

Correlation between Emotion Regulation and Mental Well-Being among University Students during COVID-19

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Studies have shown that emotion regulation has a significant association with mental health. It also serves as protective factor against mental illness. This current study intends to examine how emotion regulation contributes to mental well-being of university student especially in the pandemic. A cross-sectional study conducted among 478 university students (221 medical and 257 non-medical students) were selected using convenience sampling method. Data were collected using Emotion Regulation Questionnaire (ERQ) and Short Warwick-Edinburgh Mental Well-being Scale (SWEMBS). T-test, Pearson correlation and linear regression using SPSS version 25 were used to analyse the data. There was a significant difference between mental well-being and expressive suppression strategy (subscale of ERQ) between medical and non-medical students respectively ($p < 0.003$, $p < 0.01$). A significant positive correlation was established between cognitive reappraisal (subscale of ERQ) and mental well-being with the value of ($r = 0.45$, $p < 0.001$), while expressive suppression showed no significant correlation. Regression analysis indicated that cognitive reappraisal could predict the mental well-being of university students ($B = 2.11$, $p < 0.001$). Emotion regulation has been found to be associated with mental well-being of university students especially in the subscale of Cognitive Reappraisal. Cognitive reappraisal has been found to predict mental well-being of students which shows that by changing the way one thinks about a life situation, it may help them to improve their mental well-being.

Keywords: emotion regulation; mental well-being; university students; COVID-19

The lockdown due to the COVID-19 pandemic has led to the closure of educational institutions including schools and universities around the world. Studies have shown that the lockdown has given a significant detrimental impact on everyone including youth, particularly in their psychological well-being, sleep habits and a rise in symptoms of anxiety, stress and depression. (Cielo et al., 2021). The rise of mental health issues are prevalent in Asia as well including in Malaysia, which was ranked as the top four highest in depression, anxiety and stress scale scores (DASS 21) among seven other middle-income countries in Asia (Wang et al., 2021). Furthermore, transitions in life would cause stress and uncomfortable feelings that may affect certain aspects in life, and this includes university students who experienced changes during COVID-19 outbreak. A recent study reported that university students were more anxious during the lockdown in COVID-19 (Sundarasan et al., 2020).

Many studies have extensively researched about whether university students could be categorized as mentally ill or not, particularly during the pandemic. This study, however, focuses on students' mental well-being, which is more than just the absence of mental illness (Keyes et al., 2012). Someone with a good mental well-being does not necessarily mean that they do not have mental illness, vice-versa. Mental well-being is not opposite to mental illness nor at the opposite end of the same spectrum. Rather, a person may have a mental illness and also good mental well-being, while another may not have a mental illness but have a poor mental well-being. Mental well-being (also known as positive mental health) is defined by World Health Organization (WHO) as a state which

allows individuals to realize their abilities, can cope with normal stresses, work productively and able to make contribution to oneself and society (WHO, 2004).

Another component focused in this study is emotion regulation which is defined as attempts that individual make to influence which emotions they have, when they have them and how these emotions are expressed and experienced. According to the process model of Emotion Regulation (EmR) which is introduced by Gross et al. (2014; 2007), theoretically there are two strategies that are frequently used by many, i.e. cognitive reappraisal (CR) and expressive suppression (ER). Cognitive reappraisal is a form of strategy that focuses on changing the way of thinking in certain situations to change the emotional impact with the aim of decreasing it and/or making it more positive (Gross, 2014). Cognitive reappraisal is hypothesized to be an effective and adaptive strategy. Expressive suppression on the other hand is a form of strategy that involves inhibiting the ongoing emotion-expressive behaviour in the situation (Gross, 2014). Expressive suppression is hypothesized to be maladaptive strategy and less effective strategy than Cognitive reappraisal. It does not modify the impact of emotional experience, simply decreasing or suppressing the expression of the felt emotion.

Meta-analyses have indicated that emotion regulation has a significant relationship with mental well-being. Cognitive reappraisal was found to be positively correlated with good mental well-being whereas expressive suppression was found to be positively correlated with low mental well-being (Hu et al., 2014; Kraiss et al., 2020). This finding is supported in a study among pharmacy students in South Africa

that showed that students who flourished or had good mental well-being were more likely to use adaptive emotion regulation strategies than the maladaptive one (Basson & Rothmann, 2018). Students who used low cognitive reappraisal and high suppression were more susceptible to symptoms of anxiety, depression and depression comorbid (Zhu et al., 2021).

Reports show that reappraisers express, and experience more positive emotions and less negative emotions as compared to suppressors, who experience and express more negative emotions (Gross and John, 2003). Research has also demonstrated that in some circumstances, expressive suppression strategy was found to be applied more easily than cognitive reappraisal especially when the individuals reported more perceived stress in a day and suppressed positive emotions on a stressful day (Katana et al., 2019). Another study found no relationship between reappraisal and the intensity of stress and when only when stress was higher that people use suppression (Lennarz et al., 2019). However, in order to face the contradictory information about the course of pandemic (stressor), or probably one of the stressful events, people may require flexible implementation of various emotion strategies so that the stressful level can be reduced (Bonanno et al., 2004).

Gender has been found to play a role on the chosen strategies as to which and how emotions are expressed and experienced. A study among adolescents showed that males were more likely to show emotions than females do probably because females were more aware of social norms (Rao & Gibson, 2019). However, another did not find gender to have a significant effect on both emotion regulation strategies (Verzeletti et al., 2016).

Studies have also shown that medical students are subjected to psychological vulnerability than students of other courses because medical professions require an ability to make quick and responsible decisions in a stressful condition (Al-Dabal et al., 2010; Jafri et al., 2017; Neufeld & Malin, 2019). Medical course includes high-intensity bedside teaching and practice. Studies have indicated that before the pandemic, depressive symptoms, anxiety and stress levels are higher among medical students than the non-medical students (Al-Dabal et al., 2010; Jafri et al., 2017; Salam et al., 2013). However, due to Covid-19, university students were required to stay at home and study online. Hence, this study would like to investigate the relationship between mental well-being and emotion regulation among the medical and non-medical students during the pandemic period.

To our knowledge, studies about emotion regulation and mental well-being of students in Malaysia are limited. Understanding students' intrapersonal factor such as emotion regulation skills that may protect mental well-being can provide useful directions for university counsellors and mental health professionals to create a campus-based intervention for the well-being of the students.

Method

Setting and Sample

An online cross-sectional study was conducted among students in a public university in West Malaysia. The data collection was administered from July to August 2020. During this time, Malaysia was in lockdown period hence university students were mostly situated at home while participating in this study. A total of 478 of students which consisted of 221

medical and 257 non-medical students were recruited using convenience sampling. Non-medical students consist of students from the art stream courses (e.g., Architecture, Engineering, Language, Laws, Islamic Knowledge, Human Sciences, Education, Information and Communication) and other health-related courses (e.g., Dentistry, Pharmacy, Allied Health Science, Nursing, Science course). The study was approved by the university's ethics committee. The background of the study and informed consent were provided to all participants to indicate their agreement to participate in the study. The questionnaires were disseminated WhatsApp application and e-mails. All participants were given on online psychological self-help guidance as a token of appreciation.

Instruments

This study used a set of online questionnaires that is divided into three sections. The first section covered the demographic details of participants including age, gender, education level, accommodation and marital status. The second section was a self-report which represents the independent variable that measured emotion regulation. The last section measured mental well-being of the participants which represents the dependent variable.

Emotion Regulation Questionnaire

Emotion Regulation Questionnaire (ERQ) is a 10-item scale designed to measure participants' ability to regulate their emotions in two strategies: (1) Cognitive Reappraisal (CR), (2) Expressive Suppression (ES). Participants answered each item on a 7-point Likert-type ranging from 1 (strongly disagree) to 7 (strongly agree) (Gross & John, 2003). ERQ combined the positive emotions and negative emotions in both strategies. In a Malaysian study, ERQ showed a

remarkably reliability of Cronbach's alpha (0.80) among university students; cognitive reappraisal, 0.85; expressive suppression, 0.68 (Hafizah et al., 2015). The Cronbach Alpha's value was acceptable at 0.7 (expressive suppression) and 0.87 (cognitive reappraisal). There were six items measured for CR and four items that measured ES. The Cronbach's Alpha value for the current study is 0.88.

Short Warwick-Edinburgh Mental Well-Being Scale (SWEMBS)

The Short Warwick-Edinburgh Mental Well-Being Scale (SWEMBS) is a short version of Warwick-Edinburgh Mental Well-Being Scale (WEMWBS), which was originally developed to observe well-being in the general population, university students, and to evaluate policies addressing well-being. There are seven items that measure mental well-being that focuses on positive aspects of mental health. This scale used a five-point Likert scale, from 1= "none of the time" to 5= "all the time". The scores were summed ranging from 7 to 35. The SWEMWBS showed high internal consistency in other populations as well including Norway (Ringdal et al., 2018), the UK (Ng Fat et al., 2017), and Swedish and Norwegian adult populations (Haver et al., 2015). The Malaysian study showed good reliability among university students with a Cronbach Alpha of .878 (Kalok et al., 2020).

Data Analysis

The demographic variables such as gender, age, education level and marital status were analysed using descriptive statistics and presented as cases (n) and percentage (%). The continuous variables were described with mean and standard deviation. The independent variables of this study were the subscales of ERQ, Cognitive Reappraisal and Emotion Suppression. While the dependent variable was Mental Well-being. In this study, dependent variable was

treated as continuous data. Independent sample t-test was conducted to find the association between emotion regulation and mental well-being with medical and non-medical students. Pearson correlation was also performed. Linear regression was performed to analyse the relationship of

emotion regulation and mental well-being (continuous data). P-value < 0.05 was set and considered to be statistically significant.

Results

As shown in Table 1, an independent sample t-test was conducted to compare the mental well-being scores for medical and non-medical students. The mean score of mental well-being of medical students (M=24.79, SD=3.95) was found to be significantly higher than the non-medical students (M=23.56, SD= 5.05; t (471) = -2.98, p=0.003, two tailed). The magnitude of the differences in the means was significant. Furthermore, cognitive reappraisal showed no significant

difference between medical (M= 5.24, SD= 0.97) and non-medical students (M=5.25, SD= 0.99; t (476) =0.098, p=0.92, two tailed). However, expressive suppression showed a significantly higher difference among non- medical (M=4.8, SD= 1.09) than the non-medical students (M= 4.5, SD=1.18; t (452) =2.59, p=0.01, two tailed). Hence, the results showed that expressive suppression strategy was highly used among non-medical students than medical students more so than the cognitive reappraisal strategy.

Table 1

Comparison of mental well-being and emotion regulation between medical and non-medical students using t-values

	Sub	N	mean	Std. Deviation	t-value	Sig.
Mental well-being	Medical	221	24.79	3.95	-2.98	0.003*
	Non-Medical	257	23.56	5.05		
Emotion Regulation CR	Medical		5.24	0.96	0.098	0.92
	Non-Medical		5.25	0.98		
ES	Medical		4.52	1.18	2.59	0.01*
	Non-Medical		4.80	1.09		

*Significant value, p<0.05

As shown in Table 2, the relationship between mental well-being and cognitive reappraisal was investigated using Pearson correlation coefficient. Preliminary analyses were performed to ensure there is no violation of the assumptions of

normality, linearity and homoscedasticity. Based on Table 3, there was a moderate, positive correlation between two variables, r= 0.45, n=478, p<0.001, with high levels of mental well-being associated with high levels of cognitive reappraisal.

Table 2

Pearson Correlation between cognitive reappraisal, expressive suppression and mental well-being of students

	Mental Well-being	Cognitive Reappraisal	Emotion Suppression
Mental Well-being	1	0.45**	-0.03
Cognitive Reappraisal		1	0.23**
Emotion Suppression			1

**Significant value, $p < 0.001$

As shown in Table 3, the independent variable, cognitive reappraisal was significantly associated with the mental well-being of university students, $F(1,479) = 119.79, p < 0.001$. The adjusted R squared

value was 0.2. This indicates that 20% in mental well-being can be explained by the model, cognitive reappraisal. The beta value was 0.45.

Table 3

Association between cognitive reappraisal and mental well-being of students using linear regression

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Standard error	Beta		
Constant	13.07	1.03		12.66	0.001**
Cognitive Reappraisal	2.11	0.19	0.45	10.90	0.001**

**Significant Value, $p < 0.001$

Discussion

The purpose of this study was to investigate the relationship between emotion regulation and mental well-being of university students especially during the pandemic. 478 university students were recruited from a local university. The mean of mental well-being of these students was 24.79. This study found that the mental well-being of students was lower than those found in another study with students from another Malaysian university (Kalok et al., 2020), but it was found to be higher than the university students in United Kingdom

(Defeyter et al., 2021). However, the participants' sample and culture were different because the other sample in Malaysia, only measured mental well-being among medical students, unlike the present study which measured the mental well-being of non-medical students too.

Our study also reveals that medical students had better mental well-being than the non-medical students. The study environment could be one of the reasons why there is a significant difference between mental well-being of medical and non-medical students. Before pandemic, studies demonstrated higher stress levels of medical students compared to non-medical students (Al-

Dabal et al., 2010; Jafri et al., 2017). However, after pandemic (Saddik et al., 2020), a study showed that medical students were less anxious doing online learning because there was no clinical rotation, yet, non-medical experienced greater anxiety when doing online learning and had no issues with coping with online learning, hence, their well-being were also positive (Mustika et al., 2021). Nevertheless, since the study system has changed due to the pandemic, many things have changed.

Apart from that, medical students used less cognitive reappraisal and less expressive suppression than the non-medical students. However, only expressive suppression showed significant different between non-medical and medical students. This finding contradicted to a recent study that was conducted among nursing and non-nursing students whereby the mean score of cognitive reappraisal was significantly higher among non-nursing students than the nursing students (Miao et al., 2021). This is probably due to the medical students who are already familiar with the crisis because of the nature of the medical course itself whereby previously the medical students had to deal with stressful, life and death situation. In addition, because of the medical background, they probably have better understanding about the infectious disease because according to a study, medical students were more informed about Covid-19 than the non-medical students, thus, it gave them a great sense of control and an ability to cope with challenging situation better than the non-medical students (Xiong et al., 2021).

In literature, many have proved that cognitive reappraisal is an adaptive strategy to cope with life challenges and it is positively correlated with mental health (Hu et al., 2014; Katana et al., 2019; Kraiss et al., 2020; Shapero et al., 2019; Verzeletti

et al., 2016). Similarly, we also found that cognitive reappraisal has a significant positive correlation with mental well-being of students. As compared to other students from different countries such as China, students from this study used cognitive reappraisal strategy higher than Chinese students (Zhao et al., 2021). According to Gross & John (2003), students who modified their way of thinking to feel, show and express their emotions were more likely to experience more positive emotions and less negative emotions (Lohani et al., 2022), high life satisfaction, high esteem and more optimist about future which in this case could probably protect and enhance students' mental health during the pandemic. This is because, previous studies have proved that students who flourished were more likely to use cognitive reappraisal (Basson & Rothmann, 2018; Vally & Ahmed, 2020). On top of that, in a recent study from Zhao et al., (2021), students who frequently used cognitive reappraisals were able to control their thoughts, behaviour and surrounding to adapt with challenging pandemic situations. They see the challenges as the opportunity to a positive growth, hence, they have actively taken all kinds of method to solve problems.

Analysis from regression revealed that cognitive reappraisal is significantly associated and could influence the mental well-being of students. Similarly, a previous study showed that cognitive reappraisal was primarily used by the students as a coping strategy to deal with their circumstances, hence, it significantly influenced their well-being (Panahi et al., 2016). In addition, Zhu et al.(2021) suggested that the low usage of cognitive reappraisal could be a potential risk factor to negative mental health symptoms such as anxiety, depression and depression comorbid.

Some studies considered expressive suppression as a maladaptive strategy that is negatively correlated with mental health which could lead to low self-esteem, low life satisfaction and experienced depressed mood (Cameron & Overall, 2018; Hu et al., 2014; Verzeletti et al., 2016). In addition, in the context of student during this pandemic, students who used expressive suppression to regulate their emotions may have difficulties to cope with the challenges (Zhu et al., 2021). Nevertheless, in the current study, expressive suppression was found to have no significance to mental well-being. Which means, although it is frequently used, there is no association between mental well-being with how they suppress their emotions in order to care for someone else's feelings. A possible explanation to this finding could be due to collectivism culture. According to a previous study, as compared to westerners, easterners usually value harmony among the community, therefore they tend to hide their true feelings (Hu et al., 2014). This finding is supported by a study that found, although the Caucasian groups had a significant relationship between low cognitive reappraisal and high suppression with PTSD, the East Asian group did not show any significant result in both strategies toward PTSD and without PTSD (Nagulendran & Jobson, 2020). According to De Vaus et al. (2018), East Asian cultures more likely to accept of negative emotional experiences and always aim to adapt to current situations.

Conclusion

In conclusion, although this study lacks generalizability due to its cross-sectional nature, it is hoped to increase insights about the associations between emotion regulation and mental well-being of students whereby expressive suppression was not significantly associated with

mental well-being of students from eastern countries, which in western countries, expressive suppression had been associated with low mental well-being. The result also showed that mental well-being of medical students was significantly higher than non-medical students and the non-medical students used more expressive suppression more significantly than medical students. These results can be helpful for university administration, counsellors and clinicians to address the mental well-being issues especially in designing preventive intervention for the students. As the main result of this present study is that cognitive reappraisal is highly associated with the mental well-being of students, it is encouraged that preventive intervention incorporates the skills of cognitive reappraisal for the students to learn from, especially in the post-pandemic period.

Acknowledgment

We thank all the participants for providing their time and energy to this study.

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