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## THE PREVALENCE AND RISK FACTORS OF SELF-REPORTED COMMON MENTAL DISORDERS AMONGST DOCTORS AND DENTISTS DURING THE FIRST WAVE OF COVID-19 PANDEMIC IN BRUNEI DARUSSALAM.

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### ABSTRACT

**Introduction:** Healthcare workers are at high risk of mental health problems, particularly during the COVID-19 pandemic. This study evaluates the prevalence of self-reported mental health problems and their associated factors, amongst doctors and dentists before and during the first wave of the pandemic in Brunei in 2020. **Methods:** All 729 doctors and dentists who were registered to work in the government health service were invited to complete an online survey to collect data on demographics, mental health and work environment. Participants were asked to complete the Depression, Anxiety and Stress Scale – 21 items (DASS-21) and the Oldenburg Burnout Inventory (OBI). A combined total DASS-21 score of 34 or greater was used as the primary outcome measure indicating the presence of a common mental disorder. **Results:** A total of 312 doctors and dentists participated, achieving a response rate of 42.80%. Sixty-seven (21.47%) participants were found to have a common mental disorder. Univariate analyses found that younger, female, unmarried, local permanently employed participants, those who were in training, and those who had experienced previous mental health problems had significantly higher rates of common mental disorders during the pandemic. Multi-variate analyses found that being permanently employed and having previous mental health problems were the significant independent predictors of common mental disorders. Two hundred and sixty-six (85.26%) participants scored a high or medium level of burnout on the OBI. **Conclusion:** Almost a quarter of government doctors and dentists who participated in the study were found to have a common mental disorder during the first wave of the COVID-19 pandemic in Brunei in 2020. The findings of this study should inform the development of a strategic plan to protect workplace mental health.

**Keywords:** Brunei, COVID-19 pandemic, DASS-21, Dentists, Doctors, Mental health.

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**Keywords:** Brunei, COVID-19 pandemic, DASS-21, Dentists, Doctors, Mental health.

## INTRODUCTION

The COVID-19 coronavirus pandemic has become a significant worldwide humanitarian

crisis. Most people affected by a crisis will experience psychological distress. Subsequently the prevalence of common mental disorders such as depression and anxiety are expected to increase, especially amongst those who are directly affected by the crisis. Brunei's pandemic management plan was introduced in

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March 2020. Doctors and dentists in the government sector were a major group of frontliners deployed in the pandemic control effort.

Prior to the pandemic the increased risk of mental health problems including anxiety, depression, stress and burnout, has been well-documented amongst healthcare workers.<sup>1-4</sup> A previous survey in Brunei found high rates of stress and burnout amongst hospital staff.<sup>5</sup> Following the pandemic, high levels of mental health problems have been found in healthcare workers in other countries.<sup>6,7</sup> It is likely that healthcare workers in Brunei will also have experienced increased mental health problems during this pandemic.

Given that the pandemic is evolving into a longer-term issue, healthcare organizations will have the responsibility to identify, manage and support healthcare workers who develop mental health problems in order to maintain the well-being and sustainability of the workforce.<sup>8</sup> No previous study has evaluated the prevalence of mental health problems amongst doctors and dentists in Brunei before or after the COVID-19 pandemic. This cross-sectional survey aimed to evaluate the prevalence of self-reported mental health problems including depression, anxiety, stress, occupational burnout, and their associated factors amongst doctors and dentists working in Brunei's government health service before and during the COVID-19 pandemic.

## **METHODS**

### **Sample**

In July 2020, all 729 government doctors and dentists who were registered by the Brunei Medical Board were sent an emailed invitation to participate via a hyperlink to an anonymous Google form. A reminder email was sent one month later and the survey was closed in September 2020.

### **Assessment tools**

A questionnaire was designed to collect data on demographics, work environment and mental health. This included questions regarding participants' experience of "recent mental health problems" within the past six months since the emergence of the pandemic, and "previous mental health problems" more than six months ago prior to the pandemic. The questionnaire design was guided by previous published surveys.<sup>2,6</sup>

The Depression, Anxiety and Stress Scale – 21 items (DASS-21) was used to measure the negative emotional states of anxiety, depression and stress. Participants were asked to rate twenty-one statements regarding the frequency of negative emotions over the previous week, using a four - point scale. Participants were categorised as mild, moderate, severe and extremely severe symptomatic categories based on their subscale scores.<sup>9</sup> This tool has been validated for use in a non-clinical general adult population and measures the experience of negative emotions using three subscales, namely depression, anxiety and stress.<sup>10</sup> A DASS-21 total score of  $\geq 34$  was considered to be a positive outcome for a common mental disorder including depression and anxiety.<sup>11</sup>

The Oldenburg Burnout Inventory (OBI) was used to measure rates of burnout.<sup>12</sup> This inventory measures two areas of burnout using two subscales; disengagement and exhaustion. Exhaustion is defined as a consequence of intense physical, affective, and cognitive strain, and a long-term consequence of prolonged exposure to specific job demands. Disengagement is related to a having a negative relationship with your job, which may cause you to distance yourself from your work.<sup>13</sup> Each subscale consists of eight statements, four positively-worded and four negatively worded. Participants were asked to rate their agreement or disagreement with statements based on a four - point

scale. Average total and subscale scores were calculated by dividing the total score by the number of items on the scale or subscale. Participants were grouped into high, medium or low categories of burnout based on the mean average total and subscale scores of the sample. Individual average OBI scores below one standard deviation of the mean were classified as low, scores within one standard deviation of the mean were classified as medium, and scores above one standard deviation of the mean were classified as high.<sup>14</sup> An average exhaustion subscale score of 2.25 or greater and an average disengagement subscale score of 2.1 or greater were set to indicate a high level of burnout in each subscale.<sup>15</sup>

### **Ethical Considerations**

Approval for this study was obtained from the Medical and Health Research Ethics Committee of the Ministry of Health in Brunei. The survey contained details on how participants could access help for their mental health.

### **Statistical Analyses**

Data were analyzed using SPSS, version 26. T-tests were performed for comparison of means. Univariate analysis was performed using Pearson Chi-squared tests. For categorical variables with less than 5 responses, Fisher's Exact test were performed instead. Significant variables were then entered into multivariate logistic regression analysis to evaluate independent predictors of common mental disorders during the first wave COVID-19 pandemic in 2020. Primary outcome was set at total DASS score of  $\geq 34$ , as an indicator of a common mental health disorder<sup>11</sup>. Significance level was set at  $p < 0.05$ .

## **RESULTS**

### **Demographics (Table I)**

Three hundred and twelve completed questionnaires were received, achieving a response rate of 42.80%. There were 139

(44.55%) males and 173 (55.45%) females. The age distribution of the sample is given in Table I. Two-hundred and twenty-nine (73.40%) participants were married. One hundred and fifty-five (49.68%) participants were local staff who were employed permanently. One-hundred and fifty-seven (50.32%) participants were foreign fixed-term contract staff recruited from overseas.

### **Specialty, grade, training and work-pattern (Table I)**

Twenty-three (7.37%) participants were foundation trainee doctors, 190 (60.90%) were medical or dental officers, 54 (17.31%) were senior medical or dental officers, 17 (5.45%) were associate specialists, and 28 (8.97%) were consultants. One hundred and seventy-one (54.80%) participants worked in a hospital- or community-based medical specialty. Eighty-six (27.56%) worked in primary healthcare, 17 (5.45%) worked in public health or health promotion, 20 (6.41%) were currently undergoing foundation year training rotations and 18 (5.77%) worked in other undefined specialties including administration. Seventy-nine (25.32%) participants were undergoing a post-graduate training programme such as foundation training, basic or advanced specialty training. Two-hundred and forty-six (78.85%) participants worked office hours whilst 66 (21.15%) worked in shifts.

### **Covid-19 Pandemic Involvement**

One hundred and seventy-eight (57.05%) participants had been directly involved in the treatment and management of COVID-19 patients (Table I). One hundred and seventy (54.48%) participants reported being fearful of spreading infection to their family.

### **Self-reported Mental Health Problems**

When asked if they had experienced previous mental health problems such as anxiety, depression, severe work stress and burnout more than six months ago, 108 (34.62%)

**Table I: Demographics of doctors and dentists reporting mental health problems during the first wave COVID-19 pandemic (2020) in Brunei Darussalam.**

Group	N	No mental health problems (DASS<34) n (%)	Experiencing mental health problems (DASS≥34) n (%)	P
<b>Age (years)</b>				
20-29	46	26 (45.65)	20 (54.35)	<b>&lt; 0.001*</b>
30-39	108	83 (61.11)	25 (38.89)	
40-49	102	82 (65.69)	20 (34.31)	
50-59	35	33 (85.71)	2 (14.29)	
60-69	20	20 (95.00)	0 (5.00)	
70 +	1	1 (100.00)	0 (0.00)	
<b>Gender</b>				
Male	139	124 (77.70)	15 (22.30)	<b>&lt; 0.001*</b>
Female	173	121 (55.49)	52 (44.51)	
<b>Marital Status</b>				
Married	229	192 (83.84)	37 (16.16)	<b>&lt; 0.001*</b>
Not married	83	53 (63.86)	30 (36.14)	
<b>Employment</b>				
Permanent	155	98 (63.23)	57 (36.77)	<b>&lt; 0.001*</b>
Contract	157	147 (93.63)	10 (6.37)	
<b>Grade</b>				
Consultant	28	19 (67.86)	9 (32.14)	<b>&lt; 0.002*</b>
Associate Specialist	17	14 (82.35)	3 (17.65)	
Senior Medical Officer	54	39 (72.22)	15 (27.78)	
Medical Officer	190	161 (84.74)	29 (15.26)	
Foundation Year	23	12 (52.17)	11 (47.83)	
<b>Specialty</b>				
Medical	171	136 (79.53)	35 (20.47)	0.570
Public Health/Health Promotion	17	14 (82.35)	3 (17.65)	
Primary Health	86	70 (81.40)	16 (18.60)	
Foundation Year	20	10 (50.00)	10 (50.00)	
Other (including Administration)	18	14 (77.78)	4 (22.22)	
<b>In a training programme</b>				
Yes	79	53 (67.09)	26 (32.91)	<b>0.005</b>
No	233	192 (82.40)	41 (17.60)	
<b>Shift</b>				
Shiftwork	66	62 (93.94)	4 (6.06)	<b>0.001</b>
Office Hours	246	183 (74.39)	63 (25.61)	
<b>Previous mental health problems (&gt; 6 months ago)</b>				
Yes	108	60 (55.56)	48 (44.44)	<b>&lt;0.001</b>
No	204	185 (90.69)	19 (9.31)	
<b>Direct involvement in managing Covid-19 patients</b>				
Yes	178	140 (78.65)	38 (21.35)	0.950
No	134	105 (78.36)	29 (21.64)	

Univariate analysis using Pearson Chi-Square. \*For cells with less than 5 values, Fisher' Exact test is used.

**Table II: Depression, Anxiety and Stress sub-scale categories of the DASS-21 among the study participants.**

Severity	Depression Sub-scale score	Depression Sub-scale n (%)	Anxiety Sub-scale score	Anxiety Sub-scale n (%)	Stress Sub-scale score	Stress Sub-scale n (%)
Normal	0-9	227 (72.76)	0-7	241 (77.24)	0-14	257 (82.37)
Mild	10-13	29 (9.29)	8-9	21 (6.73)	15-18	16 (5.13)
Moderate	14-20	37 (11.86)	10-14	36 (11.54)	19-25	31 (9.94)
Severe	21-27	9 (2.88)	15-19	5 (1.60)	26-33	3 (0.96)
Extremely severe	28+	10 (3.21)	20+	9 (2.88)	34+	5 (1.60)

participants reported that they had. When asked if they had experienced these problems recently within the past six months, 130 (41.67%) participants reported that they had. Only three (0.96%) participants had received a formal diagnosis of a mental health condition such as anxiety and depression made by a medical practitioner within the past six months whilst 14 (4.49%) participants had received this more than six months ago.

#### Dass-21 Scores

In the Dass-21 subscale analyses, participants who had mild, moderate, severe or extremely severe scores on each subscale were regarded as symptomatic in Table II above. Eighty-five (27.24%) participants had a symptomatic score on the depression subscale, 71 (22.76 %) had a symptomatic score on the anxiety subscale, and 55 (17.63%) had a symptomatic score on the stress subscale (see Table II).

Female participants, those in permanent employment and those who had experienced previous mental health problems had significantly higher mean total and subscale scores than their comparison groups ([Table III](#)). Unmarried participants had significantly higher mean depression subscale scores than married participants. There was no significant difference in mean DASS-21 total or subscale scores between participants who had been directly involved in the management of COVID-19 patients and those who had not ([Table III](#)).

Sixty -seven (21.47%) participants were found to have a common mental disorder using the DASS-21 total score results of  $\geq 34$ . Univariate analyses using Pearson Chi-Squared tests found that the variables significantly associated with an outcome of common mental disorder were self-reported experience of previous mental health problems, younger age, female gender, not being married, permanent employment, being in a training programme and working office hours instead of shifts. There was a significant difference between grades of doctors and dentists, with 32.1% of consultants and 47.8% of foundation doctors having a common mental disorder during the pandemic. No significant difference was found between specialties, or between those who had direct involvement in the management of COVID-patients and those who had not ([Table I](#)).

Multivariate analyses showed that the significant independent predictors of common mental disorders were previous mental health problems and being in permanent employment ([Table IV](#)). The odds ratios showed that those who had reported previous mental health problems were more than four times more likely to have a common mental disorder compared to those without previous mental health problems. Those in permanent employment were more than three times more likely to have a common mental disorder compared to those on fixed-term contracts.

**Table III: Comparison of mean DASS-21 total and subscale scores among study participants based on demographics.**

Group	N	Total DASS-21 score (Mean±SD)	P	Total subscale score					
				Depression (Mean±SD)	P	Anxiety (Mean±SD)	P	Stress (Mean±SD)	P
<b>All participants</b>	312	18.87±20.21		6.40±8.10		4.12±5.80		8.35±8.19	
<b>Gender</b>									
Male	139	11.29±15.51	<b>&lt; 0.01</b>	3.83±6.33	<b>&lt; 0.01</b>	2.40±4.27	<b>&lt; 0.01</b>	5.06±6.41	<b>&lt; 0.01</b>
Female	173	24.95±21.49		8.47±8.75		5.49±6.47		10.98±8.52	
<b>Employment</b>									
Permanent	155	29.34±21.07	<b>&lt; 0.01</b>	10.31±9.03	<b>&lt; 0.01</b>	6.23±6.38	<b>&lt; 0.01</b>	12.80±8.05	<b>&lt; 0.01</b>
Contract	157	8.52±12.61		2.55±4.47		2.03±4.25		3.95±5.52	
<b>Marital Status</b>									
Married	229	15.57±19.25	0.21	4.98±7.20	<b>&lt; 0.05</b>	3.52±5.65	0.49	7.07±7.82	0.37
Not married	83	27.95±20.11		10.34±9.11		5.76±5.92		11.86±8.22	
<b>Previous Mental Health Problems</b>									
Yes	108	32.98±22.11	<b>&lt; 0.01</b>	11.50±9.32	<b>&lt; 0.01</b>	7.43±7.28	<b>&lt; 0.01</b>	14.06±8.35	<b>&lt; 0.01</b>
No	204	11.39±14.35		3.17±5.78		2.36±3.83		5.32±6.28	
<b>Direct Involvement in Managing Covid-19 Patients</b>									
Yes	178	18.10±21.32	0.35	5.98±8.07	0.98	4.24±6.29	0.15	7.89±8.54	0.63
No	134	19.88±18.66		6.97±8.12		3.96±5.19		8.96±7.69	

Scores are multiplied by two to obtain full scores.

All Analysis performed using independent student t test,  $p < 0.05$  considered statistically significant.

### Suicidal Thoughts

Seven (2.24%) participants had experienced suicidal thoughts recently within the past six months. Those who met the primary outcome of a common mental disorder were significantly more likely to have experienced recent suicidal thoughts ( $\chi^2(1) = 10.60, p < 0.01$ ). Those who reported previous mental health problems were also significantly more likely to report recent suicidal thoughts ( $\chi^2(1) = 8.26, p < 0.01$ ). No significant difference was found between those who had been directly involved in the management of COVID-19 patients and those who had not ( $\chi^2(1) = 0.00, p = 0.99$ ).

### Oldenburgh Burnout Inventory Scores

The mean average OBI score was 2.29 (1.31–3.19,  $sd=0.28$ ). 45 (14.42%) participants were classified at a high level of burnout, 221 (70.83%) were at medium level and 46 (14.74%) were at low level of burnout. The mean average exhaustion subscale score was 2.20 (1.38–3.13,  $sd=0.314$ ) and the mean average disengagement subscale score was

2.38 (1.25–3.25,  $sd=0.321$ ). This indicates that burnout in this sample was driven by higher scores on the disengagement subscale.

### Participant views and suggestions.

Participants' views of the likely causes of workplace mental health problems and suggestions for improving workplace mental health were tabulated into several themes (see [Table V](#)). The full verbatim comments are available in [Appendix 1](#).

## DISCUSSION

The results of this study indicate considerable rates of self-reported mental health problems such as anxiety, depression, work stress and burnout, amongst doctors and dentists working in Brunei during the Covid-19 pandemic. Self-reported mental health problems such as anxiety, depression, severe work stress and burnout, increased modestly during the pandemic with 34.62% of the sample reporting these problems prior to the pandemic to

**Table IV: Multivariate analysis of participants variables of interests for outcome of DASS-21 total score ( $\geq 34$ ) indicating a common mental disorder (depression, anxiety and stress) encountered during the first-wave COVID-19 pandemic in 2020 among healthcare workers in Brunei Darussalam.**

Variables	B	Std. Error	Wald	df	Sig.	OR	95% CI	
							Lower	Upper
Gender (1)	.395	0.405	.947	1	0.331	0.674	0.305	1.492
Age			2.236	5	0.816			
Marital Status (1)	0.100	0.447	0.050	1	0.823	0.905	0.377	2.174
*Employment (1)	-1.237	0.521	5.631	1	<b>0.018</b>	<b>3.448</b>	<b>1.241</b>	<b>9.615</b>
Grade			0.675	4	0.954			
Undergoing Training (1)	0.443	0.504	0.772	1	0.380	0.642	0.239	1.724
Shift (1)	1.104	0.609	3.279	1	0.070	0.332	0.100	1.095
*Previous mental health problems (1)	-1.475	.353	17.475	1	<b>&lt;0.001</b>	<b>4.367</b>	<b>2.188</b>	<b>8.696</b>
Constant	-21.636	40192.703	0.000	1	1.000	0.000		

Variable(s) entered: Gender (Female=1; Male=2), Age (20-29, 30-39, 40-49, 50-59, 60-69 or 70 and above), Marital Status (Not married=1; Married=2), Employment (Permanent=1; Contract=2), Grade (Associate Specialist=1; Consultant=2; FY=3; MO=4; SMO=5), Undergoing Training (Yes=1; No=2), Shift (1 = Office hours, 2= Shifts), Experienced previous mental health problems > 6 months ago (Yes=1, No=2).

\*Statistically Significant variables.

41.67% during the pandemic. 21.47% met the primary outcome measure of having a common mental disorder using a DASS-21 score of  $\geq 34$  during the pandemic.

The findings of this study are comparable to previous studies of mental health problems in doctors before<sup>2,13</sup> and after the emergence of the COVID-19 pandemic.<sup>6,7</sup> Younger, female, unmarried, permanently employed participants appeared to be more vulnerable to having common mental disorders during the pandemic. Previous studies have shown a similar protective effect of marriage, and increased vulnerability to mental health problems in younger, female frontline health workers who had less professional experience.<sup>2,7</sup> Being in training particularly at foundation trainee level, also appeared to increase the risk of common mental disorders. This may be due to the additional pressure of meeting training requirements. However, this could also reflect the younger age and relative inexperience of doctors who are in training. Interestingly this study also found that consultants were also at higher risk of mental health problems. This could be due to the increased responsibility and pressure on senior staff during the pandemic. The significance of increased risk for those working of-

office-hours compared to shift work is not clear. However, it may be related to the common practice for most office-hours doctors and dentists having to participate in "on-call" rosters to provide out-of-hours services. This may have a more detrimental effect on mental health that working full shifts where the hours of work are more clearly delineated.

Local participants on permanent employment had significantly higher rates of common mental disorders than foreign contract workers and being employed permanently was an independent predictor of having a common mental disorder. This appears to be the main driver for the increased risk seen in other groups in the univariate analyses. The reasons for this require further exploration, however they may be related to socio-cultural factors such as the common practice of giving local workers more training opportunities, and greater leadership and administrative responsibilities. Locally employed participants may have been more worried about their families and the risk of spread of infection locally. Foreign contract workers may have been more reluctant to report mental health problems for fear of losing their employment. There are no anti-discrimination laws to protect employees. Unfortunately,

**Table V. Participant views of the causes of workplace mental health problems and suggestions for improving workplace mental health.**

	<b>Causes of workplace mental health problems</b>	<b>Suggestions for improving workplace mental health</b>
i	Poor communication and work relationships	Provision of training in mental health awareness,
ii	Lack of support from bureaucratic management systems or teamwork	To have supportive occupational health policies and easy access to support and treatment
iii	Bullying and discrimination	Provision of regular supervision and team building exercises to improve workplace communication
iv	Given excessive duties beyond what they could cope with or outside their field of expertise, which included administrative or leadership duties without suitable adjustments to their clinical workload	Improvement in facilities and organizational systems with clear job plans, protected time for clinical and non-clinical work
v	Unrealistic expectations from their managers and the public	Better leadership and acknowledgement of work contributions
vi	Difficulties in adjusting to sudden change of work environment and scope arising from the pandemic	Assistance with career progression.

mental health stigma and fear of discrimination remains prevalent in Brunei society.<sup>16</sup> Perhaps unsurprisingly, having previous mental health problems was an independent risk factor for having a common mental disorder during the pandemic, and both variables were significantly associated with suicidal thoughts during the pandemic.

Although nearly half the sample self-reported experiencing mental health problems during the pandemic, a smaller proportion had the primary outcome measure of a common mental disorder or scored within symptomatic sub-categories of the DASS-21 which measured symptoms experienced within the previous week. This reflects the fluctuating nature of emotional and psychological distress. Although its prevalence may be lower at a point in time, a larger proportion have experienced emotional and psychological distress over a longer period. Nevertheless, those who had previous mental health problems were significantly more likely to have a common mental disorder during the pandemic, and they had significantly higher mean DASS-21 total and sub-scale scores, suggesting the persistence of some mental health problems in this sample. The results in this study sample were comparable to other studies that have evaluated symptoms of depression, anxiety and stress in health professionals either before<sup>17</sup> or during the COVID-19 pandemic<sup>7</sup>. Despite higher rates of common

mental disorders, only a very small proportion had received a diagnosis of a mental health condition. This suggests that many participants who experienced mental health problems either did not meet the criteria for a diagnosis of a mental health disorder, or did not seek medical help. The high burnout rates in this sample appeared to be driven by disengagement, which indicates feelings of detachment and negativity about their work.

The participants' views of the causes and suggestions for improvement of workplace mental health problems have provided further insight into this important issue. This information can be used to plan and implement strategies to address the issue.

Brunei managed to contain the first community spread of COVID-19 relatively successfully and had not detected any community cases since May 2020 until the time of this study. This may have attenuated the rates of mental health problems experienced by the sample during the pandemic. There was no significant difference found in the rates of common mental disorders, or mean DASS-21 total or subscale scores between participants who had worked directly with COVID-19 patients and those who had not. This suggests that participants may have experienced common stressors within their organization and environment, regardless of their direct involvement with COVID-19 pa-

tients. The pandemic management effort thus far has required significant front-line and supportive work by doctors and dentists across the country and this is likely to continue long-term, particularly with the emergence of a more widespread second-wave of the pandemic locally in August 2021. It is likely that this second-wave will have a greater negative impact on mental health.

The study had some limitations. It collected self-reported data. Participation was voluntary and may have been affected by response bias. Doctors and dentists may have been reluctant to participate, or to report mental health problems due to stigma and fear of losing their employment or license to practice. The response rate for this study was 42.80% which is comparable to previously suggested required response rates for online surveys.<sup>18</sup>

## CONCLUSIONS

This study found that nearly a quarter of government doctors and dentists had a common mental disorder during the first wave of the COVID-19 pandemic in Brunei in 2020. The findings of this study should guide the urgent implementation of a workplace mental health and well-being plan that could include strategies such promoting mental health awareness and engagement with employees, improving access to support, reducing stigma and discrimination, and providing augmented assistance for high-risk groups. This is particularly urgent now that Brunei has experienced a second wave of Covid-19 infections since August 2021.

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## CONFLICTS OF INTEREST

There are no conflicts of interest among authors in this study.

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