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Longitudinal Effect of Emotional and Physical Demands on Health-related Behaviour among Malaysian Workers

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Abstract
The current study examines the effect of job demands on psychological health-related behaviour among Malaysian workers. It is predicted that emotional and physical demands lead to future work-related burnout and depression and affect sleep patterns. This study was conducted among 345 Malaysian workers using a longitudinal two-wave survey. The data were analysed using AMOS software using Structural Equation Modelling (SEM). The results showed that emotional demands predict future work-related burnout, while depression predicts sleep problems through time. Overall, the current study shows that emotional and physical job demands affect employees' psychological health over time.
Keywords: Emotional Demands, Physical Demands, Work-Related Burnout, Depression, Sleep Problems

Introduction

The modern workforce may increase the risk of psychological health issues (Montgomery et al., 2015; Nasharudin et al., 2020; Schaufeli, 2015). The current reports show that Asian employees experience high job demands due to workload at the workplace (International Labour Organization [ILO], 2018). Due to these demanding work conditions, the current study examines job demands' effect on employees' psychological health. This study specifically investigates the effect of emotional and physical demands on employees' sleep problems through work-related burnout and depression.

The study highlights the importance of this research to the body of knowledge. Firstly, we used a population-based survey instead of focusing on specific occupational groups, such as medical/health industry workers (Gelsema et al., 2006; Demerouti et al., 2009); human services workers (Rogala et al., 2015); and educators (van den Tooren et al., 2011). Using a

population-based survey can cover the wide range of the population distribution in Selangor that reflects the Malaysian population comprising the three main ethnicities of Malaysia (e.g., Malay, Chinese, and Indian, see details in Idris et al., 2011).

Secondly, studies in Malaysia shows that demanding work tasks increase the risk of work-related burnouts (Yulita et al., 2014) due to workload, excessive multi-task, and the need to work overtime. In addition, a report by the Malaysian's Department of Occupational Safety and Health (DOSH, 2020) reported that the number of Malaysian employees experiencing emotional and psychological health-related issues had increased between 2005 and 2020. Instead of focusing on general aspects of job demands, the current study aims to the two specific types of job demands, namely physical and emotional demands. Physical demands refer to workplace movements generally required to perform a critical task supporting critical work functions, including standing for long hours, frequent movements, carrying/ lifting heavy things, and improper posture during work. Meanwhile, emotional demands refer to situations where employees need to control emotions by not showing real emotions. For example, when meeting and dealing with unexpected client's behaviour and constantly encountering negative events at work (de Jonge, Dormann, & van den Tooren, 2008).

Job Demands Predict work-related Burnout and Depression

The basic premise of the job demands-resources (JD-R) model states that job demands are the required tasks that employees must complete to achieve organisational targets (Bakker & Demerouti, 2007, 2018). Specifically, Demerouti and Bakker (2011, p. 2) defined job demands as:

> "those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs".

In the current study, job demands are expected to increase employees' sleep problems due to psychological-related symptoms, specifically work-related burnout and depression.

Scholars have argued that high demanding work demands predict burnout and depression (Bianchi et al., 2015) even though depression may occur after longer exposure to high working demands than burnout (Ahola & Hakanen, 2007; Xanthopoulou et al., 2007). The association between job demands and burnout and/or depression has been highlighted in the conservation of resources (COR) theory (Hobfoll et al., 2018). The COR postulates that coping with high job demands with low resources will demand higher effort and energy. Subsequently, this situation could lead to work-related burnout and depression among employees.

This finding is supported by Schaufeli et al (2009) that found that demanding emotional circumstances and overload lead to employees' burnout. While a study by Melchoir et al., 2007 discovered that job demands could lead to depression as employers demonstrate physiological fatigue, emotional exhaustion, and distress. Recent studies also found that psychological demands increase the symptoms of depression when employees are

unable to cope with job stress (Niedhammer et al., 2015; Muhamad Nasharudin et al., 2020). Moreover, Afonso, Fonseca, and Pires (2017) found that excessive working hours increase anxiety, negatively affecting employees' depressive symptoms. Therefore, it is predicted that:

Hypothesis 1: Emotional demands (at Time 1 [T1]) and physical demands (at Time 2 [T2]) predict change (at T2) in work-related burnout.

Hypothesis 2: Emotional demands (at T1) and physical demands (at T1) predict change (at T2) in depression.

Work-related Burnout and Depression Predict Sleep Problems

The current study also examines the effect of work-related burnout and depression on employees' sleep problems. In general, high workloads demand high energy from employees, which could make them force extra energy cause them to feel psychologically drained. Subsequently, it can lead to employees' burnout (Bianchi & Schonfeld, 2020; Hakanen & Schaufeli, 2012). So far, research has revealed that burnout and/or depression can lead to psychological health issues such as angry outbursts, loss of interest in work activities and a feeling of sadness/ hopelessness, and incompetence (for review, see (Bakker & Costa, 2014; Bianchi & Schonfeld, 2020; Shirom & Ezrachi, 2003). For example, rumination at work could cause physiological/ emotional fatigue leading to insomnia or sleep difficulties. (Querstret and Cropley, 2012)

Similarly, Knudsen, Ducharme and Roman (2007) discovered that burnout and overthinking at night could increase the likelihood of sleep difficulty. Kubota et al (2010) also reported that burnout leads to various sleep issues, such as not feeling well-rested after a night's sleep, irregular sleep/ wake cycle, and waking up during the night. These prolonged sleep problem symptoms will affect an individual's physiological and psychological health. Recent studies show that job burnout can lead to non-restorative sleep patterns, such as insomnia (Metlaine et al., 2018).

In today's work climate, demanding work conditions can increase psychological health issues, as shown by the increase of depression among employees (Hakanen & Schaufeli, 2012; Metlaine et al., 2018). Bianchi et al (2015) discovered that depression triggered sleep problems among stressed workers. Knudsen et al (2007) found that full-time American workers often experience depressive symptoms, particularly difficulties falling asleep and maintaining sleep. This study also found that depressive symptoms can make individuals feel restless and tired even after waking up in the morning. Research also found that depressive symptoms, specifically, anxiety can increase sleep disturbance among workers in high demanding work conditions (Yue et al., 2021). Hence, this study predicts that:

Hypothesis 3: Changes in work-related burnout (at T1) predicts future sleep problems (at T2): the higher the level of work-related burnout, the greater the sleep problems.

Hypothesis 4: Depression (at T1) predicts future sleep problems (at T2): the higher the level of depression, the greater the sleep problems.

Hypothesis 5: Change in work-related burnout and change in depression act as mediators in the relationships of job demands (at T1) with sleep problems (at T2). The mediators affect the association between job demands (at T1) and sleep problems (at T2).

Arguments on the association between job demands, burnout, depression, and sleep problems could be integrated from the job demands-resources (JD-R) theory which stipulates that high job demands trigger negative psychological health among workers through the health impairment process (Bakker & Demerouti, 2017). The JD-R has postulated that high demands with low job resources can increase emotional exhaustion, physical fatigue, drowsiness, sadness, loss of interest, loss of hope, anxiety, loneliness and anger among stressed workers (Bakker & Demerouti, 2007). In this regard, job demands are often associated with an individual's health-related behaviour, specifically burnout, depression, and sleep problems. Therefore, this study model is proposed based on the JD-R theory, as illustrated in Figure 1.

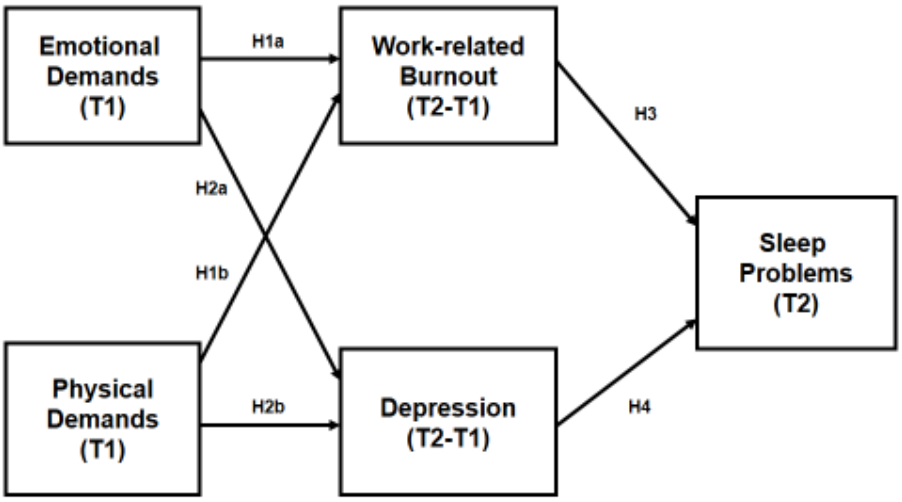

Figure 1: Proposed study model: relationship of job demands to health-related behaviour

Methods

Participants

This study was conducted using household maps provided by the Malaysian Department of Statistics. Data were collected from households in nine districts in Selangor, Malaysia, during house visits conducted on weekdays and weekends. The questionnaires were distributed among working individuals and were collected at the end of the visit. Out of the 1280 residents approached at Time 1 (T1), 583 agreed to participate (response rate of 45.6%). The author then approached the same participants after four months (T2), and about 353 questionnaires were returned for the second round. After screening, only 345 samples were used for final analysis. The rest of the samples are considered outliers and need to be removed from analysis to get better estimates. Ethical approval was obtained from the university/ institution related to this work.

Most of the study's participants are working in the private sector (62.9%). Most of them work in administrative positions (N-41; 15.1%). Meanwhile, 110 (31.8%) are aged

between 41 and 50 years; and 191 (56.2%) received a high school level education. Subsequently, 204 (59.1%) respondents are men, and 141 (40.9%) were women. Lastly, most respondents (N=312, 90.4%) are Malay, and 319 or 92.5% are Muslims.

Instrument

Job Demands

This study used the demand-induced strain compensation (DISC 2.1) questionnaire with 11 items developed by de Jonge et al. (2009). The DISC questionnaire measures two sub-dimensions of job demands: emotional demands (six items) and physical demands (five items). The Cronbach's Alpha of emotional demands at T1 is 0.85, and physical demands at T1 is 0.89.

Work-related Burnout

This study used the Copenhagen Burnout Inventory (CBI) (Kristensen et al., 2005) scale, consisting of seven items. The Cronbach's Alpha for work-related burnout at T1 and T2 is 0.90.

Depression

This study used nine items from the Patient Health Questionnaire (PHQ) Depression Scale (Kroenke & Spitzer, 2002). The Cronbach's Alpha for depression at T1 and T2 is 0.89 and 0.83, respectively.

Sleep Problems

This study used 8 items from Kubota et al. (2010) to measure sleep problems. The Cronbach's Alpha for sleep problems is 0.76 at T1 and T2.

Statistical Analysis

The data were analysed using the AMOS 5 software package (Arbuckle, 2003). The five fit indices recommended by Peugh and Feldon (2020) were used to test the study's model as the following: the goodness-of-fit index (GFI); the comparative fit index (CFI); the Tucker–Lewis index (TLI); the root mean square error of approximation (RMSEA); and chi-square divided by the *df* value (CMIN/*df*). The cut-off values of GFI, CFI and TLI must be equal to or greater than 0.90, while the best value of RMSEA would be equal to or smaller than 0.08.

This study used the residual change scores (Δ T2-T1), as recommended by Schaufeli et al. (2009), to examine the changes in mediator variables. This method is more suitable for this study because it can reduce some errors, as it has two different scores on the mediator variables at T1 and mediator variables at T2. Based on Pitts, West and Tein (1996), measurement errors can occur on mediator variables over time, for instance, between depression at T1 and depression at T2. Therefore, using a residual change scores approach would diminish errors that co-vary over time. Furthermore, based on the recommendation of Smith and Beaton (2008), this study undertook regression of the T2 scores of the variables (i.e., work-related burnout and depression) on the corresponding T1 scores to obtain the changes in scores.

The direct-effect model (M1), full mediation model (M2), partial mediation model (M3), and several alternative partial mediation models (M4) were tested to examine the

hypothesised model. In M1, we regressed the T2 variables on T1 variables (e.g., sleep problems at T2 on emotional demands at T1). For M2, we undertook regression for all outcome variables on mediator variables (e.g., sleep problems at T2 on the residual changes of work-related burnout). All mediator variables were regressed on the independent variable (e.g., mediator variables on emotional demands at T1). Next, the researcher regressed all outcome variables on all mediator variables and the independent variables as for M3.

The mediation analysis steps recommended by Baron and Kenny (1986) were used in this study. First, the study examined the relationship between the independent variable (IV) and the dependent variable (DV) (i.e., emotional demands at T1 to sleep problems at T2). Second, the study determined the significance of the association between the independent variable (IV) and the mediator and between the mediator and the dependent variable (DV). Third, while full mediation occurs when the relationship from IV to DV is no longer significant, partial mediation is considered when the association from IV to DV is still significant.

Results

The means, standard deviations and correlations of the variables are presented in Table 1.

Table 1: Means, standard deviations and correlations between study variables

Variables	M	SD	1	2	3	4	5	6	7
1. Age	2.62	0.97	-						
2. Education	1.59	0.79	-0.13*	-					
3. Emotional job demands at T1	3.17	0.78	-0.25*	0.15**	-				
4. Physical job demands at T1	2.64	0.92	0.05	-0.12*	0.22**	-			
5. Residual change: work-related burnout	0.00	0.75	0.12*	-0.07	0.16*	0.28**	-		
6. Residual change: Depression	0.00	0.96	-0.12*	-0.02	0.03	0.10*	0.29**	-	
7. Sleep problems at T2	2.61	0.91	-0.02	-0.13*	0.16*	0.16**	0.19**	0.20**	-

Notes: M=Mean; SD=standard deviation; T1=Time 1; T2=Time 2; N=345, Significance level: *$p< .05$; **$p< .01$

Table 2**:** *Cfa Tests For Measurement Models*

Models	**χ^2**	***df***	**GFI**	**CFI**	**TLI**	**RMSEA**	**AIC**	**CMIN/*df***
1) a. Two-factor model (ED & PD at T1)	132.307	40	0.93	0.95	0.93	0.07	184.307	3.308
b. Two-factor model (WBO & DEP at T1)	278.005	102	0.90	0.94	0.93	0.07	346.005	2.726
c. Two-factor model (WBO & DEP at T2)	335.250	102	0.90	0.92	0.91	0.08	60.490	3.421
2) a. Four-factor model with WBO & DEP at T1 (JD, WBO, DEP, SLEEP)	1842.007	554	0.72	0.78	0.76	0.08	1994.007	3.325
b. Four-factor model with WBO & DEP at T2 (JD, WBO, DEP, SLEEP)	2137.208	554	0.70	0.72	0.70	0.09	2289.208	3.858
3) a. Five-factor model with WBO & DEP at T1 (ED, PD, WBO, DEP, SLEEP)	1036.667	548	0.90	0.92	0.91	0.05	1200.667	1.892
b. Five-factor model with WBO & DEP at T2 (ED, PD, WBO, DEP, SLEEP)	1352.196	548	0.90	0.91	0.90	0.06	1516.196	2.468

Notes: Variables tested are job demands (JD) at T1- emotional demands (ED) at T1 & physical demands (PD) at T1, work-related burnout (WBO) at T1 & T2, depression (DEP) at T1 & T2, sleep problem (SLEEP) at T2; χ^2=chi-square; *df*=degrees of freedom; GFI=goodness-of-fit index; CFI=comparative fit index; TLI=Tucker–Lewis index; RMSEA=root mean square error of approximation; AIC=Akaike information criterion; CMIN/*df*=chi-square divided by the *df* value

Table 3: *Comparison of Study Models*

Models	**χ^2**	***df***	**GFI**	**CFI**	**TLI**	**RMSEA**	**AIC**	**CMIN/*df***
M1. Direct effect model	186.172	72	0.92	0.94	0.92	0.07	252.172	2.586
M2. Full mediation model	164.320	70	0.94	0.95	0.93	0.06	234.320	2.347
M3. Partial mediation model	155.474	68	0.94	0.95	0.94	0.06	229.474	2.286
M4 (a). Alternative partial mediation (ED,WBO,SLEEP)	218.102	74	0.91	0.92	0.91	0.07	280.102	2.947
M4 (b). Alternative partial mediation (PD,WBO, SLEEP)	196.056	73	0.92	0.93	0.91	0.07	260.056	2.686
M4 (c). Alternative partial mediation (ED,DEP,SLEEP)	189.183	73	0.93	0.94	0.92	0.07	253.183	2.592
M4 (d). Alternative partial mediation (PD,DEP,SLEEP)	187.585	73	0.93	0.94	0.92	0.07	251.585	2.570

Notes: Age and education are controlled; χ^2 =chi-square; *df*=degrees of freedom; GFI=goodness-of-fit index; CFI=comparative fit index; TLI=Tucker–Lewis index; RMSEA=root mean square error of approximation; AIC=Akaike information criterion; CMIN/*df*=chi-square divided by the *df* value

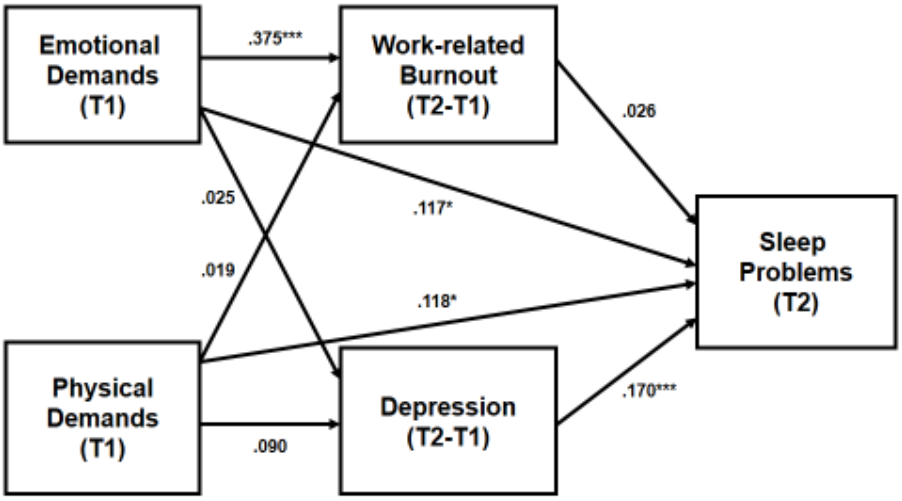

Figure 2: Final model
Notes: N=345; Standard path coefficients; T1=Time 1; T2=Time 2; *p<.05; **p<.01; ***p<.001

A confirmatory factor analysis (CFA) was conducted to check the empirical differences between the measurements of studied variables (as shown in Table 2). First, the CFA results showed that the two-factor model of emotional demands and physical demands has a good fit with χ^2=132.307; df=40 GFI=0.93, CFI=0.95, TLI=0.93; RMSEA=0.07 and CMIN/DF=3.308. Secondly, results showed that the two-factor model at both T1 and T2 (T1: χ^2=278.005; df=102; GFI=0.90; CFI=0.94; TLI=0.93; RMSEA=0.07; CMIN/DF=2.726 and T2: χ^2=335.250; df=102; GFI=0.90; CFI=0.92; TLI=0.91; RMSEA=0.08; CMIN/DF=3.421). It was found that work-related burnout and depression are the two correlated factors that better fit the study's data. Third, several factor analyses were conducted regarding job demands, work-related burnout, depression, and sleep problems. As presented in Table 2, the CFA showed that the five-factor model (with work-related burnout, depression, and sleep problems at both T1 and T2) has the best fit (T1: χ^2=1036.667; df=548; GFI=0.90; CFI=0.92; TLI=0.91; RMSEA=0.05; CMIN/DF=1.892 and T2: χ^2=1352.196; df=548; GFI=0.90; CFI=0.91; TLI=0.90; RMSEA=0.06; CMIN/DF=2.568) as compare to the four-factor model. The results indicate that emotional demands, physical demands, work-related burnout, depression, and sleep problems, were distinct, respectively.

Next, factorial invariance analysis was conducted for the mediator variables at T1 and T2 to measure if the scales' factor loadings remained identical across time. A freely estimated (unconstrained) model was compared with a constrained model in which all factor loadings at T1 and T2 were equal across time. For work-related burnout, a chi-square difference test between unconstrained and constrained models showed a p-value of *.63,* which is greater than *.05*. For the depression, a chi-square difference test between both models indicated a p-value of *.56,* which is greater than *.05*. The non-significant results specified that the factor loadings of all work-related burnout and depression scales are equivalent across time.

As shown in Table 3, all tested models reached adequate fit indices values. The direct effect model (M1) fit the data well with GFI=0.92, CFI=0.94, TLI=0.92 and RMSEA=0.07. Likewise, M2 model showed a good fit indices with GFI=0.94, CFI=0.95, TLI=0.93 and RMSEA=0.06. While M3 model also presented a good model fit with GFI=0.94, CFI=0.95, TLI=0.94 and RMSEA=0.06. All the alternative partial models also reached reasonable values. As M1 to M4 showed good fit indices, the best fit models were compared using CMIN/*df* values. We followed the recommendation of Hooper et al (2008) to use the CMIN/*df* values, with the lowest value representing the best model fit. In comparing all seven models, M4 (a) had the highest CMIN/*df* value with 2.947, followed by M4 (b; 2.686), M4 (c; 2.592), M1 (2.586), M4 (d; 2.570), and M2 (2.347). Overall, we can conclude that M3 has the best model fit for our data. Thus, the model was used to evaluate our hypotheses, as presented in Figure 2.

Hypothesis 1 (H1a and H1b) predicts that at T1, job demands have a significant, positive relationship with work-related burnout. The result indicates a significant relationship between emotional demands and change in work-related burnout (β = .375, $p < .001$) but not for physical demands (β = .019, $p <$ not significant [*ns*]).

Hypothesis 2 (H2a and H2b) predicts that at T1, job demands have a significant, positive relationship with the change in depression. The results revealed that there is no significant relationship between emotional demands (β = .025, $p < ns$) or physical demands (β = .090, $p < ns$) and changes in depression.

Hypothesis 3 (H3) predicts that the change in work-related burnout would positively relate to sleep problems at T2. As shown in Figure 2, the results found that changes in work-related burnout do not predict sleep problems at T2 (β = .026, $p < ns$).

This study also predicts that change in depression would positively relate to sleep problems at T2 (H4). Consistent with the prediction, this study found a significant relationship between change in depression and sleep problems at T2 (β = .170, $p < .001$).

In the final model (as shown in Figure 2), we included the additional path from job demands at T1 to sleep problems at T2. This path showed that emotional demands at T1 (β = .117, $p < .05$) and physical demands at T1 (β = .118, $p < .05$) were associated with sleep problems at T2.

Finally, in H5, we expected that changes in work-related burnout and changes in depression affect the relationships between emotional and physical job demands at T1 with sleep problems at T2. However, the results found the relationship between change in work-related burnout and changes in depression symptoms on sleep problems at T2 is not significant.

Discussion

In general, the current study examined the effects of job demands on Malaysian employees' psychological health. Studies in this field so far have validated the effect of quantitative demands (i.e., workload, excessive work time, multi-tasking, time pressure) on work burnout (for example, see Crawford et al., 2010; Schaufeli & Bakker, 2004; Upadyaya et

al., 2016). In the meantime, this current study offers new insights by examining the effect of the other dimensions of job demands, specifically, emotional and physical job demands, on burnout and depression.

As predicted by the study hypotheses, it was found that depression leads to negative psychological experiences, specifically sleep problems. While previous findings discovered emotional exhaustion increased employees' sleep disturbance (Metlaine et al., 2017; Kim et al., 2011; Peterson et al., 2008), but the current study was proven otherwise. However, the effect of work-related burnout on sleep problems is not significant. These unexpected findings may be due to the different "burnout" scales. Most previous studies have specifically investigated the effect of emotional fatigue/ emotional exhaustion leads to employees' sleep problems. The current study revealed another dimension of burnout: work-related burnout predicted sleep problems. Using the scale of work-related burnout that measured both the specific emotional and physiological aspects of burnout, this study has revealed the distinct pattern of the relationship between burnout and sleep problems.

Unexpectedly, this study's results showed that physical demands were not significant to work-related burnout and depression. This result might be due to the different nature of physical and emotional elements of the job demands. Based on the basic premise of the triple match principle, the effects of a stressor will be most salient when they are matched in the same domain – physical, emotional, or psychological (de Jonge & Dormann, 2006). Specifically, our findings found that specific emotional demands lead to work-related burnout but not physical demands, burnout, and depression. Thus, further research to clarify the relationship between these variables is needed.

The final model shows that job demands directly predict sleep problems. The logic of the phenomenon can be seen when individuals experiencing very high demanding work conditions require more effort, energy and time to cope with their work (Muhamad Nasharudin et al., 2020). Working overtime may disturb individuals' sleep patterns and affect sleep quality (Afonso et al., 2017). Our current finding is also in line with some previous studies that high job demands reduced employees' sleep quality (de Lange et al., 2009).

The study found no effects in light of the mediation pathway. Therefore, this study suggests that work-related burnout and depression changes do not affect the relationships between job demands and sleep problems. However, these findings need to be carefully interpreted, and further investigation is necessary to validate the association of these variables.

Contributions and Implications

The current study has contributed to the body of knowledge about the effect of job demands on the well-being of employees from eastern/Asian cultural backgrounds. This study's findings are consistent with assumptions presented in studies conducted in Western, Christian-dominated countries, even though Malaysia is a Muslim-majority country. While the cultures and religions distinctiveness might cause discrepancies in the findings, our results have shown that both in Malaysia (i.e. collectivism) or in Western countries (i.e. individualism), excessive job demands negatively influence employees' psychological health over time (e.g. see Bakker & Demerouti, 2017; Hakanen et al., 2008; Nasharudin et al., 2020).

Methodologically, the current study enriches the body of research employing the residual change process from Time 1 (T1) to Time 2 (T2). In this sense, this study has addressed an important gap in the literature with the lack of residual change studies in previous research and the importance of this method to avoid covariates over time (Schaufeli et al., 2009; Nasharudin et al., 2020).

Our study also has an important implication to the practice. The current study suggests that the specific job demands (i.e. emotional and physical demands) affecting employees' psychological health could be identified and examined specifically by most organisations. For example, physical demands, such as lifting heavy objects, might affect employees with physical/ physiological strain than cognitive demands or emotional demands. But, it should be noted that our current study was unable to discover the effect of cognitive demands on psychological health, apart from emotional and physical demands. As recommended by several studies (de Jonge & Dormann, 2006; van de Ven et al., 2008; van de Ven & Vlerick, 2013), it is suggested that specific job resources are essential to be provided in its match with specific job demands. Thus this study suggests that organisations provide appropriate resources to effectively reduce the impact of specific health demands.

Limitations and Future Research

Several limitations of the study were identified. Firstly, this study relied on self-reported questionnaires and employees' self-perceptions of their working conditions. Even though this approach is common in psychological research, future research should consider using reports of employees' health (e.g. a medical report) or objective measures of performance (e.g. a supervisor's rating) to reduce the possibility of bias (Podsakoff et al., 2012).

Second, although the current study employed a two-wave longitudinal design, which enabled the researcher to control the stability of the outcomes, using a three-wave data collection would be more efficient. For instance, assessing independent variables (at T1), mediator variables (at T2) and outcome variables (at T3), as recommended by Maxwell and Cole (2007), would be a better practice. However, due to the reluctance of Malaysian employees' to participate in survey research (Idris et al., 2015), collecting data using a three-wave longitudinal study would be highly challenging, if not impossible. Another limitation is that this study used residual change scores (Δ T2-T1) to examine the changes in mediator variables, as recommended by Schaufeli et al (2009). In this regard, while using the latent change score approach to measure the same constructs across time (Li et al., 2014) might be more recommended, this approach requires three or more waves of data collection (McArdle, 2009) which is not suitable to the current study.

Statements and Declarations

Funding

This study was not funded by any grants.

Conflicts of Interest

Author declare that there were no conflict of interest.

Ethics Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent to Participant

Informed consent was obtained from all individual participants included in the study.

Financial Interests

The author have no relevant financial or non-financial interests to disclose.

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