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ORIGINAL ARTICLE

Effect of time pressure on the burnout of home-visiting nurses: The moderating role of relational coordination with nursing managers

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Abstract

Aim: To examine the main effects of time pressure and relational coordination with nursing managers on burnout and to further analyze the moderating role of relational coordination with nursing managers on the association between time pressure and burnout among home-visiting nurses in Japan.

Methods: This was a cross-sectional, quantitative study comprising 93 home-visiting nurses in Japan. A hierarchical moderated regression analysis with mean-centered predictor variables was used to explore the main effects of time pressure and relational coordination with nursing managers on burnout and the moderating effect of relational coordination with nursing managers on the time pressure and burnout relationship.

Results: Time pressure was a significant positive predictor for emotional exhaustion and depersonalization, respectively. Relational coordination with the nursing managers was significantly and negatively related to depersonalization; however, its main effect on exhaustion was non-significant. Significant interaction effects of time pressure and relational coordination with the nursing managers on exhaustion and depersonalization also were identified. Time pressure was a significant positive contributor to exhaustion and depersonalization when the home-visiting nurses reported low relational coordination with the nursing managers.

Conclusion: Relational coordination with nursing managers is a critical resource for dealing with high time pressure. Strategies, such as establishing a skill-mix program to alleviate nurses' time pressure and creating a supportive work environment to facilitate relational coordination with nursing managers, might be effective ways to prevent burnout, as well as management interventions among home-visiting nurses.

Key words: burnout, home nurses, moderating effect, relational coordination, time pressure.

INTRODUCTION

A rapid growth of the aging population, an increase in early discharge from hospitals, and clients' preference for receiving care at home have resulted in increased demands for visiting nursing services in Japan (Japan Visiting Nursing Foundation, 2015). The annual number of recipients of visiting nursing care in Japan has grown from 386,400 persons in 2009 to 464,500 persons in 2012 (Ministry of Health, Labour and Welfare, 2009a, 2012a). However, the number of home-visiting nurses (HVNs) in Japan remains inadequate, only increasing from 32,541 in 2009 to 33,019 in 2012 (Ministry of Health, Labour and Welfare, 2009b, 2012b). The disequilibrium between a dramatic rise in demands for visiting nursing care and a sustained shortage of HVNs stimulates policy-makers and nursing managers to develop a healthy work environment in order to alleviate a nursing personnel crisis.

Burnout is a critical workplace health indicator. Burnout refers to a psychological syndrome in response to chronic job stressors, which generally comprises

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emotional exhaustion, depersonalization, and low personal achievement (Maslach & Jackson, 1981). Emotional exhaustion describes feelings of being emotionally exhausted due to the work. Depersonalization refers to the detached and impersonal treatment of patients. Personal achievement represents beliefs of competence and successful achievement at work. Recently, as visiting nursing services in Japan have become increasingly specialized and complicated, HVNs have experienced heavy workloads. In addition to providing direct medical treatment, personal care, and educational support to clients, they also are required to exchange information with family physicians, care managers and pharmacists, provide support for informal caregivers, and assist in the effective use of health and social resources (Japan Visiting Nursing Foundation, 2015). Moderate levels of burnout have been reported among Japanese HVNs in previous studies (Mochizuki, Mogi, & Iijima, 2009; Naruse *et al.*, 2012). Reduced levels of burnout can result in increased job satisfaction and reduced turnover rates among nurses, as well as better care quality and patient outcomes (Faller, Gates, Georges, & Connelly, 2011; Labrague *et al.*, 2017). As emotional exhaustion and depersonalization are regarded as two core dimensions of burnout (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), only these two domains were included for burnout evaluation in this study.

Unlike facility nursing care, specific job characteristics could be essential to predict burnout in HVNs. Home-visiting services are characterized primarily by long travel times and working alone at each client's home (Vander Elst *et al.*, 2016). Time pressure refers to stress resulting from inadequate time to complete the required tasks (Thompson *et al.*, 2008). In visiting nursing settings, time pressure is a specific job stressor that is related to burnout, as HVNs must assume multiple roles that can lead to stressful experiences when the time allotted for care is insufficient (Greggs-McQuilkin, 2004). In general, a HVN provides visiting services for an average of three or four clients per day in Japan (Japan Visiting Nursing Foundation, 2015). At each visit, the HVN is required to provide medical treatment and personal care to clients. Then, the HVN moves to another client's home. If the previous client requires more time for care, or if the traffic or weather conditions are bad, the HVN might not arrive at the next client's home on time. Therefore, time pressure is a critical factor that could affect HVNs' occupational health. A prior study proposed that time pressure was significantly associated with exhaustion; nonetheless, its effect on depersonalization was non-significant among community nurses in Netherlands (Jansen, Kerkstra, Abu-Saad, & van der Zee, 1996). The findings of another study indicated that time pressure was a significant positive contributor to exhaustion and depersonalization in Japanese HVNs (Naruse *et al.*, 2012). Therefore, the relationship between time pressure and depersonalization among nurses in home healthcare settings was inconsistent across previous studies.

Supervisor support is a heterogeneous construct with multiple facets: emotional support, instrumental support, and empathy with employees (Weigl *et al.*, 2016). Although two previous studies proposed that supervisor support was linked to burnout among HVNs, the instruments for the evaluation of supervisor support had different meanings, which highlighted emotional support and the quality of the supervisor–employee partnership (Bakker, Demerouti, Taris, & Schreurs, 2003; Jansen *et al.*, 1996).

Increasing trust, open and respectful communication, and establishing positive job relationships are essential for nursing managers to improve care quality. Relational coordination (RC) refers to a mutual reinforcing process of interaction between communication and relationships that is conducted for the purpose of task integration (Gittell *et al.*, 2000). It comprises four communication items (frequency, timeliness, accuracy, and problem-solving) and three relationship items (shared goals, shared knowledge, and mutual respect), which might affect collaborative relationships. Frequent communication keeps healthcare professionals updated on patient progress, timely and accurate communication reduces delays and errors in information exchange, and communication for problem-solving promotes problem solutions (Levin & Cross, 2004). Moreover, effective coordination can be facilitated by shared goals for the work procedure and shared knowledge for each other's work. Mutual respect for the work also can assist healthcare professionals in confirming their professional values and enhancing their inclination to collaborate (Havens, Vasey, Gittell, & Lin, 2010).

In Japan, most home-visiting stations are small-sized and have fewer than five nurses. The HVNs provide >97% of the visiting services on their own, without any assistance from colleagues (Naruse, Sakai, & Nagata, 2016). Therefore, it is critical for nursing managers to frequently, accurately, and timely communicate with HVNs and assist in problem-solving when necessary. Contrasting the supervisor support that earlier studies focused on (Bakker *et al.*, 2003; Jansen *et al.*, 1996), RC with the nursing managers highlights a combination of communication, information-

sharing, and respectful relationships between the nurses and their nursing managers. A previous study demonstrated that RC with the nursing managers was a significant contributor to the work engagement of HVNs (Naruse *et al.*, 2016). Nonetheless, the association between RC with nursing managers and burnout among HVNs has not been examined. In addition, no study has explored whether RC with nursing managers moderates the effect of time pressure on the burnout of HVNs until now. Therefore, the aims of the study were to examine the main effects of time pressure and RC on burnout and to further analyze the moderating role of RC with nursing managers on the association between time pressure and burnout among HVNs in Japan.

Theoretical framework and hypotheses: The Job Demands–Resources model

In order to clarify the relationships between time pressure, RC with the nursing managers, and burnout in HVNs, the Job Demands–Resources (JD-R) model was adopted (Demerouti *et al.*, 2001). According to the model, all the job variables can be classified into job demands and job resources. Job demands refer to the physical, psychological, and organizational job aspects requiring physical and psychological effort and related to physical and psychological costs. Job resources represent the physical, social, and organizational job aspects that can assist in achieving job goals, reducing job demands and related physical and psychological costs, and promoting personal growth and development.

The JD-R model proposes two main processes for the development of burnout. First, long-term exposure to job demands can deplete employees' energy and result in burnout. Second, a lack of job resources can reduce employees' work motivation and cause disengagement and burnout (Demerouti *et al.*, 2001). In addition to the main effects, the model also proposes that job demands and job resources can interact in the prediction of burnout. Job resources might mitigate the negative effect of job demands on burnout. The risk of burnout is highest in work environments where job demands are high and job resources are low (Bakker & Demerouti, 2007).

As exhaustion and depersonalization are two core dimensions of burnout (Demerouti *et al.*, 2001), these were focused on in this study and the following hypotheses were proposed (Fig. 1):

Hypothesis (H)1a: Time pressure as a job demand is positively associated with exhaustion.

Hypothesis (H)1b: Time pressure as a job demand is positively associated with depersonalization.

Hypothesis (H)2a: RC with the nursing managers as a job resource is negatively associated with exhaustion.

Hypothesis (H)2b: RC with the nursing managers as a job resource is negatively associated with depersonalization.

Hypothesis (H)3a: RC with the nursing managers moderates the association between time pressure and exhaustion.

Hypothesis (H)3b: RC with the nursing managers moderates the association between time pressure and depersonalization.

METHODS

Study design and sample

This was a descriptive, cross-sectional study, which was conducted in Miyazaki prefecture, Japan, where there

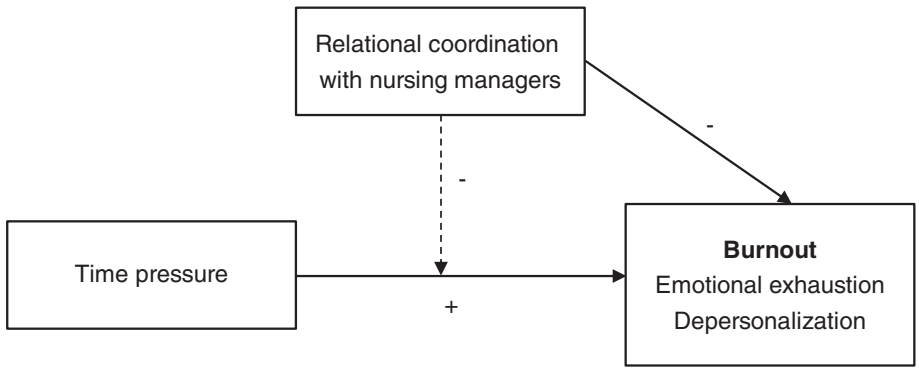

Figure 1 Conceptual framework of the study of relationships between time pressure, relational coordination with nursing managers, and burnout (emotional exhaustion and depersonalization).

are 68 home-visiting nursing agencies (HVNAs). A convenience sampling method was used. Nurses with a nurse license were recruited. Nurses who were nursing managers or who were not working in the agencies (such as because of sick leave or maternity leave) during the survey were excluded.

After contacting the head managers of all HVNAs by mail, only 29 (42.6%) agreed to participate and reported the number of HVNs in their agency. Of the 160 nurses working in these 29 agencies, 119 nurses volunteered and successfully completed the surveys (74.4%). Twenty-four nurses refused to participate in the study, 10 nurses had maternal or sick leave, and seven nurses had obviously spurious responses (filling in each item with the same answer). Moreover, as some agencies have multiple nursing managers and the researchers could not differentiate between the roles of the nursing managers and those of the staff nurses in the sampling phase, 26 nursing managers were excluded from the data analyses due to their answers of "yes" to the manager position item. Thus, 93 HVNs were included in the final analyses.

Instruments

A single item ("How often do you feel time pressure during home visits or when driving?") was used to evaluate the time pressure that the HVNs perceived, which was measured with a 5-point Likert scale ranging from 1 ("not at all") to 5 ("always"). This item was originally developed based on a conceptual definition and clinical expert consultation with four nursing managers in HVNAs. First, from a literature review (Thompson *et al.*, 2008), time pressure was defined as "… stress resulting from insufficient time to complete the required job arrangement." Then, the nursing managers proposed that time pressure, which HVNs usually perceive, is not only caused from care at each client's home, but also from the distance between visits and the traffic or weather conditions. As it is hard for HVNs to differentiate time pressure from care at the client's home and from travel, a single item was developed to assess perceived time pressure among HVNs (Naruse *et al.*, 2012).

The Relational Coordination Scale (RCS) is a 7-item instrument that evaluates the quality of collaborative relationships among practice members. It comprises four communication items and three relationships items. A 5-point Likert scale was used and all the items were scored positively, with higher scores indicating higher levels of RC. An exploratory factor analysis extracted a single factor from the scale and the Cronbach's alpha for the scale was 0.86 (Gittell, Seidner, & Wimbush, 2010). The one-factor Japanese version of the RCS (J-RCS) met well the fit indices and showed good factorial validity in the confirmatory factor analysis. The Cronbach's alpha of the J-RCS was 0.77 (Naruse, Sakai, & Nagata, 2014). In this study, the Cronbach's alpha of the J-RCS was 0.88.

The Japanese Burnout Inventory (J-BI) is a 17-item scale with three dimensions (emotional exhaustion, depersonalization, and personal achievement) (Kubo & Tao, 1992). Each item is scored on a 5-point scale ranging from 1 ("no") to 5 ("always"), with higher scores indicating higher levels of burnout. The Cronbach's alphas of each dimension of the J-BI ranged from 0.84 to 0.86. As emotional exhaustion and depersonalization are two core subscales for burnout assessment (Demerouti *et al.*, 2001), only these two subscales were included in this study, for which the Cronbach's alphas were 0.88 and 0.89 for emotional exhaustion and depersonalization, respectively.

In addition, demographic variables, such as sex, age, and job experience as a HVN and agency characteristics, including the number of HVNs in each agency, also were collected.

Data collection

Before the study, documents portraying the purpose and importance of the study and an informed consent letter were delivered to the head manager of each HNVA by mail. After receiving approval from the head managers, the survey was conducted from November, 2013 to February, 2014. The data collection procedure was conducted by Internet and mail surveys. First, documents explaining the protocol for answering the online questionnaires were delivered to each agency. Next, the head managers logged into the appointed website and answered the items that were related to the agency's characteristics. Finally, the HVNs followed another logging document and completed the online surveys that were related to individual data, the time pressure item, J-RCS, and J-BI. The participants were informed that participation was voluntary and anonymous and that answering the surveys indicated their informed consent. Among those participants, three head managers and 26 HVNs preferred to complete a paper questionnaire; therefore, the researchers mailed them an identical paper version.

Data analyses

The statistical analysis package that was used in the study was IBM SPSS v. 23.0 (IBM Corporation, Armonk, NY, USA). Descriptive analyses were conducted by using means and standard deviations (SDs), frequencies, and percentages. Pearson's correlation analyses were carried out in order to explore the associations among the continuous variables. Independent sample *t*-tests were used to test the differences in exhaustion and depersonalization scores between both subgroups. A hierarchical moderated regression analysis with mean-centered predictor variables was conducted in order to examine the moderating effect of RC with nursing managers on the time pressure and burnout (exhaustion and depersonalization) association (Cohen, Cohen, West, & Aiken, 2003). In step 1, the control variables that were significantly related to exhaustion and depersonalization in the correlation analysis or those that showed significant differences in the exhaustion and depersonalization scores between subgroups in the independent sample *t*-tests were included (Model 1). In step 2, time pressure and RC with the nursing managers were entered to explore their main effects (Model 2). In step 3, the interaction term (time pressure × RC with the nursing managers) was entered (Model 3). One SD above or below the mean was used to classify the subgroups with high or low RC with the nursing managers and the simple slope for the regression of time pressure on exhaustion and depersonalization was calculated, respectively (Aiken & West, 1991). $P < 0.05$ was considered to be statistically significant (two-tailed test).

Ethical approval

Ethical approval was obtained from the Research Ethics Committee of the The University of Tokyo, Japan (Approval No. 10063).

RESULTS

Sample characteristics

Of the 93 respondents in the study, 97.8% were female and 2.2% were male. Their mean age was 43.26 ± 7.98 years, ranging from 27 to 70 years. The average number of years of job experience as a HVN was 6.12 ± 5.57 years and the mean number of years of job experience in the current position was 4.39 ± 4.22 years. In addition, most (67.7%) of the respondents were full-time workers and most (68.8%) of the respondents were employed in a small agency (Table 1).

Table 1 Sample characteristics and descriptive results (n = 93)

Variable	Mean ± SD (range)	N (%)
Individual characteristics		
Sex		–
Male	–	2 (2.2)
Female	–	91 (97.8)
Age (years)	43.26 ± 7.98 (20–70)	
Job experience as a home-visiting nurse	6.12 ± 5.57 (1–31)	–
Job experience in the current position	4.39 ± 4.22 (1–19)	–
Employment status		
Part-time	–	30 (32.3)
Full-time	–	63 (67.7)
Agency characteristics		
Span of control	–	–
Small (<7 nurses)	–	64 (68.8)
Large (≥8 nurses)	–	29 (31.2)
Descriptive results		
Time pressure	2.80 ± 0.94 (1–5)	–
Not at all	–	5 (5.4)
Rarely	–	34 (36.6)
Sometimes	–	32 (34.4)
Often	–	19 (20.4)
Always	–	3 (3.2)
Relational coordination with the nursing managers	4.17 ± 0.71 (1–5)	
Emotional exhaustion	2.46 ± 0.91 (1–5)	–
Depersonalization	1.70 ± 0.70 (1–5)	–

SD, standard deviation.

Descriptive analyses of time pressure, relational coordination with the nursing managers, and burnout

The mean score of time pressure was 2.80 ± 0.94. Forty-two percent of the respondents did not experience or rarely experienced time pressure and 23.6% of the respondents often and always perceived time pressure. The average score for RC with the nursing managers was 4.17 ± 0.71. The average scores on exhaustion and depersonalization were 2.46 ± 0.91 and 1.70 ± 0.70, respectively (Table 1).

Correlation analyses between the study's variables

Time pressure was significantly and positively correlated with exhaustion and depersonalization. Relational

Table 2 Correlation coefficients among the study variables (n = 93)

Variable	1	2	3	4	5	6	7
1. Age	–	0.30**	0.43***	−0.21*	0.05	−0.18	−0.16
2. Job experience as a home-visiting nurse		–	0.65**	0.01	−0.03	0.09	0.09
3. Job experience in the current position			–	−0.12	−0.04	−0.07	0.07
4. Time pressure				–	0.04	0.41***	0.39***
5. RC with the nursing managers					–	−0.18*	−0.24*
6. Emotional exhaustion						–	0.74***
7. Depersonalization							–

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$. RC, relational coordination.

coordination with the nursing managers was significantly and negatively correlated with exhaustion and depersonalization. However, the continuous demographic variables were not significantly related to exhaustion or depersonalization (Table 2).

Moreover, the scores for exhaustion and depersonalization among the full-time nurses were significantly higher than those among the part-time nurses (exhaustion: 2.63 ± 0.91 *vs* 2.11 ± 0.82, respectively, $t = 2.64$, $P < 0.05$; depersonalization: 1.82 ± 0.77 *vs* 1.46 ± 0.44, respectively, $t = 2.40$, $P < 0.05$). However, no significant difference was found in the exhaustion and depersonalization scores between nurses working at a small or large agency (exhaustion: 2.51 ± 0.90 *vs* 2.36 ± 0.96, respectively, $t = 0.75$, $P > 0.05$; depersonalization: 1.70 ± 0.70 *vs* 1.71 ± 0.71, respectively, $t = -0.06$, $P > 0.05$). There also was no significant difference in the exhaustion and depersonalization scores between the female and male nurses (exhaustion: 2.46 ± 0.92 *vs* 2.50 ± 0.84, respectively, $t = -0.06$, $P > 0.05$; depersonalization: 1.71 ± 0.70 *vs* 1.50 ± 0.71, respectively, $t = 0.41$, $P > 0.05$).

Moderating effect of relational coordination with the nursing managers on the association between time pressure and burnout

The results indicated that, in step 1, employment status was a significant predictor for exhaustion. After controlling for employment status in step 2, H1a was supported, as time pressure was a positive significant predictor for exhaustion. However, H2a was not confirmed, as the main effect of RC with the nursing managers on exhaustion was not significant. In step 3, a significant interaction effect of time pressure and RC with the nursing managers on exhaustion was identified (Table 3), which was consistent with H3a. Moreover, the results of the simple slope test showed that, for HVNs in the subgroup with low RC with the nursing managers, time pressure was a positive significant predictor for exhaustion (simple slope = 0.55, $t = 4.89$, $P < 0.001$). However, when the HVNs experienced high RC with the nursing managers, the relationship between time pressure and exhaustion was non-significant (simple slope = 0.22, $t = 1.77$, $P > 0.05$). The significant moderating effect of RC with the nursing managers on the time pressure and emotional exhaustion association is shown in Figure 2.

The results also showed that employment status was significantly associated with depersonalization. Consistent with H1b and H2b, the main effects of time pressure and RC with the nursing managers on depersonalization were significant in step 2. In the final step, H3b was confirmed, as the interaction term (time pressure × RC with the nursing managers) was a significant predictor for depersonalization (Table 4). The findings of the simple slope test indicated that, for the HVNs with low RC with the nursing managers, the positive effect of time pressure on depersonalization was significant (simple slope = 0.46, $t = 5.62$, $P < 0.001$). Nevertheless, for the nurses with high RC with the nursing managers, the effect of time pressure on depersonalization was positive, but not significant (simple slope = 0.10, $t = 1.06$, $P > 0.05$). The significant moderating role of RC with the nursing managers on the relationship between time pressure and depersonalization is presented in Figure 3.

DISCUSSION

In this study, it was found that time pressure was a significant main contributor to exhaustion among HVNs. This is consistent with previous studies (Jansen *et al.*, 1996; Naruse *et al.*, 2012), indicating that HVNs with greater time pressure reported higher exhaustion. The findings from this study are also in accordance with the

Table 3 Results of hierarchical regression analyses on emotional exhaustion (N = 93)

	Emotional exhaustion								
	Model 1			Model 2			Model 3		
Predictor variable	B	SE	β	B	SE	β	B	SE	β
Control variables									
Employment status (part-time/full-time)	0.52	0.20	0.27*	0.51	0.18	0.26**	0.51	0.18	0.26**
Main effects									
Time pressure	–	–	–	0.41	0.09	0.43***	0.40	0.09	0.41***
RC with nursing managers	–	–	–	−0.20	0.12	−0.16	−0.29	0.12	−0.22*
Interaction effect									
Time pressure × RC with nursing managers	–	–	–	–	–	–	−0.24	0.10	−0.21*
ΔR^2-value	0.071			0.200			0.041		
R^2-value	0.071			0.271			0.312		
F-value	6.596*			11.031***			9.965***		

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$. β, standardized regression coefficient; B, unstandardized regression coefficient; RC, relational coordination; SE, standardized error.

JD-R model, which proposes that exhaustion is the main result in response to job demands (Bakker *et al.*, 2003). In contrast, time pressure also exhibited a significant effect on depersonalization, which is inconsistent with a prior study that was conducted with community nurses in Netherlands (Jansen *et al.*, 1996), but is in parallel to the findings of an early study on Japanese HVNs (Naruse *et al.*, 2012). Job demands result in depersonalization through evoking exhaustion firstly.

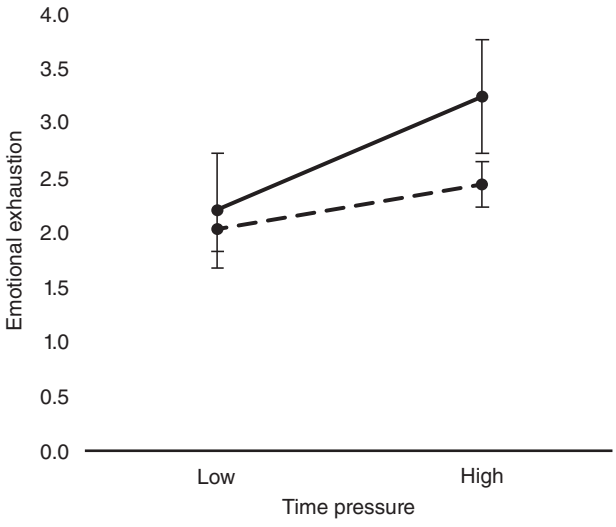

Figure 2 Moderating effect of relational coordination with nursing managers on the relationship between time pressure and emotional exhaustion. (—) Low relational coordination (RC) with nursing managers; (---) high RC with nursing managers.

Job demands can affect employees' feeling of depersonalization, as they intend to obtain mental distance from their work and clients in order to reduce stress-related exhaustion (Leiter & Maslach, 1988). In addition, time delays can cause interrupted job arrangements, nurses' anxiety, and complaints from clients, which might lead to HVNs feeling inadequate and exhausted, thus affecting their job satisfaction and feeling of being detached from their work and clients.

Moreover, this study found a significant main effect of RC with the nursing managers on depersonalization. This result supports the JD-R model, which posits that low job resources are a main contributor to employees' attitudes toward their work and clients (Demerouti *et al.*, 2001). The finding is also in parallel with the results of previous studies, indicating that supervisor support can reduce depersonalization among home healthcare providers (Bakker *et al.*, 2003; Jansen *et al.*, 1996). Generally, HVNs work alone with little collegial interaction. Therefore, establishing a frequent, timely, and adequate nurse–supervisor communication mechanism and creating goal-sharing, knowledge-sharing, and respectful job relationships with the nursing managers are critical. However, the significant and negative association between RC with the nursing managers and exhaustion was not supported, which is like the results of prior studies, suggesting that the impact of supervisor support on exhaustion was not significant among home healthcare employees (Bakker *et al.*, 2003; Jansen *et al.*, 1996). This finding may be attributed to the fact that exhaustion is primarily a health impairment process in response to job demands.

Table 4 Results of the hierarchical regression analyses on depersonalization (n = 93)

	Model 1			Model 2			Model 3		
Predictor variable	B	SE	β	B	SE	β	B	SE	β
Control variables									
Employment status (part-time/full-time)	0.36	0.15	0.24*	0.34	0.13	0.23*	0.34	0.13	0.23*
Main effects									
Time pressure	–	–	–	0.31	0.07	0.41***	0.29	0.06	0.39***
RC with nursing managers	–	–	–	−0.21	0.09	−0.22*	−0.31	0.09	−0.31**
Interaction effect									
Time pressure × RC with nursing managers	–	–	–	–	–	–	−0.26	0.08	−0.31**
ΔR^2-value	0.060			0.211			0.086		
R^2-value	0.060			0.271			0.356		
F-value	5.762*			11.011***			12.172***		

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$. β, standardized regression coefficient; B, unstandardized regression coefficient; RC, relational coordination; SE, standardized error.

In addition, a two-way significant interaction effect was found between time pressure and RC with the nursing managers in determining exhaustion and depersonalization. Although there was no significant relationship between time pressure and RC with the nursing managers, this study's results indicated that RC with the nursing managers moderated the effect of time pressure on burnout. When the HVNs reported low RC with the nursing managers, higher levels of time pressure were a positive significant predictor for more severe exhaustion and depersonalization, respectively. This can be explained by considering the JD-R model, which states that a combination of excessive job demands and decreased job resources significantly adds to predicting burnout (Bakker & Demerouti, 2007). The current results are also like the findings of previous studies that found that home healthcare providers with more job demands reported more severe burnout when they had inadequate job resources (Bakker, Demerouti, & Euwema, 2005; Xanthopoulou *et al.*, 2007).

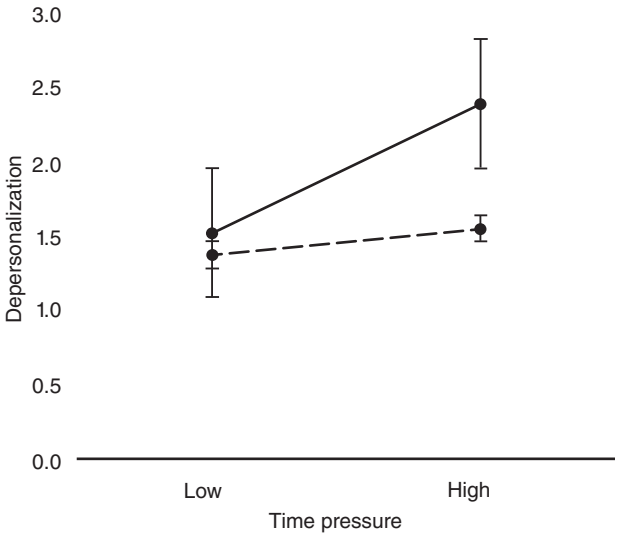

Figure 3 Moderating effect of relational coordination with nursing managers on the relationship between time pressure and depersonalization. (—) Low relational coordination (RC) with nursing managers; (---) high RC with nursing managers.

Furthermore, this study's findings indicated that the magnitude of the interaction effects of time pressure and RC with the nursing managers on exhaustion and depersonalization was stronger than those of prior studies (Bakker *et al.*, 2003; Xanthopoulou *et al.*, 2007), suggesting that strategies for promoting information-sharing and mutual respect between HVNs and their nursing managers might mitigate the negative effects of time pressure. These results suggest that when HVNs face time pressure, they might benefit from information support from the nursing managers in order to cope with such demanding situations more effectively, thus preventing burnout. This mechanism may be regarded as a type of proactive coping style (Aspinwall & Taylor, 1997). The HVNs might perceive the potential job demands in advance and activate job resources that could buffer the negative effects of such job demands before these effects occur (Xanthopoulou *et al.*, 2007). This is a key finding for clinical practice. Unlike facility nursing care that focuses on face-to-face contact, telephone communication is a critical communication mode between HVNs and their nursing managers (Or *et al.*, 2009). The HVNs typically felt isolated during visiting hours; therefore, creating a telephone-based

communication platform to help nurses obtain frequent, timely, adequate, and problem-solving information support might be an effective strategy for burnout prevention and management.

In addition, it was found that the full-time nurses reported significantly higher exhaustion and depersonalization scores than those of the part-time nurses. The results are not only consistent with a study that was conducted on HVNs in Japan (Naruse *et al.*, 2012), but also are similar to the results of several studies on hospital nurses. For instance, a systematic review of oncology nurses found that the full-time nurses were more likely to experience job dissatisfaction, stress, and burnout (Toh, Ang, & Devi, 2012). Another study similarly found that full-time employment was a factor in burnout (Colff & Rothmann, 2014). Full-time nurses usually report heavier workloads and they work longer hours. Therefore, they report more exhaustion and cynicism, poorer physical health, more medication use, and poorer lifestyles (Burke & Greenglass, 2000). On the contrary, part-time and casual work are chosen by some nurses for the flexibility offered, which provide individuals with more control over their work–life balance or time for further education (Kemp, 1994).

Four limitations were identified. First, the cross-sectional nature of this study hinders the possibility of identifying causality. A longitudinal design is recommended for future studies. Second, the sample size was small and the respondents came from one prefecture in Japan, which might limit the generalizability of the results. Further studies comprising more HVNs in more prefectures are required. Third, only two dimensions of burnout were included as outcome variables in the study. Personal achievement, which refers to successful achievement in the workplace, as another aspect of burnout, should be explored in future studies. Finally, although the item for time pressure evaluation was established based on conceptual analysis and expert consultation, its reliability and validity require more confirmation. Future studies are required to develop a HVN-sensitive time pressure scale with acceptable psychometric properties in order to accurately and effectively assess HVNs' work environment.

IMPLICATONS FOR CLINICAL PRACTICE

The results provide implications for policy-makers and nursing managers, who must develop effective strategies for burnout prevention and management among HVNs. A skill-mix program with non-nursing assistants, where non-nursing care is allocated to non-nursing staff, has been shown to be effective in reducing nurses' time pressure regarding home care (Naruse *et al.*, 2013). With the support from non-nursing assistants, HVNs can spend less time on non-nursing tasks and more time on direct nursing care and commuting, which might decrease their time pressure and reduce burnout. Strategies for supporting HVNs with elevated levels of burnout also require nursing managers in homecare settings to provide adequate supervisor support. Respect and appreciation for nurses and open and frequent communication with nurses are essential elements for a supportive work environment. Therefore, developing a relational work process that addresses the capabilities of nursing managers in maintaining timely, frequent, accurate, and problem-solving communication with nurses, which also promotes mutual respect and goal- and knowledge-sharing, could be an effective method to increase nurses' perceived supervisor support (Gittell, Beswick, Goldmann, & Wallack, 2015). This improvement might promote nurses' job satisfaction, thus cultivating nurse retention and attracting new HVNs.

CONCLUSION

This study's results indicate that time pressure is a strong contributor to exhaustion and depersonalization and RC with nursing managers exerts a significant moderating effect on the time pressure–burnout association among HVNs in Japan. The findings imply that good RC with nursing managers is a critical resource for dealing with high time pressure and for burnout prevention and management.

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DISCLOSURE

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

X-Y. C. and T. N. contributed to the conception and design of the study, conducted the data collection and analyses, and wrote the article.

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