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Original Article

Job characteristics and staying engaged in work of nurses: Empirical evidence from Malaysia

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ABSTRACT

Objective: The purpose of this study is to examine the relationship between job characteristics (job autonomy, job feedback, skill variety, task identity, task significance) and work engagement of nurses in Malaysia.**Methods:** A survey using self-administered questionnaires was used to collect data from a sample of 856 staff nurses working in eight public hospitals in Malaysia. A shortened nine-item version of the Utrecht Work Engagement Scale (UWES-9) was used to measure work engagement. The UWES-9 comprises three dimensions, which was measured with three items each: vigor, dedication, and absorption. Job characteristics (job autonomy, job feedback, skill variety, task identity, task significance) were measured with the corresponding subscales of the Job Diagnostic Survey. Each subscale consisted of three items. Hypotheses were tested using hierarchical regression analysis.**Results:** Findings indicated that all the five demographic variables (age, marital status, education, organizational tenure, job tenure) were unrelated to work engagement. The results further revealed that job autonomy ($\beta = 0.19, P < 0.01$), job feedback ($\beta = 0.10, P < 0.01$), task identity ($\beta = 0.13, P < 0.01$), and task significance ($\beta = 0.08, P < 0.05$) were positively related to work engagement. Skill variety ($\beta = 0.03, P > 0.05$), however, did not affect work engagement.**Conclusion:** Job autonomy, job feedback, task identity, and task significance are important factors in predicting work engagement. The findings of this study highlighted the need to incorporate these core dimensions in nursing management to foster work engagement.© 2019 Chinese Nursing Association. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

What is known?

- Having an engaged nursing workforce is one of the strategic imperatives for healthcare organizations worldwide in light of the multitude of challenges associated with the provision of quality healthcare.
- Most nursing studies on the predictors of work engagement have been conducted in Western, developed countries. Further research is needed to examine the impact of these factors within the context of Malaysia, a developing South-East Asian country.
- Previous Western studies have examined the role of job resources as antecedents of work engagement among various

professions. However, it remains unclear which is the most important predictor of work engagement for nurses.

What is new?

- This study shows that job resources as stipulated in the job characteristics model serve as important predictors of nurses' work engagement.
- The study validated the importance of Hackman and Oldham's (1980) core job dimensions when redesigning nursing jobs in the Malaysian public healthcare sector.

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- In Malaysia, autonomy, feedback, task identity and task significance are more likely to stimulate nurses to stay engaged in their work.

1. Introduction

Organizations generally want their employees to adopt a proactive stance, demonstrate resourcefulness, thrive in the face of difficulties, and be committed in their work. Such traits, which reflect work engagement, are likely to result in higher job performance, which in the aggregate, will lead to greater organizational performance. Hence, the need for engaged workers becomes salient particularly in today's dynamic environment where the quest for organizational survival and success becomes acute. In healthcare, having a cadre of spirited, dedicated, and committed staff is fundamental in delivering superior service. Given the challenges associated with healthcare such as shortage of nurses, need to control rising costs, and an increased call for improved patient care and efficiency gains, having engaged healthcare workers particularly nurses, is extremely important. In light of these concerns and since the nursing profession is stressful, nurses' work engagement becomes strategically critical. In fact, engaged employees are more energetic, motivated, have an effective relationship with their jobs, and are able to cope effectively with their work demands. Since job resources have been reported to act as salient predictors of work engagement, the aim of this paper is to examine the relationship between job resources and work engagement among nurses in Malaysia. Work engagement is characterized by vigor, dedication, and absorption. Job resources relate to the five core job characteristics, which include job autonomy, job feedback, skill variety, task identity, and task significance.

1.1. Work engagement

Work engagement refers to a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption [1]. Vigour reflects a high degree of energy in doing one's work, and a high perseverance level when challenged with demanding work. Dedication mirrors a high degree of commitment, motivation, and a sense of pride in one's work. Absorption signifies a deep concentration in one's work without being aware of the time, and one's difficulty in detaching self from work. Empirically, work engagement has a positive and significant relationship with customer loyalty and employee performance [2,3], job satisfaction and organizational citizenship behaviors [4,5], in-role performance [6], financial returns [7], and employee well-being [3].

Several Western studies have investigated the antecedents of work engagement [8–10]. To the best of our knowledge, research on this subject in Malaysia is in its infancy except for the work of Othman and Nasurdin [11]. Despite these pieces of evidence, Mauno et al. [12] opined that research on work engagement is still lacking because the concept is relatively new. Mauno et al. [12] contended that investigations on work engagement among healthcare employees, especially nurses, are valuable.

Nurses have been acknowledged as the backbone of the healthcare services in Malaysia [13] and play an important role to portray the hospital's competence as they spend most of their time directly with patients [14]. Moreover, since nurses work as partners with doctors; their roles in healthcare are equally important [15]. Due to their boundary-spanning roles, nurses' tasks today have become more challenging and demanding in contributing to the health and wellbeing of society in a country such as Malaysia. Nurses in most hospitals are the ones that provide round-the-clock service [16]. On a more specific note, they play a fundamental role

in administering injections and medication, as well as taking care of patients and relieving their pains [15]. As such, nurses are essential to patients' health maintenance and outcomes. As nurses represent frontline employees of the healthcare industry, their attitudes and behaviors will significantly influence the quality of healthcare services perceived by patients. One such favorable attitude that has been shown to positively affect the display of job performance is work engagement [4]. The need for nurses to perform well in their jobs becomes more acute for those working in public hospitals which are often overcrowded with patients due to the inexpensive treatment provided by these hospitals. In Malaysia, the public healthcare system is heavily subsidized by the government which results in an almost free service at the point of delivery [17].

Dempsey and Reilly [18] emphasized that understanding the current state of nurse engagement in their work is crucial because work engagement has a direct association with improved healthcare services in terms of safety, quality, and patient outcomes [19,20]. An integrative review search on work engagement in nursing by Garcia-Sierra, Fernandez-Castro, and Martinez-Zaragoza [21] demonstrated that quality of care by nurses improves through engagement. The authors discovered that positive work climate, social support from the organization and the role of supervisors through their leadership styles are significant predictors of engagement, which in turn, leads to higher nurses' performance.

1.2. Job resources

Job resources refer to those aspects of the job that may: (a) lessen job demands and the associated physiological and psychological costs, (b) be functional in attaining work goals, and (c) encourage employees' growth, learning, and development [1,22]. According to Bakker and Demerouti [22], job resources are assumed to have motivational potential that ultimately results in positive work outcomes such as enhanced engagement. In the workplace, job resources play two primary roles: extrinsic motivators and intrinsic motivators. Extrinsic, since job resources such as social support from peers are instrumental in the accomplishment of work goals, they aid in the creation of a resourceful work environment [23]. Intrinsically, according to scholars [24,25], the availability of certain job resources such as social support helps fulfill basic human needs while some such as job latitude promotes employees' capacity to grow, learn, and develop.

A nursing job is very demanding [26] especially with the rise in the number and types of ailments and patients as well as the complexity of treatments. In situations where job demands are high leading to greater strain, the availability of job resources helps buffer the negative impact of the former on the latter [24]. In line with Hackman and Oldham's [27] Job Characteristics Model (JCM), resources located at the job level may take the form of the five core dimensions. These dimensions are believed to exist in nursing jobs but in varying degrees based on our discussion with the chief matrons of eight hospitals during our preliminary interview with them. For instance, nursing jobs may often entail (1) high skill variety since nurses have to perform multiple chores including providing in-patient general care, administering medications, and administering blood products, (2) high task significance since their care on the patient would not only affect the wellbeing of the patients but their families as well, (3) high task identity since nurses need to take care of their patients from the time they are warded until discharged, (4) high feedback since the doctors-in-charge and immediate supervisors will likely provide them with information on how their performance affect patient's health, and (5) moderate autonomy since nurses may use their discretion whether to seek a doctor's help or proceed to entertain a patient's requests in their course of duty.

The meta-analytic study by Christian et al. [28] showed that job resources in the form of autonomy, feedback, task significance, task variety, job complexity, problem-solving, and social support were positively related to work engagement. In another study, Bakker and Bal [29] using a sample of 56 Dutch college teachers revealed that job resources consisting of autonomy, performance feedback, learning opportunities, and supervisory coaching were positively associated with weekly work engagement. Salanova and Schaufeli [30] in their study on 386 Spanish technology employees and 338 Dutch telecom managers also found job resources comprising job control, task variety, and feedback to be positively related to work engagement. In addition, Mauno et al. [12] in their longitudinal study involving 409 Finnish healthcare employees discovered that job resources predicted work engagement better than job demands.

Since skill variety, performance feedback, and autonomy have been found to impact work engagement [13,31], and in harmony with the JCM [27], it is expected that these five core job dimensions would have similar effects on nurses' work engagement. Given the functional outcomes associated with having an engaged workforce especially in healthcare and the limited empirical evidence from Malaysia, this study sought to address this literature gap by investigating the effects of skill variety, task significance, task identity, autonomy, and feedback on work engagement among Malaysian nurses. Hence, in line with the extant literature and consistent with the JCM [27], our hypotheses are as follows:

Hypothesis 1. Job autonomy will have a positive relationship with work engagement.

Hypothesis 2. Job feedback will have a positive relationship with work engagement.

Hypothesis 3. Skill variety will have a positive relationship with work engagement.

Hypothesis 4. Task identity will have a positive relationship with work engagement.

Hypothesis 5. Task significance will have a positive relationship with work engagement.

Based on the aforementioned discussion and for the sake of clarity, the research framework is shown in Fig. 1.

2. Methods

This study examined the relationship between job characteristics and work engagement. Thus, the independent variables comprised job characteristics which included job autonomy, job feedback, skill variety, task identity, and task significance. The dependent variable was work engagement. Data were obtained

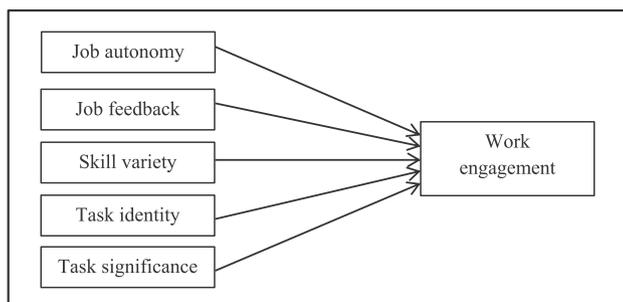


Fig. 1. A hypothesis model of relationship between job characteristics and work engagement of nurses.

from staff nurses working in Malaysian public hospitals using a survey.

2.1. Study design and sample

This study was conducted cross-sectionally among staff nurses working in eight public hospitals in Peninsular Malaysia. Self-administered questionnaires were employed in this survey. To determine the appropriate sample size for this study, power analysis for an F -test of R^2 increase using $G \times \text{Power 3.1}$ [32] was conducted. This formula can be used to estimate the sample size needed to produce a confidence interval estimate with a specified margin of error (precision) or to ensure that a test of hypothesis has a high probability of detecting a meaningful difference in the parameter, thereby, ensuring making accurate conclusions [33]. In this case, in accordance with most researchers, we wish to have a 95% confidence interval estimate or 80% power of our hypothesis test. From our computation, a sample size of 395 is adequate in order to achieve a power of 0.80 with a small to medium effect size at a confidence level of 95%. Nevertheless, initial discussions with the relevant authorities at the Malaysian Ministry of Health and respective public hospitals highlighted the busy work schedules of the nurses which necessitated the need to increase the number of questionnaires to be distributed to ensure a good response rate. Consequently, a total of 1,072 questionnaires were distributed to respondents.

2.2. Ethical consideration

Prior to data collection, several procedures were observed. The Malaysian Ministry of Health requires all research involving medical personnel to be registered online via the National Medical Research Register (NMRR). Once registration has been successful (NMRR-09-875-4753), the next step is to get the approval from each of the participating hospitals. Assistance from each State Clinical Research Centre (CRC) was sought to obtain the signature of approval from each Director of Hospital and Head of Matron at the hospitals. Subsequently, these approvals were submitted online to procure clearance from the Medical Research Ethics Committee (MREC). This process took approximately four months. Once endorsement was obtained, we proceeded to deliver the questionnaires personally to each state hospital in Peninsular Malaysia. Participants were informed of the confidentiality and anonymity of their responses through written consent.

2.3. Measurements

For the purpose of this study, two instruments were employed. A shortened nine-item version of Schaufeli and Bakker's [34] Utrecht Work Engagement Scale (UWES-9) was utilized to measure work engagement. This scale reflects the three dimensions of work engagement: vigor, dedication, and absorption. Respondents indicated their agreement on a 7-point Likert scale ranging from 1 = "never" to 7 = "always". In our analyses, an overall work engagement index was calculated by averaging the sum of the nine items associated with it, with high scores indicating greater levels of work engagement. The Cronbach's α coefficient for this instrument is 0.90.

Subsequently, the subscales of the Job Diagnostic Survey (JDS) adopted from Hackman and Oldham [35] were used to measure the dimension of job autonomy, job feedback, task significance, task identity, and skill variety. Each subscale consists of three items scored on a scale of 1 = "very inaccurate" to 7 = "very accurate". We computed a composite score for each of the dimensions by averaging the sum of the three items associated with it, with high scores

indicating greater levels. Cronbach's α for these scales were 0.78 (job autonomy), 0.74 (job feedback), 0.64 (task significance), 0.73 (task identity), and 0.80 (skill variety) respectively. Following earlier researchers [36,37], selected demographic data (such as age, marital status, education, organizational tenure, and job tenure) were treated as controls.

2.4. Data collection procedures

Data collection commenced after consent had been secured from the Malaysian Ministry of Health and state hospitals. Since the researchers were not allowed to have direct access to the staff nurses due to the hospital guidelines, the "drop-off" and "pick-up" method was employed with the matron-in-charge being responsible in distributing and collecting the questionnaires. Purposive sampling was utilized whereby only staff nurses with job tenure of at least six months were included in the sample. This inclusion criterion was used in accordance to Lashley and Warwick's [38] suggestion that a socialization period of six months in an organization is considered sufficient for employees to evaluate their contribution and to form a stable expectation about the organization. Data collection period took about two months. Of the 1,072 questionnaires distributed, 856 questionnaires were returned, yielding a response rate of 79.87%.

2.5. Data analysis

Descriptive statistical analyses were initially performed to describe the sample. Reliabilities of the measures were assessed using Cronbach's α . The strength and direction of relationships between variables were measured using Pearson's correlation analysis. Finally, the hypotheses were tested using hierarchical regression analysis.

3. Results

3.1. Demographics characteristics

Table 1 presents the demographic characteristics of the sample. As expected, our sample was predominantly females (98.95%) and Malays (90.77%) in terms of ethnicity. A majority of the respondents were married (74.30%) and have undergone some basic training (68.99%). The average age of respondents was 33.02 years and they have been employed in their current hospital for an average of 7.12 years. The nurses were considered experienced since they have

Table 1 Respondent characteristics (n = 856).

Characteristics	n (%)
Gender	
Female	847 (98.95)
Male	9 (1.05)
Marital Status	
Married	636 (74.30)
Unmarried	220 (25.70)
Ethnicity	
Malay	777 (90.77)
Indian	40 (4.67)
Chinese	29 (3.39)
Others	10 (1.17)
Education	
Basic Training	582 (68.99)
Post Basic Training	274 (32.01)
Age, Mean \pm SD (years)	33.02 \pm 8.70
Organizational tenure, Mean \pm SD (years)	7.12 \pm 7.26
Job tenure, Mean \pm SD (years)	9.15 \pm 8.15

been in the job for an average of 9.15 years.

3.2. Descriptive statistics

Table 2 illustrates the descriptive statistics for the study variables. Our results indicate that the sampled nurses experienced relatively high levels of work engagement (5.11 \pm 0.83), task identity (5.10 \pm 0.77), and task significance (5.87 \pm 0.98). On the other hand, the mean levels of job autonomy (4.66 \pm 0.95), job feedback (4.52 \pm 0.45), and skill variety (4.94 \pm 0.78) were perceived to be moderate. The Cronbach's α values for the study variables were considered acceptable as the values were above Sekaran's [39] threshold value of 0.60.

3.3. Correlations analysis of study variables

Pearson correlation analysis revealed the existence of significant correlations between the five dimensions of job characteristics and work engagement ($P < 0.01$) ranging from 0.13 to 0.47 (refer to Table 3). Despite its significance, the strengths of the associations in many cases were relatively weak since most of the values were below Hair et al.'s [40] recommended threshold of 0.40.

3.4. Hierarchical regression results

We tested our hypotheses relating to the relationships between job characteristics and work engagement using hierarchical regression analysis. As previously mentioned in subsection 2.3, in this analysis, we entered five demographic characteristics (which include age, marital status, education, organizational tenure, and job tenure) as our control variables in the first step followed by the five job dimensions in the second step. Our statistical results are presented in Tables 4–5.

In the first step, as shown in Model 1 of Table 5, demography accounted for 4% of the variance in work engagement ($R^2 = 0.04$, f -change = 6.60, $P < 0.01$). All the five demographic variables were found to be unrelated to engagement. However, with the inclusion of the five predictor variables as depicted in Model 2, the R^2 increased to 0.16, indicating that the predictor variables were able to explain an additional 12% of the variance in engagement (R^2 change = 0.12, f -change = 24.04, $P < 0.01$). Again, the five demographic variables were not linked to work engagement. Of the predictor variables, job autonomy ($\beta = 0.19$, $P < 0.01$), job feedback ($\beta = 0.10$, $P < 0.01$), task identity ($\beta = 0.13$, $P < 0.01$), and task significance ($\beta = 0.08$, $P < 0.05$) were found to be positively related to work engagement, thereby, supporting H1, H2, H4, and H5. In contrast, the effect of skill variety on work engagement was insignificant. Thus, H3 was unsupported.

4. Discussion

The main objective of this study was to investigate the effects of job characteristics on work engagement. Our findings revealed that almost all job characteristics were significant predictors of work

Table 2 Mean scores of the study variables (n = 856).

Variables	Mean \pm SD
Work engagement	5.11 \pm 0.83
Job autonomy	4.66 \pm 0.95
Job feedback	4.52 \pm 0.45
Skill variety	4.94 \pm 0.78
Task identity	5.10 \pm 0.77
Task significance	5.87 \pm 0.98

Table 3
Correlations between job characteristics and work engagement ($n = 856$, r).

Variables	Work engagement	Job autonomy	Job feedback	Skill variety	Task identity	Task significance
Work engagement	1	–	–	–	–	–
Job autonomy	0.28	1	–	–	–	–
Job feedback	0.20	0.22	1	–	–	–
Skill variety	0.13	0.17	0.17	1	–	–
Task identity	0.25	0.28	0.19	0.30	1	–
Task significance	0.20	0.14	0.22	0.29	0.47	1

Note: $P < 0.01$.

Table 4
Assignment method of independent variables.

Independent variable	Assignment method
Marital status	Unmarried = 0, Married = 1
Education	Basic training = 0, Post basic training = 1

Table 5
Hierarchical regression results of job characteristics on work engagement ($n = 856$).

Independent variables	Model 1	Model 2	P
	β	β	
Step 1: Control Variables			
Age	0.09	0.08	0.17
Marital status	0.01	0.01	0.20
Education	0.04	- 0.03	0.18
Organizational tenure	- 0.02	- 0.03	2.77
Job tenure	0.14	0.12	2.30
Step 2: Predictor Variables			
Job autonomy	–	0.19	<0.001
Job Feedback	–	0.10	<0.001
Skill variety	–	0.03	0.12
Task identity	–	0.13	<0.001
Task significance	–	0.08	0.04
F	6.60	15.77	<0.001
R^2	0.04	0.16	
Adjusted R^2	0.03	0.15	
R^2 -Change	0.04	0.12	
F -Change	6.60	24.04	

engagement. On a more specific note, job autonomy ($\beta = 0.19$, $P < 0.01$), task identity ($\beta = 0.13$, $P < 0.01$), job feedback ($\beta = 0.10$, $P < 0.01$), and task significance ($\beta = 0.08$, $P < 0.05$) were positively and significantly related to work engagement, providing support for H1, H2, H4, and, H5. The findings suggest that nurses who perceived their jobs as having sufficient autonomy, task identity, feedback, and task significance would become more engaged in their work. The results of this study validated previous findings with regard to the positive and significant relationships between job autonomy, task identity, job feedback, task significance, and work engagement [12,29–32]. Nurses with high task significance, will engage in providing appropriate instructions and information to patients and their families. In other words, nurses are aware that their jobs are very important as they have great impact on patients' physical and psychological health outcomes both during and after hospitalization.

In addition, according to Kahn [41,42], psychological meaningfulness can be attained from job characteristics that provide challenging work, skills variety, the use of personal discretion, and the opportunity to make important contributions. Based on Hackman and Oldham's [27] JCM, jobs that are high on the five core job characteristics provide individuals with intrinsic motivation which leads to higher work engagement [41]. Similarly, Maslach et al. [43] also suggested the significant role of job characteristics in

stimulating work engagement. Moreover, social exchange theory [44] argued that employees who are given challenging and enriched jobs will feel obliged to exhibit higher levels of work engagement. Therefore, nurses who perceive their jobs as being high on task significance, task identity, job feedback, and job autonomy will be more encouraged and motivated to display higher work engagement in their daily jobs.

On the contrary, skill variety was found to be unrelated to work engagement ($\beta = 0.03$, $P > 0.05$), unlike the findings in the study by Salanova and Schaufeli [30]. Hence, Hypothesis 3 was unsupported. One plausible explanation may be because the nurses sampled were relatively experienced in their job as reflected in their mean scores of 9.15 years. Hence, although their tasks are varied, these experienced nurses may have adapted themselves to their work environment and perceive the assorted activities that they perform as part of their work routine. In such a situation, skill variety may not be able to induce them to stay engaged in their work. Another plausible reason for this unforeseen finding may be attributed to the fact that staff nurses working in public hospitals experience heavy workload. This can be inferred from the country's nurse-to-population ratio (1:375) as reported in the local media [45] which is lower than the standard (1:200) set by the World Health Organization. This ratio reflects the prevalence of nursing shortage and evidence gleaned from the 2010 report from the Malaysian Ministry of Health, indicated that the density of local nurses is 1.35 per 1000 people, which is 47.3% lower than the global density of nurses [46]. Moreover, as asserted by Pillay et al. [17], the negligible costs of services provided by public hospitals due to heavy subsidization by the government have contributed to a large number of patients attending public hospitals. As a result, nurses in Malaysian public hospitals are bound to experience a greater workload. For these nurses, the variety of tasks requiring different sets of skills may be judged as part of their generally demanding workload. Thus, to these experienced nurses, skill variety seems to be less beneficial to them since this attribute brings only more tasks and results in the decreased possibility to use their accumulated specialized skills. This line of reasoning concurs with that of Truxillo et al. [47]. Under such circumstances, skill variety may not be able to enhance work engagement.

5. Conclusion

In essence, our results provided empirical evidence demonstrating the positive effects of the core job dimensions comprising autonomy, feedback, task identity, and task significance on work engagement of staff nurses working in public hospitals in Malaysia. This shows that strengthening job-based resources is one plausible strategy to enhance nurses' work engagement. Skill variety, however, was found to be unrelated to work engagement. This unexpected finding may be attributed to the heavy work burden experienced by nurses in Malaysian public hospitals. By using a non-Western sample to test our hypotheses, we have been able to contribute to the on-going debate about the motivational potential

of job resources and enrich the literature on work engagement by expanding the applicability of findings derived from Western societies [1,30] to Malaysia, a South-East Asian country. Malaysia is considered to be a multicultural and multiracial society consisting of Malays, Chinese, Indians and indigenous peoples with a predominantly collectivistic culture [48,49] with an emphasis on values such as harmony, sharing, and caring for others [50]. Thus, besides contributing to the scant literature on work engagement in Malaysia as noted by Othman and Nasurdin [11], empirical evidence from this study adds to the compendium of knowledge in understanding the role of job resources in enhancing work engagement of nurses from a cross-cultural perspective particularly within the context of the healthcare industry.

Despite the contributions of the present study, it is not without limitations. First, this study is limited to nurses and their immediate supervisors working in public hospitals in Peninsular Malaysia. Thus, in future, the same research could be expanded to include nurses from the private hospitals whereby the nature of the job and work environment may be different as suggested by Aryee, Budhwar and Chen [51]. Larger samples from the same industry would improve the generalization of the findings. Second, this study is cross-sectional in nature, which limits the verification of a cause-effect relationship as remarked by Sekaran [52]. Since an individual's attitude and behavior are expected to change over time, future researchers may opt for a longitudinal design to improve the ability to predict causality.

Since job resources in the form of autonomy, feedback, task identity, and task significance were able to enhance nurses' work engagement, public hospital administrators and the Malaysian Ministry of Health may want to redesign nursing jobs in ensuring that adequate amount of resources are provided to nurses. In corroboration with other scholars [53,54], relevant authorities are advised to enhance the level of autonomy for nurses by empowering them with sanctioned authority and encouraging the use of participative management. Frequent job feedback by immediate supervisors is also necessary to ensure that nurses know how well they are performing in their jobs. As for task identity, hospital administrators should support a culture that allows nurses to perform their tasks from beginning to completion in delivering patient care. Finally, to heighten task significance, nursing supervisors should continuously communicate to their subordinates the central role played by the latter in providing quality health services not only to the patient but to society in general. In conclusion, our findings suggest that job resources in the form of the core job dimensions were able to influence nurses to become engaged in their work, leading to greater performance and eventually improved quality of healthcare.

Conflicts of interest

The authors have no conflict of interest to declare.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijnss.2019.09.010>.

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