

Prevalence and Associated Factors of Burnout Among Working Adults in Southeast Asia: Results from a Public Health Assessment

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Conflict of interest statement

The authors declare a potential conflict of interest and state it below.

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Provisional

Prevalence and Associated Factors of Burnout Among Working Adults in Southeast Asia: Results from a Public Health Assessment

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Abstract

The COVID-19 pandemic has spotlighted the mental health crisis among employees worldwide. However, burnout research is often industry- or occupation-specific, and limited knowledge currently exists on the prevalence of burnout in the general working population of Southeast Asia. This study aims to examine the prevalence of employee burnout and its associated factors among working adults in Southeast Asia using secondary data. 4,338 full-time employees aged 18-65 years old living in Malaysia, Singapore, Philippines, and Indonesia were assessed for burnout, depression, anxiety, stress, and sociodemographic characteristics as part of an online public health assessment in October 2022. The prevalence of burnout in the region was 62.91%. Burnout was highest among employees in the Philippines (70.71%) and lowest in Malaysia (58.13%). Experiencing burnout associated with severe or extremely severe depression (AOR=6.48 [95% CI=5.06–8.33]), anxiety (AOR=2.22 [1.74–2.85]), and stress (AOR=5.51 [4.13–7.39]). Working more than 50 hours a week (AOR=1.38 [1.04–1.82]) and being very dissatisfied with the job led to higher odds of burnout (AOR=16.46 [8.99-30.53]). Alarming, more than half of working adults in the region are reporting increased levels of burnout, and improving employee mental health and work conditions may be key to improving employee burnout in the region. Findings contribute to existing research on burnout prevalence in the region and provide more comprehensive insights into understanding the factors driving employee burnout in the working population of Southeast Asia two years after the onset of the pandemic.

1 Introduction

The COVID-19 pandemic has led to an unprecedented rise in employee burnout worldwide (1,2), as the global workforce faces major changes in work norms and practices in the short span of 3 years (3–5). Defined as a work-related state of exhaustion, burnout is characterised by extreme tiredness or fatigue, an impaired ability to regulate cognitive and emotional processes, and mental distancing (6). Specific to the occupational context (7), burnout corresponds to prolonged and chronic workplace stress rather than occasional one-off stressors (8,9), and under the Job Demands-Resources (JDR) theory, is thought to result from an imbalance between work demands and employee resources (10). When left unaddressed, burnout can lead to adverse health consequences for individuals and can translate into a substantial economic burden to employers as it facilitates absenteeism, presenteeism,

42 counterproductive organisational behaviours, increased turnover intentions, and reductions in
43 work performance (10).

44 Although burnout was initially studied within the context of healthcare workers, it has now
45 been established that burnout can occur across most occupational groups, though professions
46 that involve constant demands and emotional labour tend to be disproportionately affected
47 (8). Demographic variables such as age, gender, and marital status have also been studied in
48 relation to the development of burnout, though findings have mostly been inconclusive with
49 regard to which groups are more vulnerable to burnout (10–13). Separately, work-related
50 factors such as working hours (14), emotional labour (15), workload (16), and job
51 dissatisfaction (17), are known to directly correlate with burnout. Despite burnout being an
52 entirely separate and distinct phenomenon (18), symptomatic overlapping can occur between
53 burnout and other forms of mental illness (19), with existing research showing burnout to
54 correlate with symptoms of depression, anxiety, and stress (5,20).

55 Existing research on the prevalence of employee burnout is often centred around employees
56 in the healthcare industry. Woo et al. reported a global burnout prevalence of 11.23% among
57 nurses across 49 countries (21), whilst the global prevalence of burnout among general
58 practitioners was estimated at 37% (22). In Southeast Asia, a pooled regional prevalence of
59 burnout among gastroenterologists has been estimated at 17.1%, with inter-country variations
60 identifying Malaysia, Singapore, and Brunei countries with a burnout prevalence rate
61 exceeding 30% (23). However, these prevalence rates only reflect that of healthcare workers'
62 burnout and do not represent the prevalence of employee burnout in the general working
63 population. Given the short- and long-term effects of the COVID-19 pandemic on employee
64 well-being worldwide (24), it is critical to attain a comprehensive understanding of the
65 phenomenon of employee burnout, irrespective of occupation and industry.

66 To our knowledge, there is insufficient evidence on the prevalence of employee burnout
67 amongst the general working population of Southeast Asia. Given that unmanaged burnout
68 leads to adverse psychological, behavioural, health, and economic consequences to both
69 individuals and organisations (10,25), it is crucial to understand the full extent of the
70 phenomenon in the region to guide future intervention or prevention efforts. Hence, the
71 primary objectives of this study are to determine the prevalence of employee burnout among
72 full-time working adults in Southeast Asia and to identify the associated factors that
73 contribute to the development of burnout among working adults in the region. As a secondary
74 objective, this study also looks into the prevalence of depression, anxiety, and stress among
75 working adults in Southeast Asia.

76 **2 Materials and methods**

77 **2.1 Study design and procedures**

78 This cross-sectional epidemiological retrospective study uses secondary data collected as part
79 of an annual public mental health assessment conducted by Naluri Hidup Sdn Bhd (Naluri), in
80 conjunction with a month-long Mental Health Awareness Campaign. Throughout October
81 2022, respondents were recruited through convenience sampling via paid advertising on
82 Naluri's social media channels (e.g. Facebook, LinkedIn, Instagram) and advertising platforms
83 (e.g. Google). Respondents who were interested in the mental health assessment were directed
84 to an online questionnaire hosted at www.naluri.life. The mental health assessment
85 questionnaire was divided into three sections in the following order: (1) psychological distress;
86 (2) burnout, and; (3) optional sociodemographic questions. The landing page of the assessment

87 displayed instructions on how to complete the assessment, as well as information on the nature
88 and purpose of the mental health assessment.

89 **2.2 Ethical consideration**

90 By proceeding with the assessment, participants provided implied consent by accepting and
91 agreeing with Naluri's data policy, which includes a clause stating that their anonymised data
92 may be used for research purposes. Ethics approval for this study was obtained from the
93 Medical Research & Ethics Committee, Ministry of Health Malaysia (NMRR ID-22-02193-
94 GDR). Although this study was planned prior to data collection, ethics approval was only
95 obtained towards the end of the data collection period, which led to changing the study's
96 design from prospective to retrospective. No personally identifiable information was
97 collected and all data was obtained anonymously and handled confidentially. Participants did
98 not receive any tokens or incentives as part of participation in the study. In line with the
99 EQUATOR Network reporting guidelines, a complete STROBE checklist for this study is
100 provided (Supplementary Table 1).

101 **2.3 Study participants**

102 Participants of this study were respondents of the mental health assessment who fulfilled the
103 study inclusion criteria, which were set to full-time employed adults aged 18-65 years old
104 living in Southeast Asia, specifically in Malaysia, Singapore, Philippines, and Indonesia, who
105 had completed the English-language version of the survey on Naluri's website. A convenience
106 sampling strategy was employed to select only respondents who fulfilled the pre-specified
107 inclusion criteria out of all the responses from the mental health assessment. Respondents who
108 were outside of the target age range, did not hold full-time employment, resided outside of the
109 target countries, and completed the assessment in a local non-English language were excluded.
110 Although the mental health assessment was available in multiple languages, setting the
111 inclusion criteria to those who completed the assessment in English was done to optimise the
112 study's validity as the instruments used in the mental health assessment were validated in
113 English. Additionally, the mental health assessment was designed to allow respondents to skip
114 sociodemographic questions in order to encourage as many respondents to complete the
115 assessment as possible. Hence, only complete responses across all sections of the assessment
116 were included in the study. Our initial protocol was specified to include responses from
117 residents in Thailand, with a minimum sample size of $n=384$ required based on an estimated
118 prevalence of 49.3% and a precision of 5% (26–28). However, as only $n=44$ responses from
119 Thailand fulfilled the inclusion criteria, we elected to remove responses from Thailand from
120 our final analysis as a small sample size would have resulted in inaccurate and imprecise
121 estimates (29,30).

122 **2.3 Measures and instruments**

123 **2.3.1 Burnout Assessment Tool (BAT-12)**

124 Burnout was measured using the work version of the 12-item Burnout Assessment Tool
125 (BAT-12), a validated short-version of the BAT that measures four core symptoms of burnout
126 - exhaustion, mental distance, cognitive impairment, and emotional impairment (6,31,32).
127 The work version of the BAT-12 was chosen due to its applicability across all forms of work
128 and professions, and for its ability to classify burnout along a continuum of "low" to "very
129 high," which has been recommended as a superior way of measuring burnout (33). In
130 addition, the BAT-12 was also preferred for its ability to provide a composite score that

131 comprehensively reflects the overall experience of burnout, as opposed to more traditional
132 burnout measurements, like the Maslach Burnout Inventory, which was developed primarily
133 as an instrument to detect the different dimensions of burnout (9). Items are scored on a 5-
134 point scale from 1 - “never” to 5 - “always”, and a total composite burnout score is obtained
135 by averaging the sum of all 12 items (6). Burnout scores were classified as Low, Average,
136 High, and Very High using the more conservative cut-offs of Low=1.00-1.50; Average=1.51-
137 2.79; High=2.80-3.66; Very High=3.67-5.00 (6). The use of more conservative cut-off scores
138 is intended to control for possible cross-cultural bias, as previous cross-cultural research
139 revealed that Asian populations tend to score higher in the BAT compared to Western
140 populations (34). The presence of burnout was defined as recording ‘High’ or ‘Very High’
141 levels of burnout based on the BAT-12. The BAT has previously been validated for cross-
142 cultural and online use (34), and its convergent validity against traditional burnout measures
143 such as the Maslach Burnout Inventory has been established (35). The internal reliability of
144 the BAT-12 for this study is $\alpha=0.94$.

145 **2.3.2 Depression, Anxiety, Stress Scales (DASS-21)**

146 Psychological distress was measured using the DASS-21, a set of self-report scales
147 comprising 21 items equally divided into three subscales measuring the emotional states of
148 depression, anxiety, and stress (36). Items are scored on a 4-point Likert scale ranging from 0
149 – “did not apply to me at all” to 4 – “applied to me very much or most of the time,” and final
150 scale scores are obtained by multiplying subscale scores by 2, with higher scores indicating
151 higher severity for each scale. Cutoff scores for each subscale are used to further classify the
152 scores into conventional severity labels - Normal, Mild, Moderate, Severe, and Extremely
153 Severe (36). The presence of depression, anxiety, and stress was respectively defined as
154 recording ‘Severe’ or ‘Extremely Severe’ levels of each domain based on scores of the
155 DASS-21.

156 **2.3.3 Sociodemographic Questions**

157 The exposure variables were measured using sociodemographic questions on demographic
158 and work-related characteristics. Specifically, participants were asked to supply their year of
159 birth, gender, country of residence, relationship status, employment status, work industry, job
160 seniority, the average number of hours they worked per week (inclusive of overtime), current
161 working setup (i.e. in-office, remote, hybrid), and job satisfaction. Job satisfaction was
162 assessed using a single-item measure, “Taking everything into consideration, how do you feel
163 about your job as a whole?,” rated on a seven-point Likert scale (1=extremely dissatisfied, 7=
164 extremely satisfied) with higher scores indicating higher levels of job satisfaction, which has
165 been shown to be valid and reliable in assessing job satisfaction among employees (37). The
166 sociodemographic questions were not compulsory for the respondents to complete.

167 **2.4 Statistical analysis**

168 All analyses were performed on RStudio version 2022.07.0+548, using R version 4.2.1.
169 Statistical tests performed were 2-sided and evaluated at a $p<0.05$ significance threshold. The
170 prevalence of burnout, depression, anxiety, and stress were reported with their respective
171 95% confidence intervals (CIs). In addition, means and standard deviations for burnout,
172 depression, anxiety, and stress scores were reported for the overall sample, as well as for each
173 sociodemographic group (Supplementary Table 2).

174 Simple logistic regressions were performed to investigate the possible relationship between
175 sociodemographic variables, depression, anxiety, stress, and burnout. Variables significant at

176 $p < 0.25$ were subsequently entered into a stepwise multivariate logistic regression model.
177 Reference categories for the categorical independent variables were chosen based on
178 guidelines recommended by Johfre and Freese (38). For variables that categorise a quantity or
179 rank (age, seniority, depression, anxiety, stress levels), the smallest quantities or lowest ranks
180 are chosen as the reference groups (18-30 years old, entry level, normal or mild levels of
181 depression, anxiety, and stress levels). For variables that unfold from a single group, such as
182 relationship status, average hours worked per week, current work setup, and job satisfaction,
183 the normative groups (single, 40-50 hours per week, fully onsite, extremely satisfied) are
184 chosen as the reference groups. For variables with symmetric categories (gender, country),
185 groups that result in positive coefficient estimates are chosen as the reference groups.
186

187 Model fit was assessed using Hosmer & Lemeshow's omnibus χ^2 test, and we further report
188 the final model's McFadden's adjusted R², Nagelkerke's R², and Akaike information
189 criterion (AIC). As all predictor variables in the model were categorical in nature, linearity
190 assumptions were thus not applicable. Multicollinearity checks were conducted to ensure no
191 multicollinearity between all predictors (GVIF < 5.00). A priori sample size calculations
192 following Bujang et al.'s (39) rule of thumb of $n = 100 + 50i$, where i refers to the number of
193 independent variables in the final logistic regression model, revealed that a minimum sample
194 size of $n = 700$ was sufficient to detect accurate estimates.

195 **3 Results**

196 **3.1 Participant characteristics**

197 Out of the 72,883 responses in the public health assessment, 4,338 respondents fulfilled the
198 study's inclusion criteria, leaving a final response rate of 5.95%. Figure 1.0 demonstrates the
199 flow of participant inclusion and exclusion based on the pre-set inclusion criteria. The median
200 age of our sample was 29 (Interquartile range=9.0). A majority of the sample were female
201 (74.48%), aged 18-29 years old (53.69%), single (37.00%) and resided in Malaysia (54.89%).
202 With regards to work demographic, our sample mostly worked in the education and training
203 industry (8.41%), reported themselves as non-managerial executives (30.90%), worked 40-50
204 hours a week (47.10%), worked fully onsite (i.e. in-office) at the time (53.39%), and were
205 moderately satisfied with their job (30.45%). Detailed sample characteristics are reported in
206 Table 1.

207 **3.2 Burnout and psychological distress**

208 The prevalence of burnout, depression, anxiety, and stress for each level of severity in each
209 country are shown in Table 2-3. Across the four countries, a majority of respondents reported
210 high (33.93%) or very high (28.98%) levels of burnout. Similar patterns are reported for
211 respondents experiencing severe (10.88%) or extremely severe (37.37%) symptoms of
212 anxiety, and severe (14.18%) or extremely severe (36.91%) depression. In comparison, the
213 prevalence of severe or extremely severe symptoms of stress across our sample was only
214 20.40% and 15.81% respectively.

215 The prevalence of high or very high levels of burnout was the highest in the Philippines
216 sample (70.71%), followed by Singapore (66.84%). Amongst the four countries, respondents
217 from the Philippines also reported the highest prevalence of severe and above symptoms of
218 anxiety (62.67%), depression (64.07%), and stress (46.55%). Respondents in Indonesia
219 reported the second-highest prevalence for severe and above symptoms of anxiety (54.3%),
220 depression (55.49%), and stress (39.09%). Meanwhile, respondents in Malaysia reported the

221 lowest prevalence for severe and above symptoms of anxiety (41.75%), depression (43.34%),
222 and stress (31.25%).

223 3.3 Factors associated with high or very high burnout

224 Univariate logistic regressions showed that sociodemographic variables, work characteristics,
225 and psychological distress variables were all significantly associated with experiencing high
226 to very high levels of work burnout (Supplementary Table 3). Table 4 presents the results of a
227 multivariate logistic regression with the aforementioned variables as predictors of burnout.

228 Compared to Malaysia, employees in Indonesia (AOR=0.69, $p<0.05$) had significantly lower
229 odds of experiencing burnout. Separately, employees who worked either less than 40 hours
230 per week (AOR=1.23, $p<0.05$) or more than 50 hours per week (AOR=1.36, $p<0.05$) reported
231 significantly higher odds of experiencing burnout compared to employees who maintained
232 the regular average of 40-50 regular work hours per week. Increasing job dissatisfaction was
233 linked to higher risks of experiencing burnout, with employees who are very dissatisfied
234 having the highest odds of experiencing burnout compared to those who are extremely
235 satisfied (AOR=16.46, $p<0.001$). With regards to psychological distress, compared to those
236 reporting normal or mild symptoms, employees in the region who reported moderate or above
237 symptoms of depression, anxiety, and stress all reported higher odds of experiencing burnout
238 ($p<0.001$). Despite having significant results at a univariate level, no significant associations
239 were detected between burnout and gender, relationship status, employment industry, work
240 seniority, and current work arrangement (i.e., in-office, remote, hybrid). Country-level
241 analyses investigating associated factors of burnout among different countries are presented
242 in Tables 4-7 in the attached Supplementary Materials.

243 4 Discussion

244 Using retrospective data obtained from a large-scale public mental health assessment, we
245 investigated the prevalence of burnout and its associated factors among the general working
246 population of full-time employees in five countries in Southeast Asia. Across the four
247 countries, 62.91% of respondents reported experiencing high or very high levels of burnout.
248 Inter-country variations revealed that the prevalence of burnout was highest in the Philippines
249 (70.71%) and Singapore (66.84%), and lowest in Malaysia (58.13%). As a secondary
250 objective, we also found that 51.09% of respondents in the region were reporting severe and
251 above symptoms of depression, followed by a 48.25% prevalence of anxiety, and a 36.21%
252 prevalence of stress. The magnitude of burnout and psychological distress identified in this
253 study highlights the rising necessity to pay attention to employee mental health and well-
254 being in the region.

255 Limited evidence exists on the prevalence of burnout in the general working population and
256 across occupational industries (40). To our knowledge, this study is the first in the region to
257 investigate the prevalence of employee burnout in the general working adult population of
258 Southeast Asia. Ndongo et al. recorded a 67.9% prevalence of burnout across industry sectors
259 in Cameroon (41). Closer to the region, Matsuo et al. found that 31.0% of the general
260 working population of Japan was experiencing burnout (40), while Lam et al. observed that
261 60% of corporate employees in Hong Kong were reporting moderate to high levels of
262 emotional exhaustion, one of the traditionally measured components of burnout (42). The
263 usage of different measures to assess burnout prevalence limits a straightforward comparison
264 of the findings, though the prevalence of burnout we recorded in all four respective countries
265 is highly similar to those reported by Ndongo et al. and Lam et al. (41,42). Otherwise, Teo et

266 al. reported a 20.0% prevalence of burnout among healthcare workers in Southeast Asia, with
267 those in Singapore reporting the highest prevalence of 39.0% (43). However, it is difficult to
268 speculate on the mechanisms behind the reported differences given that Teo et al.'s study
269 focused on an entirely different, more specific employee population than ours.

270 In terms of work-related risk factors, we found that both working more and less than 40-50
271 hours a week – the average weekly mandated work hours in the region – were associated
272 with higher odds of burnout in employees. Employees in Asia are typically more prone to
273 working long and inflexible work hours in the face of rising work demands, largely owing to
274 a strong cultural emphasis on work as a means of fulfilling social and familial
275 responsibilities, and high levels of power distance that inhibit employees from voicing
276 discontent over or refusing increasing workloads (44). Our findings are consistent with
277 previous studies in the region linking more than usual work hours and higher burnout risk
278 (40,43). Surprisingly, we also found that employees who worked less than the average
279 mandated weekly hours were also at higher risk of burnout, though the odds are slightly
280 lesser compared to those working more than 50 hours a week. While shorter working hours
281 have been generally linked to improved work quality and work-life balance (45,46), existing
282 research does indicate that the relationship between reduced work hours and employee health
283 and well-being can be unclear (46), warranting a need for future studies in this area to
284 investigate the role of potential moderators (47–49). Additionally, cultural attitudes may
285 contribute to differences in how Asians view working hours, as cultural values such as social
286 harmony, collectivism, and respect for authority may translate to a higher appreciation for
287 longer working hours (50). If anything, our results indicate that employees in the region may
288 require participating in a minimum number of working hours per week to consider
289 themselves productive and equal contributors in the workplace, the absence of which may
290 negatively impact employees' self-efficacy, which under the Social Cognitive Theory can
291 make them more prone to developing burnout (10,50,51).

292 Furthermore, our results revealed that job satisfaction was significantly associated with
293 burnout, with employees who are more dissatisfied with their work having higher odds of
294 experiencing burnout. Previous work has established the negative relationship between job
295 satisfaction and burnout (52–55), and how this relationship can lead to increased turnover
296 intentions among employees (52,56,57). However, many employees in the region value job
297 security, especially during uncertain economic conditions, and are thus less likely to act on
298 their work dissatisfaction compared to their Western counterparts (58). Nevertheless,
299 employees in Southeast Asia are traditionally faced with high work demands, work overload,
300 work-life imbalance (44), and wage stagnation (59,60), all of which largely contribute to
301 reduced job satisfaction (61–63). Given the adverse organisational consequences that burnout
302 can bring, our findings highlight the importance of addressing work dissatisfaction as part of
303 burnout prevention among employees.

304 Despite the large number of studies dedicated to understanding the relationship between
305 remote work and employee wellbeing since the emergence of COVID-19, we found no
306 significant association between different kinds of work arrangements and burnout amongst
307 the employees in the region. The existing literature in the area of remote work has so far been
308 conflicting. Although multiple studies have established the benefits of remote work
309 arrangements and its impact in reducing work-family conflict, improving work-life balance,
310 work efficiency, and employee mental health (64–67), there is also an equivalent amount of
311 evidence to suggest a negative relationship between remote or hybrid work arrangements and
312 employee wellbeing, with remote employees being more vulnerable to increased burnout,

313 escalating job demands, poorer self-rated mental health, intensified physical and mental
314 exhaustion, and increased presenteeism (65,67–70). Thus, our results further support the
315 suggestion that an indirect relationship likely exists between remote work and employee well-
316 being. As employees continue to demand remote and flexible work arrangements post-
317 pandemic, there is a need for more studies in the area to establish the moderators of this
318 relationship among employees in the region to ensure that organisations are well-equipped to
319 manage the risks that come with remote work arrangements.

320 Our results reveal no significant relationship between gender and burnout, further adding to
321 the inconsistent literature that exists in the area. Purvanova and Muros' meta-analysis of
322 gender differences in burnout found that, while women tend to score higher on burnout
323 measures than men, women are significantly likelier to report experiencing emotional
324 exhaustion, whereas men are more likely to report experiencing the depersonalisation
325 component of burnout (71). Additionally, despite a population-based study in Sweden
326 showing that more women than men suffer from burnout, this difference was only a function
327 of age (11), and became non-existent once all other factors were taken into account (12).
328 Separately, when marital status is taken into account, single men and married women tend to
329 be at higher risk of burnout compared to their married counterparts (10,13), though this
330 association has been inconclusive in the literature (13). Our findings thus contribute to the
331 growing body of evidence suggesting that gender alone cannot explain the difference in
332 reports of burnout between the different gender groups (72), thus highlighting the need for
333 more studies in the region to look into potential moderators to further understand the nuance
334 in the relationship between gender and burnout.

335 While previous studies have linked the rise in COVID-19 cases and social restrictions as a
336 contributor to deteriorating mental health (73,74), our findings indicate a long-lasting
337 psychological impact of the pandemic, as we continue to observe an overall decline in mental
338 well-being in the region despite lessening COVID-19 cases and the removal of most
339 pandemic social restrictions in 2022 (75,76). We recorded a higher prevalence of depression,
340 anxiety and stress symptoms than those reported in Tay et al.'s study, which reported a
341 regional prevalence of 48.86% for depression, 49.34% for anxiety, and 36.19% for stress in
342 the general population in 2021 (77). At the time of our data collection (October 2022), most
343 of the countries in Southeast Asia were only beginning to undergo economic recovery post-
344 pandemic (78), which meant that employees in the region were facing high economic
345 pressures - not only to recover from the economic and financial impact of the pandemic (79)
346 (73), but also to face global inflation and the rising cost of living at the time (78). In addition,
347 as we found that experiencing moderate and above symptoms of depression, anxiety, and
348 stress significantly increased the odds of employee burnout, it is also possible that the high
349 prevalence rates we recorded here reflect the long-term patterns of rising mental health
350 challenges throughout the region (80,81), which argues for the importance of effective
351 intervention and early prevention efforts to mitigate the deterioration of mental well-being in
352 the region.

353 Several limitations should be acknowledged in assessing this study's findings. Firstly, this
354 study utilised the BAT-12 to measure burnout due to the scale's ability to reliably provide an
355 overall score of burnout, as well as its validated scoring classification (6), both of which were
356 integral to the objectives of the study. However, the usage of BAT-12 over more traditional
357 burnout measures such as the Maslach Burnout Inventory or the Copenhagen Burnout
358 Inventory limits the direct comparisons of our findings against existing research in this field.
359 Secondly, we did not include more elaborate work-related factors such as emotional labour,

360 job autonomy, inter-role conflict, and social support (10), which could have provided more
361 insight into documenting the burnout phenomenon in the region. Additionally, the nature and
362 source of data used in this study may be a possible source of bias, as individuals who were
363 attracted and opted to complete the online mental health assessment were more than likely to
364 come from those with a higher degree of awareness of the importance of mental wellbeing. In
365 turn, this may have resulted in prevalence estimates that are not reflective of a purely random
366 and mixed sample. Separately, the logistic regression results for job satisfaction reveal wide
367 confidence intervals for the adjusted odd ratios as dissatisfaction increases, suggesting less
368 precise estimates that warrant further caution in interpreting the large odd ratios. In addition,
369 our sample consists of a higher proportion of residents from Malaysia (54.896%) and the
370 Philippines (54.89%), which limits the representability of our findings across countries.
371 Separately, we elected to exclude participants with missing data which may have introduced
372 selection bias in our study's population (82).

373 Furthermore, several of the study's limitations can be attributed to the cross-sectional design
374 of the study. Firstly, the objectives of the study are to investigate the associated factors that
375 contribute to the development of burnout among employees in the region. However, as a
376 cross-sectional study, no causal relationships can be inferred from the results of our study.
377 Secondly, as a cross-sectional study that utilises self-report measures, the results of this study
378 are susceptible to common-method bias which can compromise the construct validity and
379 reliability, and inflate the relationships between our observed variables (83). Finally, as a
380 cross-sectional study, our results were only able to capture the mental health status of
381 employees in the region as of October 2022. Given the rapid and mass social, political and
382 economic changes afflicting the region these past few years, and the dynamic nature of
383 burnout itself (84), our findings hold limited temporal generalisability, warranting the need
384 for more studies in the future that look into employee burnout and mental health in the
385 Southeast Asian region.

386 In conclusion, this study looked into the prevalence of burnout among the general working
387 population of Southeast Asia and provides evidence of rising mental health concerns across
388 employees in the region. We found that the prevalence of burnout in the region was generally
389 high, and that a majority of the employees are also dealing with heightened symptoms of
390 psychological distress such as depression, anxiety, and stress. Working longer and shorter
391 hours than the weekly average, having lower job satisfaction and having symptoms of
392 anxiety, depression, and stress were associated with higher odds of experiencing burnout.
393 Even as the region moves towards a post-pandemic landscape, employees are still dealing
394 with the long-term economic and psychological impact of the pandemic, and our findings
395 crucially highlight the importance of burnout prevention and intervention in the region.

396 6 Figures

397 **Figure 1.** Flow chart showing participant inclusion flow into the study's final sample size.

398 7 Tables

399 **Table 1.** Sociodemographic characteristics of the sample (N=4,338).

	N	%
Gender		
Male	1092	25.17 %

Female	3231	74.48 %
Other	15	0.35 %
Age		
18-29	2329	53.69 %
30-39	1448	33.38 %
40-49	433	9.98 %
50-65	128	2.95 %
Country		
Malaysia	2381	54.89 %
Singapore	401	9.24 %
Indonesia	337	7.77 %
Philippines	1219	28.10 %
Relationship status		
Single	1605	37.00 %
Casually dating	361	8.32 %
In a long-term relationship	773	17.82 %
Married or in a domestic partnership	1490	34.35 %
Divorced, or separated	92	2.12 %
Widowed	17	0.39 %
Industry		
Science & Technology	59	1.36 %
Education & Training	365	8.41 %
Administration & Office Support	322	7.42 %
Mining, Resources & Energy	53	1.22 %
Manufacturing, Transport & Logistics	217	5.00 %
Accounting	252	5.81 %
Engineering	222	5.12 %
Sales	98	2.26 %
Call Centre & Customer Service	341	7.86 %
Banking & Financial Services	300	6.92 %
Trades & Services	31	0.71 %
Information & Communication Technology	257	5.92 %

Healthcare & Medical	339	7.81 %
Advertising, Arts & Media	123	2.84 %
Retail & Consumer Products	139	3.20 %
Hospitality & Tourism	94	2.17 %
Construction	165	3.80 %
Human Resources & Recruitment	133	3.07 %
Design & Architecture	46	1.06 %
Legal	60	1.38 %
Consulting & Strategy	92	2.12 %
Real Estate & Property	61	1.41 %
Government & Defence	118	2.72 %
Marketing & Communications	127	2.93 %
Community Services & Development	36	0.83 %
Sport and Recreation	9	0.21 %
Insurance & Superannuation	52	1.12 %
Farming, Animals & Conservation	16	0.37 %
Others	211	4.86 %
Seniority		
Senior management	265	4.61 %
Middle management	893	15.52 %
Lower management	1201	20.87 %
Non-managerial executive	1778	30.90 %
Entry level	1240	21.55 %
Not applicable	377	6.55 %
Average hours worked per week		
Less than 40 hours per week	2451	38.75 %
40-50 hours per week	2043	47.10%
More than 50 hours per week	614	14.15%
Current work setup		
Fully onsite	2316	53.39 %
Mostly onsite with some remote work	756	17.43 %
Mostly remote with some onsite work	754	17.38 %

Fully remote	512	11.80 %
Work satisfaction		
Extremely satisfied	136	3.14 %
Very satisfied	542	12.49 %
Moderately satisfied	1321	30.45 %
Neither dissatisfied nor satisfied	912	21.02 %
Moderately dissatisfied	767	17.68 %
Very dissatisfied	397	9.15 %
Extremely dissatisfied	263	6.06 %

400 **Table 2.** Prevalence of burnout in the region and across the five countries.

		Burnout	
		<i>N</i>	% (95% CI)
Malaysia	Low	158	6.64 (5.64 – 7.64)
	Average	839	35.24 (33.31 – 37.16)
	High	778	32.68 (31.00 – 34.56)
	Very High	606	25.45 (23.70 – 27.20)
Singapore	Low	17	4.24 (2.27 – 6.21)
	Average	116	28.93 (24.49 – 33.37)
	High	164	40.90 (36.01 – 45.71)
	Very High	104	25.94 (21.65 – 30.22)
Indonesia	Low	16	4.74 (2.48 – 7.02)
	Average	106	31.45 (26.50 – 36.41)
	High	126	37.38 (32.22 – 42.55)
	Very High	89	26.40 (21.70 – 31.11)
Philippines	Low	48	3.94 (2.85 – 5.03)
	Average	309	25.35 (22.91 – 27.79)
	High	404	33.14 (30.50 – 35.78)
	Very High	458	37.57 (34.85 – 40.29)
Total	Low	239	5.51 (4.83 – 6.19)

Average	1370	31.58 (30.20 – 32.96)
High	1472	33.93 (32.52 – 35.34)
Very High	1257	28.98 (27.63 – 30.33)

Provisional

402 **Table 3.** Prevalence of anxiety, depression, and stress in the region and across the five countries.

		Anxiety		Depression		Stress	
		N	% (95% CI)	N	% (95% CI)	N	% (95% CI)
Malaysia	Normal	802	33.73 (31.83 – 35.62)	666	27.97 (26.17 – 29.77)	1009	42.38 (40.39 – 44.36)
	Mild	174	7.31 (6.26 – 8.35)	230	9.66 (8.47 – 10.85)	264	11.09 (9.83 – 12.35)
	Moderate	440	18.48 (16.92 – 20.03)	453	19.03 (17.45 – 20.60)	364	15.29 (13.84 – 16.73)
	Severe	220	9.24 (8.08 – 10.40)	315	13.23 (11.87 – 14.59)	406	17.05 (15.54 – 18.56)
	Extremely Severe	774	32.51 (30.63 – 34.39)	717	30.11 (28.27 – 31.96)	338	14.20 (12.79 – 15.60)
Singapore	Normal	103	25.69 (21.41 – 29.96)	77	19.20 (15.35 – 23.06)	116	28.93 (24.49 – 33.36)
	Mild	27	6.73 (4.28 – 9.19)	28	6.98 (4.49 – 9.48)	54	13.47 (10.13 – 16.81)
	Moderate	89	22.19 (18.13 – 26.26)	80	19.95 (16.04 – 23.86)	94	23.44 (19.30 – 27.59)
	Severe	47	11.72 (8.57 – 14.87)	68	16.96 (13.28 – 20.63)	90	22.44 (18.36 – 26.53)
	Extremely Severe	135	33.67 (29.04 – 38.29)	148	36.91 (32.18 – 41.63)	47	11.72 (8.57 – 14.87)
Indonesia	Normal	64	18.99 (14.80 – 23.18)	63	18.69 (14.53 – 22.86)	89	26.41 (21.70 – 31.12)
	Mild	18	5.34 (2.94 – 7.74)	23	6.82 (4.13 – 9.52)	51	15.13 (11.31 – 18.96)
	Moderate	72	21.36 (16.99 – 25.74)	64	18.99 (14.80 – 23.18)	72	21.36 (16.99 – 25.74)
	Severe	56	16.62 (12.64 – 20.59)	57	16.91 (12.91 – 20.91)	67	19.88 (15.62 – 24.14)
	Extremely Severe	127	37.69 (32.51 – 42.86)	130	38.58 (33.38 – 43.77)	58	17.21 (13.18 – 21.24)

Philippines	Normal	203	16.65 (14.56 – 18.74)	163	13.37 (11.46 – 15.28)	284	23.30 (20.92 – 25.67)
	Mild	64	5.25 (4.00 – 6.50)	88	7.22 (5.77 – 8.67)	142	11.65 (9.85 – 13.45)
	Moderate	188	15.42 (13.40 – 17.45)	187	15.34 (13.32 – 17.36)	228	18.70 (16.51 – 20.89)
	Severe	149	12.22 (10.38 – 14.06)	175	14.36 (12.39 – 16.32)	322	26.42 (23.94 – 28.89)
	Extremely Severe	615	50.45 (47.64 – 53.26)	606	49.71 (46.91 – 52.52)	243	19.93 (17.69 – 22.18)
Total	Normal	1173	27.04 (25.72 – 28.36)	969	22.34 (21.10 – 23.58)	1498	34.53 (33.12 – 35.95)
	Mild	283	6.52 (5.79 – 7.26)	369	8.51 (7.68 – 9.34)	511	11.78 (10.82 – 12.74)
	Moderate	789	18.19 (17.04 – 19.34)	784	18.07 (16.93 – 19.22)	758	17.47 (16.34 – 18.60)
	Severe	472	10.88 (9.95 – 11.81)	615	14.18 (13.14 – 15.22)	885	20.40 (19.20 – 21.60)
	Extremely Severe	1621	37.37 (35.93 – 38.81)	1601	36.91 (35.47 – 38.34)	686	15.81 (14.73 – 16.90)

Table 4. Association between sociodemographic variables and psychological distress with burnout

Variable	Burnout		
	Odds Ratios (OR)	95% CIs	p-values
Gender			
Male	1.00		
Female	1.22	1.00 – 1.49	0.055
Other	1.42	0.32 – 7.32	0.658
Age			
18-29	1.00		
30-39	0.83	0.67 – 1.03	0.088
40-49	0.86	0.62 – 1.19	0.363
50-65	0.86	0.49 – 1.51	0.614
Country			
Malaysia	1.00		
Singapore	1.00	0.73 – 1.36	0.949
Indonesia	0.69	0.50 – 0.96	0.026
Philippines	1.10	0.87 – 1.38	0.421
Relationship status			
Single	1.00		
Casually dating	0.83	0.58 – 1.14	0.222
In a long-term relationship	0.77	0.60 – 1.00	0.050
Married or in a domestic partnership	0.98	0.78 – 1.22	0.827
Divorced, or separated	0.90	0.49 – 1.67	0.727
Widowed	0.52	0.12 – 2.20	0.382
Industry			
Science & Technology	1.00		
Education & Training	0.76	0.35 – 1.64	0.496
Administration & Office Support	0.82	0.37 – 1.78	0.621
Mining, Resources & Energy	0.79	0.27 – 2.29	0.673
Manufacturing, Transport & Logistics	0.73	0.32 – 1.64	0.456
Accounting	0.84	0.37 – 1.84	0.660
Engineering	0.90	0.40 – 2.01	0.806
Sales	0.96	0.38 – 2.43	0.934
Call Centre & Customer Service	0.78	0.35 – 1.69	0.530
Banking & Financial Services	0.80	0.36 – 1.74	0.578
Trades & Services	1.57	0.44 – 5.97	0.498
Information & Communication Technology	0.75	0.34 – 1.65	0.482
Healthcare & Medical	0.80	0.36 – 1.73	0.578
Advertising, Arts & Media	0.50	0.21 – 1.18	0.116
Retail & Consumer Products	0.93	0.39 – 2.15	0.862
Hospitality & Tourism	1.49	0.57 – 3.87	0.417
Construction	0.84	0.36 – 1.92	0.676

Human Resources & Recruitment	1.35	0.56 – 3.22	0.506
Design & Architecture	0.64	0.22 – 1.87	0.417
Legal	0.87	0.31 – 2.41	0.787
Consulting & Strategy	1.11	0.45 – 2.68	0.819
Real Estate & Property	1.82	0.65 – 5.05	0.252
Government & Defence	0.95	0.38 – 2.34	0.904
Marketing & Communications	1.11	0.45 – 2.68	0.819
Community Services & Development	0.66	0.21 – 2.09	0.488
Sport and Recreation	0.85	0.07 – 5.78	0.886
Insurance & Superannuation	0.44	0.15 – 1.26	0.130
Farming, Animals & Conservation	1.30	0.24 – 8.83	0.775
Others	1.19	0.52 – 2.68	0.673
Seniority			
Entry level	1.00		
Senior management	0.85	0.53 – 1.37	0.509
Middle management	1.19	0.86 – 1.64	0.294
Lower management	1.18	0.89 – 1.56	0.259
Non-managerial executive	1.11	0.85 – 1.43	0.444
Not applicable	1.14	0.73 – 1.79	0.561
Average hours worked per week			
40-50 hours a week	1.00		
Less than 40 hours a week	1.23	1.02 – 1.48	0.034
More than 50 hours a week	1.36	1.03 – 1.81	0.030
Current work setup			
Fully onsite	1.00		
Mostly onsite with some remote work	1.08	0.85 – 1.37	0.542
Mostly remote with some onsite work	0.96	0.75 – 1.22	0.718
Fully remote	0.85	0.64 – 1.15	0.296
Work satisfaction			
Extremely satisfied	1.00		
Very satisfied	1.04	0.60 – 1.80	0.889
Moderately satisfied	3.04	1.82 – 5.10	<0.001
Neither dissatisfied nor satisfied	5.12	3.03 – 8.72	<0.001
Moderately dissatisfied	7.68	4.50 – 13.23	<0.001
Very dissatisfied	16.18	8.82 – 30.05	<0.001
Extremely dissatisfied	8.79	4.51 – 17.47	<0.001
Depression			
Normal or mild	1.00		
Moderate	3.04	2.41 – 3.83	<0.001
Severe or extremely severe	6.39	4.98 – 8.21	<0.001
Anxiety			
Normal or mild	1.00		
Moderate	1.99	1.58 – 2.52	<0.001
Severe or extremely severe	2.25	1.75 – 2.88	<0.001

Stress

Normal or mild	1.00		
Moderate	2.17	1.70 – 2.78	<0.001
Severe or extremely severe	5.50	4.11 – 7.39	<0.001

406 Bolded p-values represent $p < 0.005$. McFadden's adjusted $R^2 = 0.598$; Cragg-Uhler
407 (Nagelkerke) $R^2 = 0.755$; Akaike information criterion (AIC) = 3513.820; Hosmer &
408 Lemeshow test $\chi^2 = 5.884$, $p > 0.05$; Multicollinearity checks indicated no multicollinearity
409 between all listed factors (GVIF < 5.00).

410 **8 Data availability statement**

411 The raw data supporting the conclusions of this study are available from the corresponding
412 author upon request.

413 **9 Ethics statement**

414 This study involves use of secondary retrospective data obtained from human participants and
415 received institutional ethics approval from the Medical Research & Ethics Committee,
416 Ministry of Health Malaysia (NMRR ID-22-02193-GDR).

417 **10 Author contributions**

418 AFAA and TO conceptualised the study. AFAA acquired the data and performed the
419 statistical analysis. AFAA wrote the original draft of the manuscript, and TO reviewed and
420 edited the manuscript. All authors approved the final version of the manuscript.

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429 **13 Conflict of Interest**

430 Authors AFAA and TO are employed by Naluri Hidup Sdn Bhd. The authors declare that this
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432 involvement in the study: study design, data collection, analysis and interpretation, the
433 writing of this article and the decision to submit it for publication.

434 **14 Supplementary materials**

435 This manuscript contains supplementary materials.

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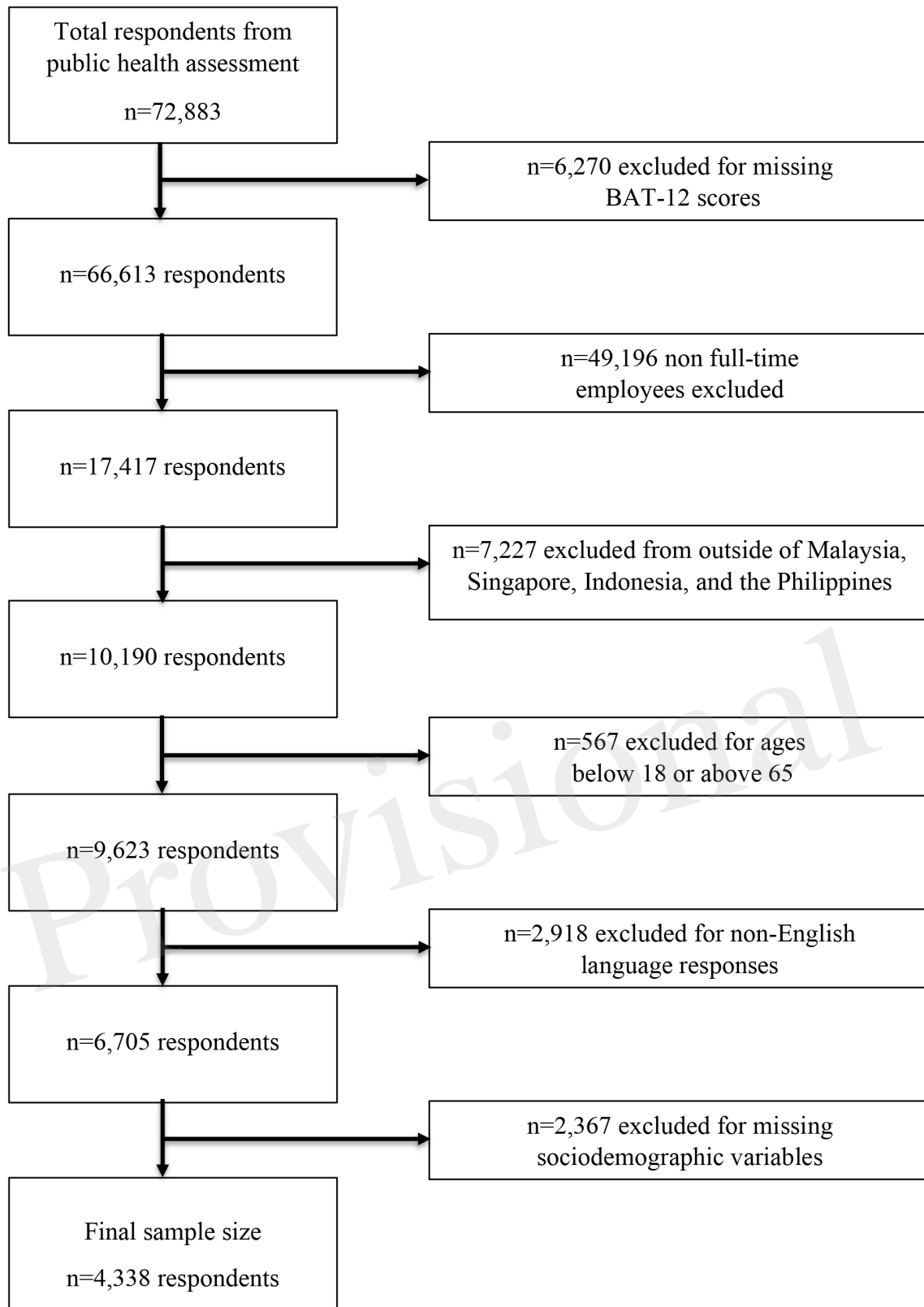


Figure 1. Flow chart showing participant inclusion flow into the study's final sample size.