Influence of type D personality on job stress and job satisfaction in clinical nurses: the mediating effects of compassion fatigue, burnout, and compassion satisfaction

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Abstract

Aims. To test a hypothetical path model evaluating the influence of type D personality on job stress and job satisfaction and to identify the mediating effects of compassion fatigue, burnout, and compassion satisfaction among clinical nurses in South Korea.

Background. Personalities susceptible to stress, compassion fatigue, and burnout in clinical nurses have negative effects on the job stress and job satisfaction.

Design. A correlational, cross-sectional design was used.

Methods. A convenience sample of 875 clinical nurses was recruited between December 2014 - February 2015. The structured questionnaires included the Type D personality scale-14, Professional Quality of Life, job stress, job satisfaction, and general characteristics. To test the hypothetical path model, we performed a path analysis by using the AMOS 18.0 program.

Findings. Based on the path model, type D personality was significantly associated with compassion fatigue, burnout, and compassion satisfaction in our study subjects. Type D personality was significantly associated with job stress and job satisfaction via the effect of burnout, compassion satisfaction, and job stress.

Conclusion. Since type D personality is associated with job stress and job satisfaction, identifying personalities vulnerable to stress would help to address job stress and to enhance job satisfaction when nurses have a high level of compassion fatigue and burnout and a low level of compassion satisfaction. The development of interventions that can reduce negative affect and social inhibition of nurses with type D personality and investigation of methods to decrease their compassion fatigue and burnout and to increase compassion satisfaction should be encouraged.

Keywords: burnout, compassion fatigue, compassion satisfaction, job satisfaction, job stress, nurses, nursing, personality, stress, type D personality

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Introduction

Since nursing requires humane, empathetic, and proficient care in working environments with limited resources and increasing responsibilities, nurses experience high levels of stress (Khamisa et al. 2015). The job stress of clinical nurses results from exposure to a combination of working environmental factors and personal characteristics (Wu et al. 2010) and a relationship between job stress and mental distress has been reported (Healy & McKay 2000, Han et al. 2007).

The type D personality is vulnerable to negative affect, such as depression or anxiety and consciously suppresses self-disclosure in social interactions (Denollet 2005). People with type D personality are known to experience chronic stress more severely (Denollet 2000). Among healthcare professionals, type D personality subjects perceive their workplace as more stressful and manifest more mental distress symptoms than non-type D personality subjects do (Ogińska-Bulik 2006). Therefore, nurses with a type D personality may be more susceptible to job stress.

Recently, nurses were reported to experience mental distress while caring for chronically ill, suffering, and dying patients and compassion fatigue and burnout are increased among clinical nurses (Crabbe et al. 2004, Sabo 2008). Compassion fatigue and burnout can cause physical health problems, including sleep disturbance, somatic complaints, drug abuse, and psychological health problems, including depression, apathy, and distress, in nurses (Crabbe et al. 2004, Potter 2006, Hooper et al. 2010). Thus, compassion fatigue and burnout have a negative impact on patient care, including patient satisfaction, patient safety, and work accomplishment (Garman et al. 2002, Halbesleben et al. 2008, Potter et al. 2010, Hunsaker et al. 2015, Meyer et al. 2015). Compassion fatigue and burnout are associated with job stress and job satisfaction (Khamisa et al. 2015). Conversely, compassion satisfaction is the emotional reward of caring for others and this factor is negatively related to compassion fatigue and stress in nurses (Stamm 2010, Li et al. 2014, Meyer et al. 2015).

Excessive job stress affects physical and psychological health (musculoskeletal injuries, emotional exhaustion, harmful habits, and psychosomatic symptoms) and causes decreased work ability (McNeely 2005, Piko 2006, Wu et al. 2010, Hamaideh & Ammouri 2011). Previous studies reported that job stress and job satisfaction influenced each other (Ahmad & Oranye 2010) and that they were related to personality characteristics (McVicar 2016, Ogińska-Bulik 2006). Since job stress and job satisfaction among clinical nurses are directly related to a low quality of care, including increased accident rates, poor production performance, premature retirement, sickness absence, and loss of highly skilled nurses, they are very imperative issues in terms of nursing staff management (Ogińska-Bulik 2006, Hayes & Bonnet 2010, Han et al. 2013). In this respect, compassion fatigue and burnout may be painful experiences in nurses who are susceptible to stress (Kim et al. 2010, Lee 2012) and they have more negative effects on job stress and job satisfaction in nurses who are susceptible to stress.

Identifying the type of personalities related to compassion fatigue, burnout, and compassion satisfaction could provide clues to help clinical nurses reduce job stress and enhance job satisfaction. Accordingly, our present study was performed to evaluate the influence of type D personality on job stress and job satisfaction and to identify the mediating effects of compassion fatigue, burnout, and compassion satisfaction.
Background

Type D personality and stress

Type D personality reflects a relatively stable psychological characteristic and consists of negative affectivity and social inhibition (Denollet 2005, Ogińska-Bulik 2006). The negative affectivity refers to the tendency to experience negative emotions and social inhibition refers to the tendency to inhibit the expression of emotions (Lim et al. 2011). Experiencing negative emotions and not expressing them outwardly exposes individuals to chronic stress (Denollet 2005) and the type D personality is associated with greater perceived stress (Howard & Hughes 2012, Williams & Wingate 2012). A type D personality is based on normal personality traits rather than psychopathology and has been identified as a predictor of mental and physical health in the general population (Mols & Denollet 2010, Williams & Wingate 2012). In a previous systematic review, type D personality had a negative impact on the mental health (more symptoms of depression, anxiety, post-traumatic stress disorder, and mental distress), physical health (more somatic complaints and lower health status), and work-related problems (higher levels of vital exhaustion, burnout, and work-related stress) (Mols & Denollet 2010).

Compassion fatigue, burnout, and compassion satisfaction

Compassion fatigue is defined as ‘a state of tension and preoccupation with the individual or cumulative traumas of clients and described the cost a caregiver experiences as a result of caring for others’ (Figley 2002). Compassion fatigue appears to be connected to the therapeutic relationship between the healthcare professional and the patient (Sabo 2008). Burnout is commonly defined as ‘a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur in individuals who do people work’ (Maslach & Jackson 1986). Burnout is a condition associated with the feelings of hopelessness and apathy and creates an inability to perform one’s job duties effectively and is a result of prolonged exposure to stressful working environments (Stamm 2010, Khamisa et al. 2015). Definitions of burnout more often point to environmental stressors, while compassion fatigue addresses the relational nature of the condition (Potter et al. 2010). Compassion fatigue develops over time and is associated with changing behaviours and a loss of capacity to interact and engage intimately with others (Coetzee & Klopper 2010). Compassion fatigue and burnout are often closely linked and the two influence each other (Hunsaker et al. 2015). On the other hand, compassion satisfaction is a positive aspect of helping others achieved by helping others and being able to do one’s job well (Stamm 2010). In recent studies, compassion fatigue and burnout were positively correlated with stress and had a negative impact on job satisfaction in clinical nurses (Hegney et al. 2014, Meyer et al. 2015).

Job stress and job satisfaction in clinical nurses

Stress occurs when a perceived demand exceeds one’s perceived ability to cope and job stress is a result of the discrepancies between demands in the workplace and individual properties of the workers (Ogińska-Bulik 2006). Job stress is influenced by working environmental and personal factors. For nurses work environmental factors include overloading, working hours, severity of patient illness and role conflicts and personal factors include age, marital status, the individual’s past experience, and a personality influenced by stress (Wu et al. 2010, Hamaideh & Ammouri 2011). Job satisfaction is defined as the degree of positive effect an employee feels about his/her employment (Price & Mueller 1986). A higher level of job satisfaction in nurses has been positively linked to improved quality of care and patient outcome (Hayes & Bonnet 2010). Job satisfaction is associated with workload, management style, role ambiguity, professional commitment, and personal factors (McVicar 2016). Job stress is strongly and inversely related to job satisfaction in nurses (Coomber & Barriball 2007).

The study

Aim

The aim of our current study was to test a hypothetical path model evaluating the influence of type D personality on job stress and job satisfaction and identify the mediating effects of compassion fatigue, burnout, and compassion satisfaction among clinical nurses in South Korea. In this study, two hypotheses were proposed: 1) a type D personality could have significant direct effects on compassion fatigue, burnout, and compassion satisfaction (hypothesis 1); and 2) a type D personality would have significant indirect effects on job stress and job satisfaction via compassion fatigue, burnout, and compassion satisfaction (mediating the effects of compassion fatigue, burnout, and compassion satisfaction in the path from type D personality to job stress and job satisfaction) (hypothesis 2).
Design

A correlational, cross-sectional design was used.

Participants

Between December 2014—February 2015, a convenience sample of 875 clinical nurses was recruited from an approximately 2700-bed, tertiary hospital in Seoul, South Korea. The inclusion criteria were that nurses be 20 years of age or older and have ≥6 months of clinical experience. Among 1000 structured questionnaires distributed, 875 were returned and included for this study (response rate: 87.5%).

Data collection

Data were collected using structured questionnaires. The structured questionnaires included Type D personality scale-14 (DS14), Professional Quality of Life (ProQOL), job stress (KOSS-SF), job satisfaction, and general characteristics.

Type D personality scale-14 (DS14)

Type D personality was measured using the Type D personality scale-14 (DS 14) (Denollet 2005). The DS 14 includes 14 items and each item ranges from 0 to 4 points. The scale consists of two subscales: negative affectivity and social inhibition. If the score is ≥10 for both negative affectivity and social inhibition, the participant is classified as having type D personality (Denollet 2005). In this study, type D personality was regarded as and analysed as a dichotomized variable.

Professional quality of life (ProQOL)

Compassion fatigue, burnout, and compassion satisfaction were measured using Professional Quality of Life (ProQOL) version 5.0 (Stamm 2010). ProQOL consists of three subscales: compassion fatigue, burnout, and compassion satisfaction. Each subscale includes 10 items ranging from 1 to 5 points. Higher scores reflect higher levels of compassion fatigue, burnout, and compassion satisfaction.

Job stress (KOSS-SF)

Job stress was measured using the Korean Occupational Stress Scale—Short form (KOSS-SF) (Chang et al. 2005). The KOSS-SF consists of 24 items, including seven subscales: job demands (4 items), insufficient job control (4 items), interpersonal conflict (3 items), job insecurity (2 items), the organizational system (4 items), lack of reward (3 items), and occupational climate (4 items). Each item ranges from 1 to 4 points and higher scores indicate higher job stress. Based on the aim of this study, job stress was regarded as a composite variable.

Job satisfaction

Job satisfaction was measured using the Job Satisfaction Scale (Brayfield & Rothe 1951), which is one of the most commonly used tools for assessing job satisfaction among Koreans (Ko 1999). The scale includes five questions and each item ranges from 1 to 5 points. Higher scores indicate greater job satisfaction.

Ethical considerations

This study was approved by the Institutional Review Board (IRB) of Asan Medical Center where this study was conducted. Written informed consent was obtained from all participants after fully explaining the aims and procedures of the study. The participants were also informed that they could voluntarily withdraw from the study at any point and that the collected data would be kept strictly confidential.

Data analysis

Statistical analyses were conducted using SPSS version 22.0 (IBM SPSS Statistics; SPSS Inc., Armonk, NY, USA) and AMOS 18.0. All data are expressed as numbers (percentages), means ± sd (standard deviations), or medians (ranges). To compare the general characteristics and other variables between type D and non-type D personalities, we used the chi-square test, t-test, or Mann–Whitney U-test as appropriate. To test the hypothetical path model, we performed path analysis by using AMOS employing a maximum likelihood estimation and bootstrap with 200 samples (Kim 2001). Based on the hypothetical path model, we calculated a standard estimate for the direct, indirect, and total effects of the research variables on job stress and job satisfaction.

Finally, to evaluate the validity and fitness of our model, we used absolute fit indices of the chi-square test, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), root mean square residual (RMSR), normed fit index (NFI), and comparative fit index (CFI). Additionally, we calculated the squared multiple correlations (SMC) of the research variables on job stress and job satisfaction. Two-tailed P-values less than 0.05 were considered statistically significant.

Validity and reliability

The reliability and validity of the Korean version of Type D personality scale-14 (DS 14) has been well-documented.
In current study, Cronbach’s alpha was 0.85 for negative affectivity and 0.85 for social inhibition of the DS14. The reliability and validity of ProQOL have been validated in Korean nurses (Kim et al. 2010, 2014) and Cronbach’s alphas of the ProQOL subscales were 0.72 for compassion fatigue, 0.73 for burnout, and 0.89 for compassion satisfaction in our study. The Korean Occupational Stress Scale—Short form (KOSS-SF) has established reliability and validity among Korean workers (Chang et al. 2005). Cronbach’s alpha for this scale was 0.81 in this study and the Cronbach’s alphas of subscales were 0.71 for job demands, 0.55 for insufficient job control, 0.51 for interpersonal conflict, 0.62 for job insecurity, 0.69 for organizational system, 0.60 for lack of reward, and 0.67 for occupational climate. The reliability and validity of Job Satisfaction Scale has been well-documented (Ko 1999) and Cronbach’s alpha for this scale was 0.83 in current study.

Results

Participant characteristics

The characteristics of the study participants are presented in Table 1. The mean age of these nurses was 31.26 (SD 5.17) years (range: 23–53) and 98.5% were women. Approximately 63% of the participants were unmarried and 53% lived with their family. The mean duration of

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>Total (n = 875), n (%) or Mean (SD)</th>
<th>Type D Personality (n = 322), n (%) or Mean (SD)</th>
<th>Non-type D Personality (n = 553), n (%) or Mean (SD)</th>
<th>t or χ²</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td>31.26 (5.26)</td>
<td>31.31 (5.17)</td>
<td>31.23 (5.31)</td>
<td>−0.219</td>
<td>0.827</td>
</tr>
<tr>
<td></td>
<td>≤25</td>
<td>31 (10.9)</td>
<td>36 (11.5)</td>
<td>56 (10.5)</td>
<td>5.497</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>26–30</td>
<td>352 (41.7)</td>
<td>119 (38.1)</td>
<td>233 (43.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>31–35</td>
<td>323 (27.5)</td>
<td>90 (28.8)</td>
<td>142 (26.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>36–40</td>
<td>107 (12.7)</td>
<td>43 (13.8)</td>
<td>64 (12.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>41–45</td>
<td>53 (6.3)</td>
<td>23 (7.5)</td>
<td>30 (5.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥46</td>
<td>8 (0.9)</td>
<td>1 (0.3)</td>
<td>7 (1.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>13 (1.5)</td>
<td>4 (1.2)</td>
<td>9 (1.6)</td>
<td>0.206</td>
<td>0.777</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>862 (98.5)</td>
<td>318 (98.8)</td>
<td>544 (98.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td>Not-married</td>
<td>553 (63.3)</td>
<td>214 (66.5)</td>
<td>339 (61.4)</td>
<td>2.229</td>
<td>0.146</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>321 (36.7)</td>
<td>108 (33.5)</td>
<td>213 (38.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family living</td>
<td>Family</td>
<td>461 (52.7)</td>
<td>157 (49.8)</td>
<td>304 (55.0)</td>
<td>3.107</td>
<td>0.075</td>
</tr>
<tr>
<td></td>
<td>Friend</td>
<td>89 (10.2)</td>
<td>34 (10.8)</td>
<td>55 (10.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alone</td>
<td>284 (32.5)</td>
<td>114 (36.2)</td>
<td>170 (30.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>40 (4.6)</td>
<td>10 (3.2)</td>
<td>24 (4.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical experience (years)</td>
<td>&lt; 2</td>
<td>7.17 (5.60)</td>
<td>7.13 (5.38)</td>
<td>7.22 (5.73)</td>
<td>0.224</td>
<td>0.823</td>
</tr>
<tr>
<td></td>
<td>2–5</td>
<td>167 (19.2)</td>
<td>61 (19.1)</td>
<td>106 (19.3)</td>
<td>4.881</td>
<td>0.031</td>
</tr>
<tr>
<td></td>
<td>5–10</td>
<td>209 (24.1)</td>
<td>78 (24.4)</td>
<td>131 (23.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10–15</td>
<td>267 (30.8)</td>
<td>94 (29.3)</td>
<td>173 (31.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15–20</td>
<td>143 (16.5)</td>
<td>59 (18.4)</td>
<td>84 (15.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥21</td>
<td>57 (6.6)</td>
<td>23 (7.2)</td>
<td>34 (6.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job position</td>
<td>Head nurse</td>
<td>17 (2.0)</td>
<td>3 (0.9)</td>
<td>14 (2.5)</td>
<td>3.568</td>
<td>0.068</td>
</tr>
<tr>
<td></td>
<td>Charge nurse</td>
<td>62 (7.1)</td>
<td>26 (8.1)</td>
<td>35 (6.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Staff nurse</td>
<td>792 (90.9)</td>
<td>292 (91.0)</td>
<td>501 (91.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward characteristics1</td>
<td>Surgical</td>
<td>427 (50.1)</td>
<td>171 (54.8)</td>
<td>256 (47.3)</td>
<td>4.438</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>Medical</td>
<td>426 (49.9)</td>
<td>141 (45.2)</td>
<td>285 (52.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward characteristics2</td>
<td>ICU</td>
<td>188 (21.5)</td>
<td>74 (23.0)</td>
<td>114 (20.6)</td>
<td>6.368</td>
<td>0.173</td>
</tr>
<tr>
<td></td>
<td>ER</td>
<td>54 (6.2)</td>
<td>26 (8.0)</td>
<td>28 (5.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General ward</td>
<td>463 (53.1)</td>
<td>159 (49.4)</td>
<td>304 (55.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outpatient clinic</td>
<td>65 (7.4)</td>
<td>28 (8.7)</td>
<td>37 (6.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>105 (12.0)</td>
<td>35 (10.9)</td>
<td>70 (12.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

sn, standard deviation.

*P < 0.05.
Table 2 Comparison of compassion fatigue, burnout, compassion satisfaction, job stress, and job satisfaction between the type D and non-type D personality groups (n = 875).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total (n = 875) Mean (sd)</th>
<th>Type D Personality (n = 322) Mean (sd)</th>
<th>Non-type D Personality (n = 553) Mean (sd)</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compassion fatigue</td>
<td>25·64 (4·95)</td>
<td>27·68 (4·84)</td>
<td>24·45 (4·61)</td>
<td>−9·841</td>
<td>&lt;0·001*</td>
</tr>
<tr>
<td>Burnout</td>
<td>28·65 (4·80)</td>
<td>31·40 (4·19)</td>
<td>27·06 (4·39)</td>
<td>−14·341</td>
<td>&lt;0·001*</td>
</tr>
<tr>
<td>Compassion satisfaction</td>
<td>32·05 (5·61)</td>
<td>30·33 (5·24)</td>
<td>33·06 (5·59)</td>
<td>7·111</td>
<td>&lt;0·001*</td>
</tr>
<tr>
<td>Job stress</td>
<td>57·64 (6·61)</td>
<td>59·66 (6·75)</td>
<td>56·47 (6·24)</td>
<td>−7·063</td>
<td>&lt;0·001*</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>16·00 (3·27)</td>
<td>15·05 (3·35)</td>
<td>16·55 (3·09)</td>
<td>6·715</td>
<td>&lt;0·001*</td>
</tr>
</tbody>
</table>

so, standard deviation.

*P < 0·001.

their clinical experience was 7·17 (sd 5·60) years (range: 0·5-37). Ninety-one percent were staff nurses.

Compassion fatigue, burnout, compassion satisfaction, job stress, and job satisfaction

The mean scores of compassion fatigue, burnout, and compassion satisfaction were 25·64 (sd 4·95), 28·65 (sd 4·80), and 32·05 (sd 5·61), respectively. The mean scores of job stress and job satisfaction were 57·64 (sd 6·61) and 16·00 (sd 3·27), respectively (Table 2).

The prevalence of type D personality

Of the participants, 36·8% were classified as having a type D personality. The subscale scores for negative affectivity and social inhibition were 10·53 (sd 5·48) and 9·05 (sd 5·47), respectively.

Comparison of general characteristics and the variables between type D and non-type D personality groups

Table 1 shows an explorative comparison of the general characteristics between the type D and non-type D personality groups without controlling for the variables related to type D personality. General characteristics, such as sex, age, marital status, family living situation, duration of clinical experience, job position, and work place, were not statistically significantly different between the two groups. Comparison of the variables between the type D and non-type D personality groups is presented in Table 2. Participants with type D personality had significantly higher scores for compassion fatigue, burnout, and job stress than those with non-type D personality (t = −9·841, P < 0·001; t = −14·314, P < 0·001; and t = −7·063, P < 0·001, respectively). Participants with a type D personality had significantly lower scores for compassion satisfaction and job satisfaction than those with non-type D personality (t = 7·111, P < 0·001; and t = 6·715, P < 0·001, respectively).

Evaluation of the path model

The correlations of the variables were summarized in Table 3. Type D personality was analysed as a dichotomized variable in the path model. The hypothetical path model we proposed for this study demonstrated a good fit with data derived from the sample of clinical nurses. The chi-square test was statistically significant (χ² = 5·863, P = 0·015), indicating that the model did differ from the

Table 3 Correlations among the study variables (n = 875)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Compassion fatigue</th>
<th>Burnout</th>
<th>Compassion satisfaction</th>
<th>Job stress</th>
<th>Job satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compassion fatigue</td>
<td>1</td>
<td>0·46 (&lt;0·001**)</td>
<td>−0·62 (&lt;0·001**)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Burnout</td>
<td></td>
<td>1</td>
<td>0·51 (&lt;0·001**)</td>
<td>−0·46 (&lt;0·001**)</td>
<td>1</td>
</tr>
<tr>
<td>Compassion satisfaction</td>
<td></td>
<td></td>
<td>0·57 (&lt;0·001**)</td>
<td>0·69 (&lt;0·001**)</td>
<td>−0·51 (&lt;0·001**)</td>
</tr>
<tr>
<td>Job stress</td>
<td>−0·13 (&lt;0·001**)</td>
<td>−0·62 (&lt;0·001**)</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>−0·13 (&lt;0·001**)</td>
<td>−0·51 (&lt;0·001**)</td>
<td>0·69 (&lt;0·001**)</td>
<td>−0·51 (&lt;0·001**)</td>
<td></td>
</tr>
</tbody>
</table>

* r (P) obtained by Pearson’s correlation analysis.

**P < 0·001.
data. However, because the $x^2$ value can be influenced by the sample size, various other suitability indicators were examined. The goodness of the fit test results showed GFI, AGFI, RMSR, NFI, and CFI values of 0.99, 0.95, 0.07, 0.99, and 0.98, respectively. The RMSR should be less than 0.05 and GFI, AGFI, NFI, and CFI should be 0.99, and 0.91, respectively. The AGFI, RMSR, NFI, and CFI values were examined. The goodness of the fit test results showed GFI, AGFI, RMSR, NFI, and CFI values of 0.99, 0.95, 0.07, 0.99, and 0.98, respectively. The RMSR should be less than 0.05 and GFI, AGFI, NFI, and CFI should be 0.99, at a minimum. These results indicated that the model displayed a good fit to the data. Three non-related paths among 12 paths in the final path diagram were not accepted (type D personality $\rightarrow$ job stress, type D personality $\rightarrow$ job satisfaction, and compassion fatigue $\rightarrow$ job satisfaction) (Figure 1).

### Analysis of the variable effects

Standardized estimates for the direct, indirect, and total effects of exogenous variables on endogenous variables and SMC values for the path model are presented in Table 4. Hypothesis 1 was supported. Type D personality had significant direct and total effects on compassion fatigue ($\beta = 0.316$, $P = 0.002$; $\beta = 0.316$, $P = 0.002$, respectively), burnout ($\beta = 0.429$, $P = 0.001$; $\beta = 0.429$, $P = 0.001$, respectively), and compassion satisfaction ($\beta = -0.234$, $P = 0.001$; $\beta = -0.234$, $P = 0.001$). This result indicated that a type D personality is significantly associated with compassion fatigue, burnout, and compassion satisfaction.

Hypothesis 2 was also supported. Compassion fatigue ($\beta = 0.070$, $P = 0.047$; $\beta = 0.070$, $P = 0.047$), burnout ($\beta = 0.307$, $P = 0.001$; $\beta = 0.307$, $P = 0.001$), and compassion satisfaction ($\beta = -0.270$, $P = 0.001$; $\beta = -0.270$, $P = 0.001$) had significant direct and total effects on job stress. A type D personality had significant indirect and total effects on job stress ($\beta = 0.217$, $P = 0.001$; $\beta = 0.231$, $P = 0.001$, respectively) but had no significant direct effect on job stress. This finding indicates that compassion fatigue, burnout, and compassion satisfaction completely mediate the path of type D personality $\rightarrow$ job stress. In other words, a type D personality is significantly associated with job stress via the effects of compassion fatigue, burnout, and compassion satisfaction.

Our analyses further indicated that type D personality had significant indirect and total effects on job satisfaction ($\beta = -0.234$, $P = 0.001$; $\beta = -0.248$, $P = 0.001$, respectively), but had no significant direct effect on job satisfaction. Burnout ($\beta = -0.147$, $P = 0.001$; $\beta = -0.063$, $P = 0.001$; $\beta = -0.210$, $P = 0.001$) and compassion satisfaction ($\beta = 0.500$, $P = 0.001$; $\beta = 0.056$, $P = 0.001$; $\beta = 0.556$, $P = 0.001$) had significant direct, indirect, and total effects on the job satisfaction, respectively. Job stress ($\beta = -0.206$, $P = 0.001$; $\beta = -0.206$, $P = 0.001$) had significant direct and total effects, respectively, on job satisfaction. However, compassion fatigue had no significant direct, indirect, or total effects on job satisfaction. These findings indicated that

![Figure 1](image-url)
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Table 4 Standard direct, indirect, total effect, and SMC of variables on job stress and job satisfaction (n = 875)

<table>
<thead>
<tr>
<th>Endogenous variables</th>
<th>Exogenous variables</th>
<th>Beta (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Direct Effect</td>
</tr>
<tr>
<td>Compassion fatigue</td>
<td>Type D personality</td>
<td>0.316 (0.002*)</td>
</tr>
<tr>
<td>Burnout</td>
<td>Type D personality</td>
<td>0.429 (0.001**)</td>
</tr>
<tr>
<td>Compassion satisfaction</td>
<td>Type D personality</td>
<td>-0.234 (0.001**)</td>
</tr>
<tr>
<td>Job stress</td>
<td>Type D personality</td>
<td>0.014 (0.664)</td>
</tr>
<tr>
<td></td>
<td>Compassion fatigue</td>
<td>0.070 (0.047*)</td>
</tr>
<tr>
<td></td>
<td>Burnout</td>
<td>0.307 (0.001**)</td>
</tr>
<tr>
<td></td>
<td>Compassion satisfaction</td>
<td>-0.270 (0.001**)</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>Type D personality</td>
<td>-0.014 (0.630)</td>
</tr>
<tr>
<td></td>
<td>Compassion fatigue</td>
<td>-0.022 (0.452)</td>
</tr>
<tr>
<td></td>
<td>Burnout</td>
<td>-0.147 (0.001**)</td>
</tr>
<tr>
<td></td>
<td>Compassion satisfaction</td>
<td>0.500 (0.001**)</td>
</tr>
<tr>
<td></td>
<td>Job stress</td>
<td>-0.206 (0.001**)</td>
</tr>
</tbody>
</table>

SMC, Squared multiple correlation.

*p < 0.05; **p < 0.01.

burnout and compassion satisfaction completely mediate the path of type D personality to job satisfaction; in other words, a type D personality is significantly associated with job satisfaction via the effect of burnout, compassion satisfaction, and job stress. Finally, based on the SMC values, type D personality, compassion fatigue, burnout, and compassion satisfaction explained the total variance of job stress by 30.8% and that of job satisfaction by 53.8%.

Discussion

Job stress and job satisfaction among clinical nurses are significant issues directly connected to work ability, efficacy, and quality of patient care. To reduce job stress and enhance job satisfaction for nursing staff, it is imperative to consider all of the possible factors that affect these outcomes, including not only the factors that have been confirmed to influence stress and satisfaction, but also those that have yet to be confirmed. The strengths of our present study included our identification of the influence of type D personality on vulnerability to stress and compassion fatigue, burnout, and compassion satisfaction and clarification that a type D personality is significantly associated with job stress and job satisfaction via the effect of compassion fatigue, burnout, and compassion satisfaction (mediating effects). This has not been reported in previous studies.

In our present analyses, the type D personality affected job stress and job satisfaction in our nurse cohort. This finding suggests that identifying the personalities vulnerable to stress and intervening to manage job stress and job satisfaction could be an important strategy, especially in highly stressful situations. Our results further showed that the prevalence of the type D personality was 36.8% among clinical nurses in South Korea. This frequency is higher than that reported by a previous study that used the same research tools to examine psychiatrists and nurses (27.8%) (Ogińska-Bulik 2006). This rate is also higher than the type D personality prevalence reported by a study conducted on the general population (33.1%) (Michal et al. 2011), and that reported in a systematic review of this personality in the general population (Mols & Denollet 2010). Further analysis in this study revealed that the frequency of the type D personality varied with the level of clinical experience: 36.9% among nurses with less than 5 years of clinical experience, 35% among nurses with 5–10 years of clinical experience, 41% among nurses with 10–15 years of clinical experience, and 40% among nurses with greater than 15 years of clinical experience. The type D personality is known to be characterized by a relatively stable psychosocial state; however, nurses’ personalities may be altered over time as they are exposed to excessive stress induced by their working environments and personal attributes. As, individuals with a type D personality tend to use more passive and maladaptive avoidance coping strategies (Polman et al. 2010) and have an increased risk for clinically significant depression, panic disorder, somatization, and alcohol abuse (Michal et al. 2011), nurse managers need to pay close attention to nurses with this personality trait. Particularly, nurse managers need to systematically deal with the stress of nurses who experience high levels of stress due to job rotation, return-to-work after time off, etc. and therefore pay attention to such issues so as not to become a type D personality. Given that type D personality is a normal personality trait rather than a pathological personality, the
practice could be a strategy for improving the work efficiency and psychological health of nurses rather than discriminate against them.

In our study, the mean scores of compassion fatigue, burnout, and compassion satisfaction were 25.64, 28.65, and 32.05, respectively. Comparing this with the findings of previous studies that used the same instrument (Slocum-Gori et al. 2013, Hegney et al. 2014), compassion fatigue and burnout are higher and compassion satisfaction is lower among Korean nurses. Although the findings in our study might be explained by the high prevalence of type D personalities, which affects compassion fatigue, burnout, and compassion satisfaction, further studies need to be conducted to explore the levels of compassion fatigue, burnout, and compassion satisfaction, along with their affecting factors among Korean nurses. This is because compassion fatigue, burnout, and compassion satisfaction can be affected by various factors.

Our present results indicated that the nurses with a type D personality had higher compassion fatigue and burnout and lower compassion satisfaction than those with a non-type D personality. In addition, we found that the type D personality had significant direct and total effects on the compassion fatigue, burnout, and compassion satisfaction in the path model. We contend therefore that if a nurse has high level of compassion fatigue and burnout and a low level of compassion satisfaction, the possibility of type D personality should be assessed along with other characteristics. This strategy will be the basis for lowering compassion fatigue and burnout and for improving the compassion satisfaction in clinical nurses. In addition, as compassion fatigue and burnout are related to patient satisfaction and safety, this could contribute to improving patient satisfaction and safety.

In addition, type D personality had significant indirect and total effects on the job stress in this study. Although having a type D personality does not directly affect job stress per se, this personality type affects compassion fatigue, burnout, and compassion satisfaction, which in turn influences job stress. Therefore, it is important to consider the characteristics of type D personality are important to consider and to provide appropriate care for individuals that exhibit this type of personality when providing interventions to decrease compassion fatigue and burnout and to improve compassion satisfaction is necessary to ultimately reduce job stress ultimately. On the other hand, type D personality, burnout and compassion satisfaction had significant direct, indirect, and total effects on the job satisfaction and type D personality is significantly associated with job satisfaction via the effect of burnout, compassion satisfaction, and job stress. By the same token, these factors should also be considered when attempting to enhance these individuals’ job satisfaction. In addition, future studies are needed to explore the direct effect of type D personality on job stress and job satisfaction since type D personality was not directly associated with job stress and job satisfaction in our study.

We found that compassion fatigue had no significant direct, indirect, or total effect on job satisfaction in this study. This finding is consistent with a recent study (Meyer et al. 2015). Since few studies on the relationship between compassion fatigue and job satisfaction were found, further studies are needed to clarify the relationship between these two factors.

As mentioned earlier, the relationship between job stress and job satisfaction has long been studied and job stress is strongly and inversely related to job satisfaction. In addition, job stress had significant direct and total effects on job satisfaction in this study. This indicates that interventions that relieve job stress could directly improve job satisfaction.

The characteristics of type D personality in nurses are an important issue related to work environment and thus institutional effort and personal effort should be invested in monitoring these characteristics. Assessment of job stress and job satisfaction of nurses with type D personality under highly stressful situations and identifying the transition from non-type D personality to type D personality in nurses is needed. Stress management programs should be developed for nurses with non-type D personality to avoid development of type D personality. Interventions for nurses with type D personality also need to be designed. Type D personality is characterized by relatively stable psychological attributes; however, this type of personality may be altered through a variety of interventions. An eight-week mindfulness-based stress reduction (MBSR) program has been reported to significantly improve the negative affect and social inhibition dimensions of subjects who exhibit type D personality in a local community (Nyklíček et al. 2013). Moreover, MBSR has also been reported to be effective in enhancing individuals’ emotional experiences and expressions (Robins et al. 2012). Hence, MBSR may be effective for nurses with a type D personality.

Fostering psychological health in the workplace is a crucial strategy for improving practice environments (Medland et al. 2004). Recent interest in the compassion fatigue and burnout experienced by nurses has led to vigorous research regarding potential intervention methods to alleviate these factors. For example, Aycock and Boyle (2009) suggested that it is important for nurses to be...
aware of the risk factors and symptoms of compassion fatigue and burnout and for hospitals to foster a working environment that is welcoming to nurses’ emotional expressions. In addition, that study suggested that implementing various programs for nurses experiencing compassion fatigue and garnering strong support from co-workers are also critical (Aycock & Boyle 2009). In the future, hospitals should implement a variety of interventions to reduce the negative affect and social inhibition of nurses with a type D personality. This need calls for more research on reducing compassion fatigue and burnout and simultaneously promoting compassion satisfaction. These efforts will be essential in reducing nurses’ job stress and increasing their job satisfaction.

As mentioned earlier, to address nurse job stress and job satisfaction, both identifying possible factors and exploring their influence are important aspects, in addition to well-known factors. Additionally, factors beyond personality type that influence job stress and job satisfaction of nurses should continue to be explored.

Study limitations

There were a few limitations to our study. First, the study was conducted at a single, tertiary referral hospital and convenience sampling was used. Therefore, generalization of our results might be limited. Second, as the response rate of our survey was 87.5% and nurses with a type D personality are less likely to agree to participate in the study due to the personality characteristics, these might underestimate the findings of our study. Third, job stress was regarded as a composite variable, based on the aim of our study. Therefore, the reliability value of job stress is higher than any single subscale point to the artefact that more items will increase the reliability value. Last, this study was performed to identify the influence of type D personality on job stress and job satisfaction among clinical nurses, including staff nurses, charge nurses, and head nurses. Future study needs to explore the influence of type D personality on job stress and job satisfaction according to job position of nurses. Nevertheless, this study identified effects of type D personality on the compassion fatigue, burnout, compassion satisfaction, job stress, and job satisfaction.

Conclusions

Because having a type D personality affects job stress and job satisfaction, identifying the personalities vulnerable to stress is needed to relieve job stress and to enhance job satisfaction when nurses experience a high level of compassion fatigue and burnout and a low level of compassion satisfaction. More interventions that can reduce negative affect and social inhibition of nurses with type D personality need to be developed in addition to methods that can decrease compassion fatigue and burnout and increase compassion satisfaction.

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Conflict of interest

No conflict of interest has been declared by the author(s).

Author contributions

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/recommendations/)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

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