of humor, such as listening to favorite songs, calling friends who are good at making jokes, especially when difficult situations happen, or just enjoying comedy television shows like standup comedy. Some studies have proved that the strategies above are effective in reducing anxiety and increasing positive emotions.^{13,36}

Humor content (HNCE only) is validated (see Table 3 and Table 4) to predict coping humor and Internal HLoC as well as anxiety & depression (indirect effect). It signifies that humor content on social media (unrelated to the COVID-19) can positively impact coping humor; the more entertained the individual, the higher the coping humor is. This condition eventually will help to decrease social dysfunction and anxiety & depression. On the other hand, humor content can also predict the positive impact of Internal HLoC on someone's well-being. Previous studies stated in Nick's study have linked laughter to the production of endorphins that can improve mood and reduce stress, increasing disease resistance.³⁷ Whereas, please understand and note that even though many studies have proved the positive effect of humor in various contexts, it is still suggested to pay attention to the sensitivity when using humor. Speaking of the concept of humor style, not all types of humor can function well in a pandemic situation. As revealed by Peter McGraw from Humor Research Lab,³⁷ the authors also advise enjoying and using friendly humor.

Internal HLoC is directly and persistently capable (see Table 3) to predict social dysfunction and anxiety & depression. The effectiveness of Internal HLoC in the pandemic situation has been demonstrated in this study. Other variables have been tested in other conditions, such as social loafing,³⁸ and collective action.³⁹ In the field of health, previous studies stated in Kesavayuth, Poyago-Theotoky, and Zikos showed that men and women with Internal HLoC tend to have better self-assessed physical and mental health. They rely less on preventive and curative medical care.²¹ In addition, those with Internal HLoC tend to be less prone to psychological

distress and depression.²¹ Jacobs-Lawson, *et al.*,²⁰ said that education level as well as self-assessed and self-efficacy health could predict the Internal HLoC. Locus of control is the core dimension of self-evaluation along with neuroticism, self-efficacy, and self-esteem.⁴⁰ In the context of social distancing, individuals with high Internal HLoC will depend more on their inner spirit. They believe that what happens to themselves is a consequence of their actions and efforts.

On the contrary, individuals with high External HLoC will depend more on external factors (e.g., fate, luck, or intervention from others). This result does not mean that External HLoC should be ruled out. A combination of Internal HLoC and External HLoC is possible. This is expected to give more effective and efficient results precisely. The study conducted by April, Dharani, and Peters,⁴¹ showed that an individual's maximum level of happiness could be achieved with a balanced locus of control that is the combination of two controls (internal and external) known as the "Bi-Locals" type. Rotter mentioned that internality and externality are a continuum, not a typology.⁴² Therefore, the authors of this study argue that conditions and situations should be considered in every locus of control study.

This study is expected to contribute to literature studies related to social dysfunction, anxiety, depression, coping humor, Internal HLoC, and humor contents on social media, particularly regarding implementing a social distancing agenda during the COVID-19 pandemic. In addition to the scientific contribution, this study can be used as a reference for the preparation of social distancing programs such as the socialization to use appropriate humor as a coping strategy in difficult situations or to conduct training to strengthen Internal HLoC in the health sector. Further researches must pay attention to the limitations of the study. For example, this study was conducted only at the beginning of social distancing implementation.

The data collected did not cover until the end of the period and only measured what participants felt in the last two weeks. The effect size also needs to be considered because the effect of coping humor and humor content is relatively small. This study showed that only anxiety & depression have a significant impact on social dysfunction. Internal HLoC has a relatively small effect on social dysfunction but is moderate on anxiety & depression. This indicates that other causative variables need to be involved. It also may be caused by the variability of data. Besides that, the social dysfunction scale in this study only measured five areas. Two items that measure "relationships with family" and "me time" were eliminated by the PLS model. Overall, the authors encourage further researchers to pay more attention to the procedures used, such as the measuring instruments, demographic variables, statistical power, and other locations/regions.

Conclusion

From the results, it can be concluded that anxiety & depression directly predict social dysfunction. Coping humor directly predicts Internal HLoC and indirectly predicts social dysfunction and anxiety & depression. Humor content (only humor content on social media unrelated to the COVID-19 issues) directly predicts coping humor and indirectly predicts Internal HLoC and anxiety & depression. Moreover, this study reveals that Internal HLoC directly predicts social dysfunction and anxiety & depression. It means that the higher the anxiety & depression, the higher the social dysfunction would be. Increasing the Internal HLoC and higher coping humor can also decrease social dysfunction and anxiety & depression. Humor content unrelated to the COVID-19 issues can increase the level of coping humor and thus lower the level of anxiety & depression. To sum up, this study proves that Internal HLoC can decrease social dysfunction and anxiety & depression levels.

Abbreviations

COVID-19: coronavirus disease 2019; WHO: World Health Organization; HNCE: Humor Non-Covid Effect; HCE: Humor Covid Effect; SFQ: Social Function Questionnaire; PHQ: Patient Health Questionnaire; GAD: Generalized Anxiety Disorders; CH: Coping Humor; SD: Standard Deviation; M: Mean; PLS-SEM: Partial Least Square-Structural Equation Modeling; CI Bca: Confidence Interval Bias Corrected and Accelerated; VIF: Collinearity Statistics; AVE: Average Variance Extracted; CR: Composite Reliability; HLoC: Health Locus of Control.

Ethics Approval and Consent to Participate

Ethical approval was obtained from the local hospital (No. 239/Kom-Etik/Int/VI/2019).

Competing Interest

The authors declare that there are no significant competing financial, professional, or personal interests that were likely to have affected the performance or presentation of the work described in this manuscript.

Availability of Data and Materials

Data and all related materials are available to all authors. Please get in touch with the correspondence if data is required.

Authors' Contribution

MAS proposed research topic. Overall, all of the authors (MAS, Z, HRA, AZF) are involved and contribute to every step of the process of drafting the manuscript.

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