Validation of Malay version of the COVID-19 Burnout Scale

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Abstract

Objective: Malaysia had to implement nationwide lockdowns at various times as a mitigation measure to contain the spread of COVID-19 virus. As a result of the lockdowns, necessary quarantines and social distancing practices were put in place. This affected the economic, social, and political scenes in Malaysia and created prolong uncertainly as well as burnout among many Malaysians. The aim of the present research is to develop and validate the Malay version of the COVID-19 Burnout Scale (M-COVID-19-BS).

Method: A three-phase study was conducted among Malaysians. Phase 1 involved forward and backward translations by four professional bilingual translators at two different points. Phase 2 involved 30 participants with the aim to assess the semantic, face, and content validation of the Scale. Phase 3 involved 225 Malaysians who took part in a self-administered online questionnaire comprising the M-COVID-19-BS, Copenhagen Burnout Inventory, World Health Organization Quality of Life Scale (Abbreviated Version), and Fear of COVID-19 Scale. Data analysis was performed using SPSS and IBM AMOS.

Results: The statistical analysis revealed that the M-COVID-19-BS demonstrated good internal consistency (Cronbach's alpha = 0.926) and presented with a unidimensional factor structure. M-COVID-19-BS scores positively correlated with the CBI three subscales, showing evidence of convergent validity. Negative correlation was reported between the M-COVID-19-BS with WHOQOL-BREF and with that, discriminant validity was achieved. Lastly, the M-COVID-19-BS exhibited moderate positive correlations with the FCV-19S, concurrent validity was thus supported.

Conclusion: Results demonstrated that M-COVID19 BS is a valid and reliable instrument to assess burnout symptoms related to COVID-19 and as self-care tool to detect burnout symptoms without needing to further exacerbate Malaysia's healthcare system.

Keywords: COVID-19 Burnout Scale, Malaysia, Malay, reliability, validation, psychometric properties.

Introduction

Since Year 2019, the novel coronavirus (COVID-19) has spread widely and impacted millions of people globally. In March 2020, World Health Organisation (WHO) officially declared it a global pandemic (1). For Malaysia, the implementation of lockdown, known as the Movement

Control Order (MCO), was implemented for the first time in 18th March 2020 (2) and the latest being on 1st July 2021. The movement control orders which included travel bans, social distancing, and lockdowns had shown promising results initially in flattening the COVID-19 infection rate. However, the third wave of the pandemic occurred in October 2020. Despite several implementations of the MCO by the local authority, the cases in Malaysia continued to grow. As of July 2021, Malaysia has more than 951,000 confirmed cases with 7000 deaths (3).

Like with many in other nations, Malaysians have been battling the pandemic under extreme conditions. Amidst the changing political landscape in the country when the pandemic first started, the health and safety issue very rapidly resulted in the development of many socio-economic concerns. Nearly every aspect of life for all in the country, regardless of citizenship, has been affected. The COVID-19 pandemic rapidly moved beyond merely a physiological health concern metastasizing into financial and economic as well as psychological instability. Every layer of society from the individuals through private enterprises to government entities has been impacted directly and indirectly. Lives of people, especially those in the B40 and M40 strata, are severely disrupted. Many remain concerned about their job security, increased responsibilities, longer working hours and having difficulties in finding meaning in anything (4).

Many individuals are experiencing a difficult time adjusting to the new norms, the constant changes, and the uncertainties in life. All these uncertainties and changes can be overwhelming and stressful for many individuals (5, 6). Overwhelming stress and prolonged isolation from social supports has had a tremendous impact on individual's mental health. Malaysia reported a spike in the number of suicide cases lately. Four hundred and sixty eight (468) cases were reported within the first five months of 2021 as compared to a total of 631

cases in year 2020 (7) with an average of almost four suicide incidents per day were reported in the first quarter of 2021 (8). At present, the COVID-19 pandemic has become the most severe and challenging public health crisis in the contemporary world (9). In addition to the soaring mortality rate, countries around the world are also suffering from a rapid increase in psychological consequences, which includes burnout, among people of all ages.

While different contemporary studies outlined the prevalence of depression, anxiety, and stress, less is known about burnout (10). Burnout can be understood as a state of physical, emotional and psychological exhaustion causing from exposure to the tremendous, long-term stress from our daily life (11). Individuals with burnout experience energy depletion or emotional exhaustion, negativity related to one's job, and reduced professional efficacy (12), leaving people feeling stuck, drained, helpless, hopeless and resentful (11). There are variety of studies regarding burnout among medical practitioners (10, 13, 14). Beyond professional healthcare providers, there are also studies indicating that the negative psychological impact suffered by non-professional healthcare providers is, in fact, higher in comparison to those who are professional healthcare providers (13).

During the pandemic, we can see that the entire ecosystem within society changing tremendously. Most students are required to study from home (15), and the working atmosphere for many working adults has changed from office to home (16). With working from home as a mitigation measure, individuals may require clocking in more and longer hours. Despite that, they may also be living in uncertainly with regards to the future of their employment. As many businesses are required to shut down, whether permanently or as a temporary measure, anytime the government enforces a lockdown, job security becomes a major concern for many individuals. Prolonged lockdowns evidently contribute to feeling of

anxiety and burnout among individuals. With no ability to know when the situation will improve or even if it will improve at all, it is reasonable to expect the burnout level in Malaysia will continue to rise. This is even more so considering that Malaysia have gone through more than one time of lockdown and working from home has become a new norm among Malaysians.

For this reason, developing the burnout instrument in the Malay Language would be crucial. Without an accurate assessment and clear understanding of the burnout situation among Malaysians, timely and sustainable intervention or even self-help by the individuals themselves are virtually impossible. With that in mind, this study aimed to provide a valid and reliable instrument to measure the burnout-level of Malaysians in response to the COVID-19 pandemic.

Methods

Design

Convenience sampling was used to recruit the participants for the anonymous online survey. All participants were older than 18 years of age, able to provide consent, and literate in the Malay language. Participants with a psychological or neurological diagnosis were excluded from the study. A detailed description of the study's purposes and objectives was advertised on social media platforms or via email. The advertisement included instructions and a link to a Google Form. To increase participation, participants were encouraged to forward the questionnaire to colleagues and friends. In addition to the Malay COVID-19-BS version, the participants completed additional validity scales online. Participants' sociodemographic data (e.g., age, ethnicity, and education level) were also collected, and all participants provided informed consent via an online questionnaire. There was no compensation or reward provided to the participants for the study. This study was approved by the ethics committee at the corresponding author's institution (Sunway University: SUREC 2021/031).

Measures

COVID-19 Burnout Scale. COVID-19 related burnout was assessed using the COVID-19 Burnout Scale (COVID-19-BS) (17). The scale includes 10 items with five levels of agreement, rated on 1 (never) to 5 (always). The higher the COVID-19-BS score, the greater the burnout. The scale reported good internal consistency in the past study (α = 0.920) (17). Data from the present study indicated that the Malay version scale has good reliability (α = 0.926), which is comparable to that reported in previous research (17).

In parallel with validating the M-COVID-19-BS, the following tools were used:

Copenhagen Burnout Inventory. The Copenhagen Burnout Inventory (CBI) (18), which has been validated for use in Malaysian populations (19) measures burnout severity in three subscales: 'personal burnout' (PB) relates to the level of physical and psychological fatigue and exhaustion one experiences, 'work-related burnout' (WR) relates to the level of physical and psychological fatigue and exhaustion one experiences when doing their job, and 'client-related burnout' (CR) relates to the level of physical and psychological fatigue and exhaustion a person experiences as they work with clients. There are 19 items in the CBI Malay version, which are rated on a five-point scale ranging from 1 (never/ to a very low degree) to 5 (always/ to a very high degree). The higher the score, the higher the burnout level. In Chin et al.'s (2018) study, internal consistency coefficients of the Malay-CBI have been reported to range from 0.830 to 0.870. The Cronbach's alpha ranged between 0.849 and 0.915 for this study. We used the CBI to test the convergent validity of the M-COVID-19-BS. The M-COVID-19-BS is expected to show a moderate-to-strong positive correlation with the CBI's three subscales.

World Health Organization Quality of Life Scale, Abbreviated Version. The World Health Organization Quality of Life Scale, Abbreviated Version (20) which has been validated for use in Malaysian populations (21), measures individuals' level of satisfaction with their quality of life in four subscales: 'physical health' relates to a person's perception of their physical health, often construed as the absence of disease, 'psychological health' relates to an individual's

appraisal of their own life and the quality of their positive and negative emotions, 'social relationships' relates to an individual's social relationships with others, and 'environment' relates to an individual's participation in their current environment. There are 26 items in the WHOQOL-BREF Malay version, which are rated on a five-point scale ranging from 1 (very poor/ never) to 5 (very good/ always). Higher scores denote a better quality of life. The Malay WHOQOL-BREF reported good internal consistency with Cronbach alpha values ranging from 0.64 to 0.80 for the subscales (21). In the present study, Cronbach's α coefficient for physical health, psychological health, social relationships, and environment were 0.646, 0.666, 0.721, and 0.869, respectively. The WHOQOL-BREF was used to test the discriminant validity of the M-COVID-19-BS. The M-COVID-19-BS was anticipated to exhibit a negative correlation or no correlation with the four subscales of the WHOQOL-BREF.

Fear of COVID-19 Scale. The Fear of COVID-19 Scale (FCV-19S) (22), which has been validated for use in Malaysian populations (23), measures fear towards COVID-19. The Malay version of the FCV-19S consists of 7 items, each score on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate higher levels of fear towards COVID-19. The Malay FCV-19S had good internal consistency reliability with Cronbach alpha value of 0.893 (23). The scale appears to be internally consistent with an alpha of 0.911 in the present study. The FCV-19S was used to test the concurrent validity of the M-COVID-19-BS. The M-COVID-19-BS was anticipated to exhibit a moderate positive correlation with the FCV-19S.

Procedure

There were three phases to this study (Figure 1). As part of Phase 1, the COVID-19-BS was translated into Malay, and its pre-final version was piloted in Phase 2. Phase 3 of this study

included a validation study, during which data were collected between 11th June and 10th July 2021.

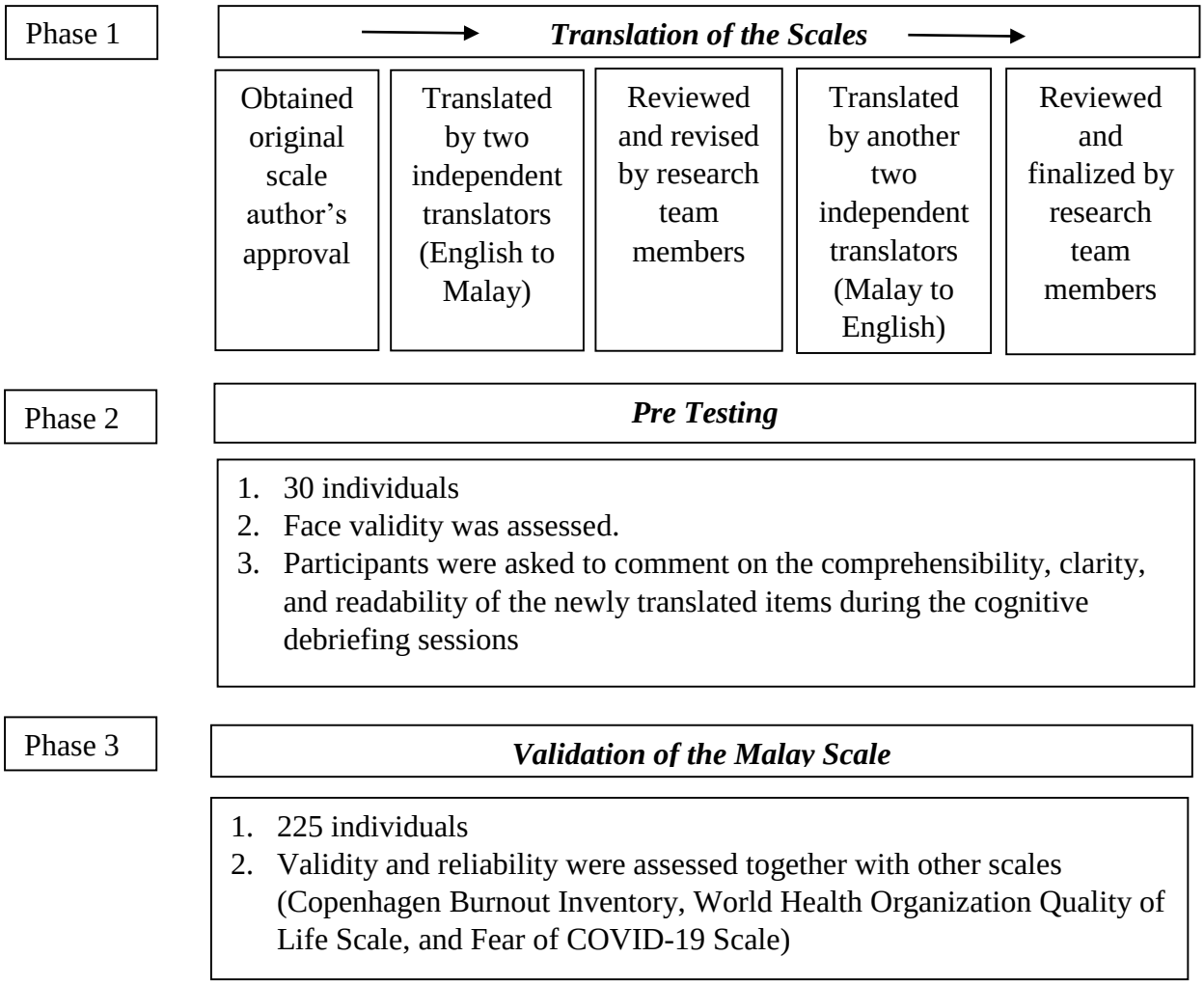

Figure 1: Translation and validation process of M-COVID-19-BS

Phase 1: Translation of the Scales

Permission to translate and adapt the scale was obtained from the original author. The M-COVID-19-BS went through a backward and forward translation process according to (24). The forward translation (English to Malay) was done by two independent bilingual professional certified translators to ensure conceptual and semantic equivalence between the items. The research team reviewed both Malay versions and, without any changes, it was reconciled into

a single Malay version. To avoid bias, the reconciled Malay version was then back translated into English by two bilingual independent professional certified translators who did not know the original scale. In order to ensure contextual meaning was preserved, the research team reviewed the back-translated versions against the original English version. After consensus was reached, this pre-final version was piloted among volunteers (n=30).

Phase 2: Pre-testing

A pre-test was conducted to determine the face validity and comprehensibility of the newly translated measure. During the cognitive debriefing session, participants were asked to comment on the clarity and readability of each translated item individually. Participants were also asked to provide more details if anything seemed vague to them. The word "hopeless" was one of the items discussed in length. It was deliberated whether to use "*putus asa*" or "*putus harapan*". The consensus was opted for "*putus asa*", which has a closer semantic meaning to "hopeless". The final version of the M-COVID-19-BS was found by the participants to be simple, short, and easy to understand after modifications to the scale. This was followed by the release of the final version in Phase 3. Table 1 illustrates each item in Malay and English from which it was translated.

Table 1: Comparison of the original English COVID-19-BS and Malay M-COVID-19-BS items.

Item	English original	Malay Item
1	When you think about COVID-19 overall, how often do you feel tired?	Secara am, berapa kerapkah anda berasa letih apabila anda memikirkan COVID-19?
2	When you think about COVID-19 overall, how often do you feel disappointed with people?	Secara am, berapa kerapkah anda berasa kecewa dengan orang ramai apabila anda memikirkan COVID-19?

3	When you think about COVID-19 overall, how often do you feel hopeless?	Secara am, berapa kerapkah anda berasa putus asa apabila anda memikirkan COVID-19?
4	When you think about COVID-19 overall, how often do you feel trapped?	Secara am, berapa kerapkah anda berasa terperangkap apabila anda memikirkan COVID-19?
5	When you think about COVID-19 overall, how often do you feel helpless?	Secara am, berapa kerapkah anda berasa tidak berdaya apabila anda memikirkan COVID-19?
6	When you think about COVID-19 overall, how often do you feel depressed?	Secara am, berapa kerapkah anda berasa murung apabila anda memikirkan COVID-19?
7	When you think about COVID-19 overall, how often do you feel physically weak/sickly?	Secara am, berapa kerapkah anda berasa lemah/sakit secara fizikal apabila anda memikirkan COVID-19?
8	When you think about COVID-19 overall, how often do you feel worthless/like a failure?	Secara am, berapa kerapkah anda berasa diri anda tidak bernilai/seperti seorang yang gagal apabila anda memikirkan COVID-19?
9	When you think about COVID-19 overall, how often do you feel difficulties sleeping?	Secara am, berapa kerapkah anda berasa sukar untuk tidur apabila anda memikirkan COVID-19?
10	When you think about COVID-19 overall, how often do you feel “I’ve had it”?	Secara am, berapa kerapkah anda berasa “saya sudah tidak boleh tahan” apabila anda memikirkan COVID-19?

Phase 3: Validation of the Malay COVID-19-BS

A large-scale validated study was then performed on the newly translated scale to determine its validity and reliability. On the basis of the recommended ratio of participants to items of 1: 10 (25), we expected to get more than 170 participants.

Data Analysis

Our analysis was undertaken with IBM SPSS version 26.0 and IBM AMOS 20.0. A quick check for missing values and normality was conducted before conducting the COVID-19-BS analyses. There were no missing values. The normality of the data was examined on a univariate and multivariate basis. With 2,000 samples, confirmatory factor analysis (CFA) and bootstrap maximum likelihood estimation were used to validate the factorial construct validity. In view of the sensitivity of the chi-square statistic to sample size, several goodness-of-fit indices were evaluated: the comparative fit index (CFI) (26), the Tucker-Lewis index (TLI) (27) standardised root mean residual (SRMR), and the root mean square error of approximation (RMSEA) (28). For CFI and TLI, values ≥ 0.90 are acceptable (28), whereas SRMR≤ 0.08 (28)and RMSEA$\leq$0.1 (29) are acceptable. Pearson's correlation was used to test convergent validity, discriminant validity, and concurrent validity with a series of previously validated scales. In order to determine internal consistency, we made use of corrected item-total correlation and reliability coefficients of .70 and above (30).

Results

Demographic Profile

A total of 255 Malaysians participated in this study, of which 154 were women (68.4%). The participants were aged 18 to 70, with a mean age of 26.18 (SD = 9.46), and 3 chose not to reveal their ages. There were 102 Chinese participants (45.3% of the total), 95 Malay (42.2%),

18 Indian (8.0%), and 10 others (4.5%). Nearly nine out of ten participants (89.4%) have received tertiary education (i.e., diplomas, bachelor's degrees, or postgraduate degrees), while just 10.6% completed education below the postsecondary level.

Item Properties and Inter-Item Correlations

Univariate normality was evaluated using the skewness and kurtosis measures. A few items were found to be outside the normal range. The distribution of items in M-COVID-19-BS showed a slight positive skewness. In order for a multivariate normality to be considered acceptable, it must be less than 5 (31). In this study, the multivariate kurtosis values exceeded the value, which refutes the multivariate normality assumption. The results are presented in Table 2.

Table 2: Mean Scores for the M-COVID-19-BS Items and their Distribution Parameters.

Scale	**Mean**	**SD**	**Skewness**	**Skewness ratio**	**Kurtosis**	**Kurtosis ratio**
Item 1	1.71	1.087	0.248	1.531	-0.200	-0.619
Item 2	2.30	1.016	-0.083	-0.512	0.344	1.065
Item 3	1.61	1.121	0.308	1.901	-0.487	-1.508
Item 4	1.80	1.056	0.179	1.105	-0.316	-0.978
Item 5	1.57	1.059	0.147	0.907	-0.833	-2.579
Item 6	1.57	1.167	0.554	3.420	0.043	0.133
Item 7	1.12	1.037	0.687	4.241	0.010	0.031
Item 8	1.21	1.097	0.529	3.265	-0.722	-2.235
Item 9	0.95	0.994	0.768	4.741	-0.271	-0.839
Item 10	1.50	1.173	0.407	2.512	-0.548	-1.697
					42.620	20.633

Note. SD = Standard deviation; Skewness ratio = skewness/ standard error of skewness for each item. Kurtosis ratio = kurtosis / standardized error of kurtosis for each item. A skewness ratio and kurtosis ratio larger than 1.96 can be regarded as signs of non-normality.

As for inter-item correlations, the M-COVID-19-BS had inter-item correlation coefficients ranging from 0.241 to 0.790 at $p < .001$, respectively. The presence of moderate to high correlations among scale items may indicate unidimensionality, which means the test is assessing only one construct. We then inspected the factorial construct validity of the items to make inferences. Since normality is an essential assumption of structural equation modelling, we used bootstrapping for CFA (31).

Factorial Construct Validity

The factor structure of the M-COVID-19-BS was tested using a one-factor model in which all items were loaded onto one factor. Aside from SRMR, all the fit indices were unsatisfactory (Table 3). Two error terms for items 7 and 9 as well as 8 and 9 were then inserted into the model to produce another model (M2a). Following this adjustment, Model 2a demonstrated a better fit index than Model 2. Figure 2 illustrates that all the items were statistically significant, ranging from 0.58 to 0.86 (see Figure 2). It appears the M-COVID-19-BS has a common factor structure with the original English version.

Table 3: Summary of Model Fit Indices for M-COVID-19-BS.

Model	**$\chi 2$**	**df**	**CFI**	**TLI**	**SRMR**	**RMSEA (90% CI)**
M-COVID-19-BS						
M2: one factor	202.285	35	.887	.854	.065	.146(.127-.166)
M2a: modified, one factor	131.666	33	.933	.909	.052	.076(.055-.097)

Note. $\chi 2$ = Chi-square, df = Degree of Freedom, CFI = Comparative Fit Index, TLI = Tucker-Lewis index, SRMR = Standardized Root Mean Square Residual (SRMR), RMSEA = Root Mean Square Error of Approximation.

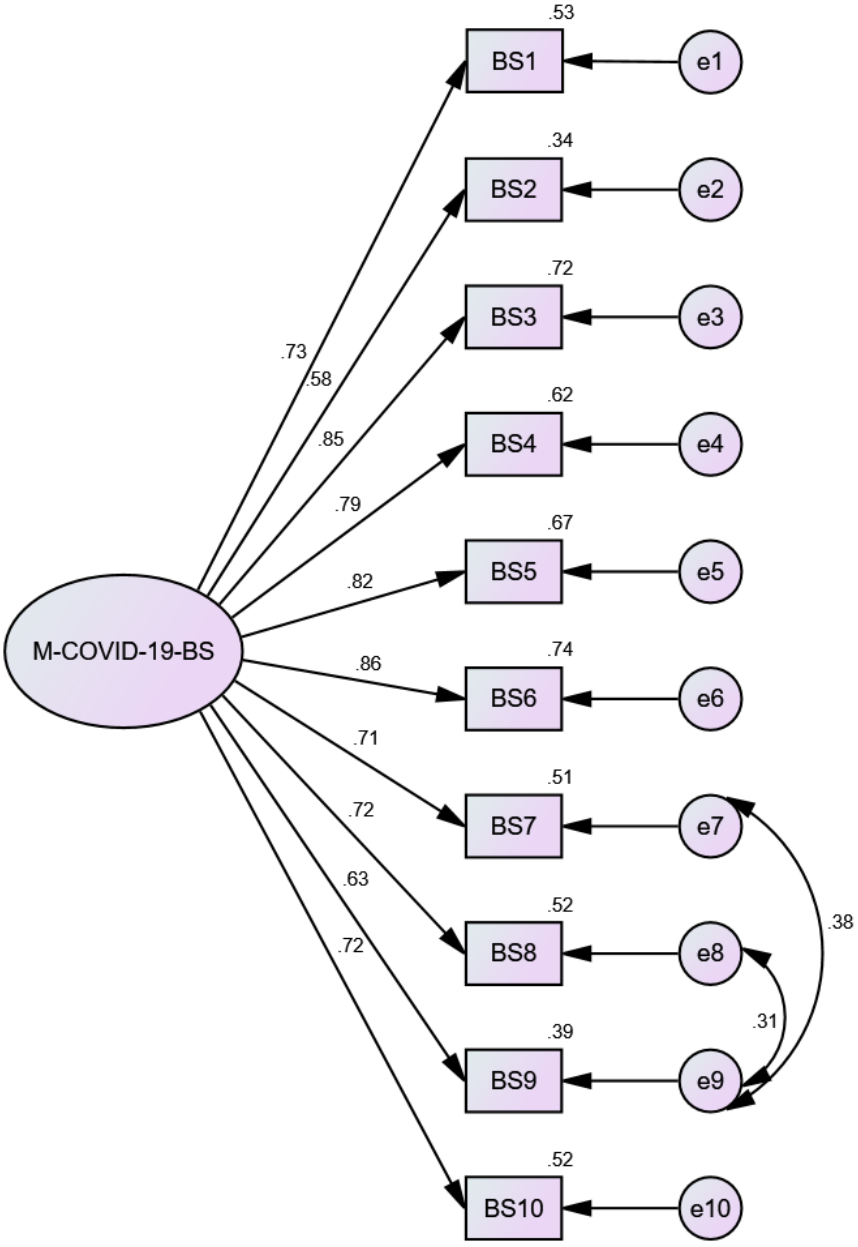

Figure 2: Standardized Factor Loading for the M-COVID-19-BS

Convergent, Discriminant, and Concurrent Validity

The correlations between these scales follow the expected pattern (see Table 4). Significant positive correlations were reported between the M-COVID-19-BS and the CBI three subscales (PB, WR, and CR). Evidence of convergent validity was thus provided.

Negative correlation was reported between the M-COVID-19-BS with four subscales of the WHOQOL-BREF (PhH, PsH, SR and Env). This indicated that they have discriminant validity. In addition, the M-COVID-19-BS exhibited moderate positive correlations with the FCV-19S. Concurrent validity was thus supported.

Table 4: Convergent, Discriminant, and Concurrent Validity of the M-COVID-19-BS.

Scale	**Convergent validity**			**Discriminant validity**				**Concurrent validity**
	CBI			**WHOQOL-BREF**				**FCV-19S**
	PB	**WR**	**CR**	**PhH**	**PsH**	**SR**	**Env**	
M-COVID-19-BS	0.497***	0.400***	0.324***	-0.197**	-0.197**	-0.228**	-0.284**	0.416***

Note. CBI = Copenhagen Burnout Inventory, PB = Personal burnout, WR = Work-related burnout, CR= Client-related burnout; WHOQOL-BREF = World Health Organization Quality of Life Scale, Abbreviated Version, PhH = Physical Health, PsH = Psychological Health, SR = Social relationship, Env = Environment; FCV-19S = Fear of COVID-19 Scale; ** $p < .01$; *** $p < .001$.

Internal Consistency

The M-COVID-19-BS showed a high homogeneity, as indicated in Table 5. Corrected item-total correlation coefficients ranged from 0.532 to 0.811. Its alpha coefficient was 0.926. This means the scale was internally consistent.

Table 5: Internal Consistency of M-COVID-19-BS

Item	Corrected Item-Total Correlation	Squared Multiple Correlation
Item 1	0.691	0.536
Item 2	0.532	0.400
Item 3	0.794	0.706
Item 4	0.749	0.615
Item 5	0.784	0.659
Item 6	0.811	0.713
Item 7	0.726	0.653
Item 8	0.723	0.628
Item 9	0.637	0.574
Item 10	0.708	0.517

Discussion

The current study aimed to translate the COVID-19-BS developed by Yıldırım and Solmaz, (2020) (17) to a Malay version of COVID-19-BS (M-COVID-19-BS) and to assess its psychometric properties in a sample recruited from the general population in Malaysia who are well-versed in the Malay language.

Results revealed statistical support on the reliability and validity of the M-COVID-19-BS across several levels. First, M-COVID-19-BS was found to be reliable with an internal consistency of 0.926 which is as excellent as the original version of COVID-19-BS ($\alpha = 0.920$) (17). Second, CFA indicated that M-COVID-19-BS is a single dimension scale meeting the criteria of fit indices (cut-off points to support single factor solution: $X^2/df \leq 5$; TLI and CFI > 0.9; and RMSEA<0.1) (32). This finding is aligned with CFA reported in the original study (17) which showed it was a single factor solution for the assessment of burnout related to the COVID-19 pandemic.

Third, 10-items in M-COVID-19-BS showed a weak (<0.4) to strong (>0.6) factor loading ranging from 0.34 (item 2) to 0.74 (item 5), specifically factor loading of two items were considered weak (Item 2 and 9), 3 items were moderate (item 1, 7, 8 and 10), 4 items were strong (item 3, 4, 5 and 6). The loading factor of Item 2 and 9 in M-COVID-19-BS did not achieve the conventional acceptable threshold (factor loading >0.50). In comparison to COVID-19-BS, loading factor of item 2 and 9 in COVID-19-BS was strong and moderate (0.73 and 0.59, respectively).

The M-COVID-19-BS had significant moderate correlations with the CBI and weak to moderate negative correlations (ranging from 0.324 to 0.497) with the WHOQOL-BREF. This reflects that the M-COVID-19-BS is measuring burnout. All domains of the WHOQOL-BREF were negatively correlated, demonstrating the reverse impact burnout may have on the quality of life of individuals. There is a moderate correlation with the FCV-19 scores despite fear and burnout being different psychological concepts. This could be explained by the burnout contributing to fear towards COVID-19 infection. This relationship may need to be further explored and confirmed by using the qualitative research methods.

Suggested utility of the M-COVID-19-BS subscale– tested in a general adult Malaysian population with respondents from various ethnicities and a wide range of ages. However, all respondents had access to internet to participate in this study and possessed at least secondary level education. Therefore, the validity of the tool in respondents with lower levels of education is not tested yet.

Implications of this study

The 10-items M-COVID-19-BS reported to have conceptual and semantic equivalence to the original English scale. It was also simple and easy to understand. The scale demonstrated good internal consistency reliability, and the confirmatory factor analysis supported the unifactorial structure for the scale. The scale was also found to have convergent, discriminant, and concurrent validity with various established psychological measures for burnout, fear, and quality of life.

The tool may be used to measure the levels of burnout specifically for the context of the COVID-19 pandemic. With the increasing numbers of COVID-19 infection in Malaysia, it is a very relevant tool to rapidly assess the psychological impact of COVID-19 in the country.

Strengths and limitations

Although there may be other translated burnout scale available, this may well be the first validated Malay version of the burnout scale assessing burnout symptoms and levels amid COVID-19 pandemic among Malaysia. This Scale could also be used to assess burnout for other Malay speaking nations or nations where the Malay language may be used, namely

Brunei, Indonesia, and Singapore. It is essential to have a simple and direct scale, such as the M-COVID-19-BS, which could be used by the public without the need of a professional healthcare personnel to administer the assessment. This not only promotes self-care among the individuals, but it will also decrease the already heavy burden on the country's healthcare system. Healthcare resources are currently more needed to address the surge in COVID-19 infected patients who are in categories 3, 4, and 5 who require critical intensive care.

This study adopted a rigorous method in the translation and validation of the M-COVID-19-BS as a tool to assess burnout symptoms as well as an early detection tool to further examine emotional burnout levels among individual. Prolonged and unaddressed burnout lead to poor mental health. Although this self-care tool may be used as a form of self-assessment among Malaysians, it should not be perceived as an official clinical tool for clinical diagnosis of burnout or emotional disturbances. In addition, the sample size of 225 participants may be another limitation of the study. The data collection efforts were limited in view of the lockdown measures implemented nationwide, and this study heavily depended on online disseminations and participations. Additionally, because the study included the majority of individuals who obtained tertiary education, the finding should be used or interpreted with caution when applied to a non-elite group of participants.

Conclusion

This study validated the Malay version of COVID-19 Burnout Scale – (M-COVID-19-BS) for the Malaysian population. The validation findings showed that M-COVID-19-BS is a valid and reliable tool in assessing burnout during COVID-19 pandemic. The 10 items tool was reported to be simple, direct, and easy to understand.

Declarations

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

No potential competing interest was reported by the authors.

Funding

No funding was received

Institutional Review Board approval

Institutional ethical approval was obtained with Reference number: SUREC 2021/031.

Authors' contributions

Conceptualization: Siew Mooi Ching, Chai Eng Tan and Pei Boon Ooi; Data curation: Meng Chuan Ho, Siok Ping Voon and Kai Wei Lee; Formal analysis: Chin Siang Ang; Methodology: Chin Siang Ang, Kai Wei Lee, and Chai Eng Tan; Project administration: Meng Chuan Ho, Siok Ping Voon and Pei Boon Ooi; Software: Chin Siang Ang; Writing – original draft: Chin Siang Ang, Kai Wei Lee, Meng Chuan Ho, Siok Ping Voon and Pei Boon Ooi; Writing – review & editing: Chin Siang Ang, Kai Wei Lee, Meng Chuan Ho, Siok Ping Voon, Siew Mooi Ching, Chai Eng Tan and Pei Boon Ooi.

Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board (Approval number: SUREC 2021/031).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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