



## Burnout Research

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## Individual vulnerability to burnout in nurses: The role of Type D personality within different nursing specialty areas

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## ABSTRACT

**Introduction:** Previous studies describe nursing as an occupation with a high-risk for burnout. However, less attention has been paid to the individual factors underlying this psychological syndrome.**Aim:** This study aims to contribute to the limited body of evidence concerning Type D personality and burnout in nursing. To investigate this topic, we examined Type D personality, stress and burnout within the nursing profession, while taking the organisational and job-related elements into account.**Method:** During this cross-sectional study, data were collected using self-report questionnaires. The 222 nurses who participated were selected from 12 general hospitals across Antwerp, Belgium. The departments and nurses surveyed were selected at random and sub-divided into six nursing specialty areas.**Results:** Type D personality ranged from 23% in medical and surgical units, up to 36% in paediatric units. In addition, even when corrected for organisational and job-related factors, nurses with Type D personality were five times more likely to have a high risk for burnout.**Conclusion:** This study suggested that Type D is a vulnerable personality in nurses for the development of burnout. Consequently, it might be advisable to target this individual factor in prevention programmes.© 2015 The Authors. Published by Elsevier GmbH. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Burnout is a psychological syndrome that can develop as a result of a long period of occupational stress. This syndrome consists of three dimensions, namely: emotional exhaustion – the feeling of having used up all emotional reserves; depersonalisation – which is characterised by adopting a negative, blunt and cynical attitude towards the care receivers; and the feeling of reduced personal accomplishment – the tendency to assess one's professional achievements negatively (Maslach & Jackson, 1981; Schaufeli & Van Dierendonck, 2000). The combination of these three dimensions can differentiate burnout from other psychological syndromes such as depression. Whereas, emotional exhaustion can also be observed in depression, lack of job motivation (depersonalisation) and experiencing low job efficiency (reduced personal accomplishment) are typical burnout symptoms. In addition, the most crucial difference

between burnout and other psychological syndromes is that the cause of burnout can be attributed to the work setting (Taris, Houtman, & Schaufeli, 2013).

The diathesis × stress model explains the development of burnout through the interaction of vulnerability with precipitating environmental events (Clark, Beck, & Alford, 1999; Ingram & Luxton, 2005). The greater the diathesis or vulnerability, the fewer stressors are needed to trigger certain behaviours – which indicates that only a few stressors might cause feelings of burnout when someone has a limited resilience to stress. Conversely, greater life stressors are needed to produce particular results when vulnerability is smaller. Therefore, a person with high stress-resilience may not develop burnout as easily, but can also become susceptible if the number of stressors accumulates.

The core of the cognitive diathesis-stress model of vulnerability is that, in confrontation with stressful life events, latent negative self-schemas containing dysfunctional attitudes about the self become activated in an automatic, repetitive, unintended, and difficult to control way (Clark et al., 1999). This leads to specific negative cognitions (automatic thoughts), including negative views of one-self (lower levels of self-esteem), resulting in sadness and other depressive symptoms (Beck, 1987; Beck, Rush, Shaw, & Emery,

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1979; Clark et al., 1999). In the absence of stressful life events, these negative schemas remain latent and less consciously accessible, and do not directly bias the information processing system (Haaga, Dyck, & Ernst, 1991). Thus, according to the diathesis  $\times$  stress model, burnout develops when the experienced stressors outweigh the personal resilience (Ingram & Luxton, 2005). In line with this model, several researchers have suggested that the causes of burnout are multi-dimensional and can be categorised in three groups: organisational, job-related and individual factors (Shirom, 2003). Furthermore, the stressors of the diatheses  $\times$  stress model consist mainly of organisational and job-related factors, while the diathesis or susceptibility can be classified as an individual factor.

Due to the fact that the stressors in nursing are often manifold, this profession has been described as high-risk for the development of burnout, causing even nurses with a low burnout susceptibility to become vulnerable (Demerouti, Bakker, Nachreiner, & Schaufeli, 2000; Grau-Alberola, Gil-Monte, Garcia-Juesas, & Figueiredo-Ferraz, 2010). After all, nurses are regularly exposed to suffering, pain, death, physical labour, changing technology, ethical dilemmas, shift work, staffing shortages, high expectations from families and patients, and conflicts with physicians, as well as low salaries and high responsibility (Demir, Ulusoy, & Ulusoy, 2003; Fagerberg, 2004; Maytum, Heiman, & Garwick, 2004; Muncer, Taylor, & McManus, 2001). Verhaeghe, Vlerick, De Backer, Van Maele, and Gemmel (2008) have confirmed this is a high-risk population by revealing that nurses experience significantly more stress in comparison to other professions with a similar educational level and within the same age category.

Although considerable research has been devoted to the organisational and job-related factors – such as the nurse–physician relationship, management at the unit level, hospital management and organisational support, and the number of patients per nurse (Jourdain & Chenevert, 2010; Ksiazek, Stefaniak, Stadnyk, & Ksiazek, 2011; Van Bogaert, Clarke, Roelant, Meulemans, & Van de Heyning, 2010; You et al., 2013) – less attention has been paid to the individual factors. Swider and Zimmerman (2010) agree, stating that existing research on individual factors has been random and lacks focus. Nevertheless, the importance of this individual aspect becomes evident when we consider the fact that all nurses within a certain unit are exposed to the same organisational and job-related factors, and yet not all of these nurses will develop symptoms of stress or burnout.

Therefore, the present study focuses on the influence of individual factors on the development of burnout.

Different models can be applied to measure these individual factors. For instance, the personality characteristic of neuroticism from the Five Factor Model has been linked to burnout in nurses (Burgess, Irvine, & Wallymahmed, 2010; Hudek-Knezevic, Kalebic Maglica, & Krapic, 2011; Jahanbakhsh Ganjeh, Omidi Arjenaki, Nori, & Oreyzi, 2010). In the study at hand, however, the individual factors were examined through Type D personality. Type D is a relatively stable personality trait that is characterised by a combination of a wide variety of negative emotions (negative affectivity) while at the same time inhibiting these emotions in social situations in order to avoid rejection or disapproval (social inhibition) (Denollet, 2005). People with high levels of negative affectivity are likely to experience distress, anxiety, irritability, pessimism, and worry. Negative affectivity is also related to a negative view of oneself, the world, the future, and others (Larsen & Ketelaar, 1991; Polman, Borkoles, & Nicholls, 2010). Social inhibition is associated with individuals being tense, having fewer personal ties, and being uncomfortable when socialising with other people (Denollet, 2005; Emons, Meijer, & Denollet, 2007; Polman et al., 2010). It is this social inhibition component that distinguishes Type D personality from

other related negative affectivity constructs such as depressive symptoms and neuroticism – as social inhibition is distinct from, and adds to the negative affectivity construct (Hausteiner et al., 2010; Kudielka, von Kanel, Gander, & Fischer, 2004; Mommersteeg, Denollet, & Martens, 2012).

Type D personality has been associated with poor prognosis and increased risk of morbidity and mortality in cardiac patients (Compare et al., 2014; Pedersen & Denollet, 2003). A potential mechanism underlying this finding may be increased sympathetic activation, which has been found to be associated with emotional expressive suppression (Gross, 2002). Findings from theories of emotion and self-regulation indicate that expressive suppression increases sympathetic activation of the cardiovascular system (Gross, 2002; Muraven & Baumeister, 2000). Moreover, high dispositional negative affectivity or anger may serve to amplify negative emotional responses, and this may have biological correlates that stimulate cardiac dysfunction (Compare et al., 2014; Pedersen & Denollet, 2003).

In addition, Mommersteeg et al. (2012) have hypothesised that individuals with Type D personality are more likely to perceive their environment as stressful, but at the same time, are less likely to seek help due to their tendency to inhibit their emotions in social interactions. As a result, individuals with Type D personality might have an increased risk of burnout. Furthermore, Type D has also been found to be a determinant of psychological distress (Pedersen & Denollet, 2003; Polman et al., 2010). Type D individuals are therefore predicted to report higher levels of stress over prolonged periods, which in turn would be expected to be associated with increased symptoms of burnout (Polman et al., 2010). This predicted positive relation between Type D personality and burnout has been confirmed for different populations, such as the general Dutch population and first-year undergraduate students (Mommersteeg et al., 2012; Polman et al., 2010). Research concerning the nursing population is limited to two studies: Oginska-Bulik (2006), and Kim, Kim, and Kang (2014). In addition, these studies do not take organisational and job-related elements into account. Nevertheless, research has shown the importance of factors such as the nurse–physician relationship, management at the unit level, and hospital management in the development of burnout (Van Bogaert, Clarke, Roelant, Meulemans, & Van de Heyning, 2010; You et al., 2013).

Therefore, the current study aims to expand the existing evidence concerning Type D personality and burnout in nursing, while taking the organisational and job-related elements into account as well. Thus, examining the complete diathesis  $\times$  stress model. The main hypothesis of this study is that even after correcting for a wide array of stressors – containing job-related and organisational factors – the diathesis or Type D personality will be a determining factor for increasing burnout risk.

In addition, some evidence suggests differences in personality and behaviour between nursing specialty areas. This implies that not all nurses can be grouped together when considering personality but that clusters of similar personality characteristics can be identified among nurses working within the same specialty area (Cross & Kelly, 1984; Kennedy, Curtis, & Waters, 2014; Lentz & Michaels, 1965). This led to the hypothesis that a nurse's personality type might influence her choice of nursing specialty area (provided that the nurse is able to choose the area). Therefore, a higher prevalence of certain personality types within a nursing specialty area might render that area more vulnerable to burnout. In fact, literature often describes differences in the prevalence of burnout across various nursing specialty areas (Hooper, Craig, Janvrin, Wetsel, & Reimels, 2010). As a consequence, different approaches to burnout prevention might be advised according to the specialty area. Therefore, the nursing specialty area was also considered in the study at hand.

## 2. Method

### 2.1. Participants

The study sample consisted of nurses between 21 and 65 years of age. They were selected from 12 general hospitals across Antwerp, Belgium. Due to the fact that literature often describes differences in personality, behaviour and burnout prevalence among various nursing specialty areas (Cross & Kelly, 1984; Hooper et al., 2010; Kennedy et al., 2014; Lentz & Michaels, 1965), we included an equal number of participants from different specialty areas. Nursing specialty areas were identified based on similar working conditions. This resulted in six areas, namely: Technical units; a combination of Emergency Room (ER), Operating Room (OR), and Intensive Care Units (ICU); Medical and Surgical units; Psychiatric units; Paediatric units; and finally Geriatric units.

### 2.2. Procedure

During this cross-sectional study, data were collected by means of a written questionnaire between 24 April and 2 July 2013. A statistical power analysis was performed for sample size estimation, based on data from the study of Polman et al. (2010) comparing emotional exhaustion and disengagement (or depersonalisation) between a group with Type D personality and a group with non-Type D personality. The effect size (ES) in this study was 0.58 and 0.63, respectively, for emotional exhaustion and disengagement. This effect size is considered to be 'medium' using Cohen (1988) criteria. With an  $\alpha = .05$  and power = 0.80, the projected sample size needed with this effect size (Faul, Erdfelder, Lang, & Buchner, 2007) is approximately  $N = 70$  for this simplest comparison. Thus, our proposed sample size of 249 (70 + 179) was more than adequate for the main objective of this study, while also allowing for expected attrition and controlling for possible confounding factors (Hunt, 2015). Sample size calculations for chi-square and One-way-ANOVA comparing Type D or burnout within the nursing specialties were not possible, as no similar studies were available. Therefore, a post hoc power analysis was conducted. The effect sizes (ES) for these calculations were small and ranged from 0.088 for the percentage of Type D personality within the nursing specialty areas up to 0.199 for the prevalence of (very) high depersonalisation within the nursing specialty areas (Table 2). Power calculation indicated a power between 0.137 and 0.599 for these results. For the multiple linear regression analysis the same method of power calculation was applied. The effect size (ES) in this study was 0.18, and power calculation indicated a power of 0.985.

In order to select the participating units, a database was set up containing all of the units in the 12 hospitals, categorised per nursing specialty area. Different department types were grouped within each nursing specialty area: for instance, the 'technical units' specialty area combined departments such as radiology and different types of outpatient clinics, and the 'ER-OR-IC units' specialty area gathered operating, recovery, and emergency rooms, and intensive and medium care units.

A large number of units were selected at random using dice in order to include different types of departments per specialty area and thus obtain a broad spectrum of the nursing profession within the hospital setting. A total of 34 units were asked to participate in the study. Six unit nurse managers refused to participate due to high workload. Considering the proposed sample size of 249 nurses and the large number of selected units, we limited the number of selected nurses per unit to thirteen. Thus, the unit nurse managers of the participating units were asked to choose a random day or shift and hand out questionnaires to the nurses working at that time. Depending on the number of nurses employed within the selected units, three to thirteen questionnaires were handed out

per unit, with an average of eight. Especially the technical units often employed only a few nurses. To avoid selection bias, the unit nurse managers were obliged to follow the selection procedure rigorously. Despite the small number of nurses per unit, this strict randomisation ensured that the selection of nurses was representative for the total unit.

All selected nurses received a questionnaire, an informed consent form, and an envelope to seal the questionnaire after completion to ensure privacy. With the aim of increasing the response rate, an incentive of two cinema tickets was provided when a questionnaire was submitted. Of the 249 questionnaires, 222 were submitted, for a response rate of 89%.

### 2.3. Measures

The questionnaire consisted of validated instruments concerning Type D personality, stress and burnout. A fourth validated instrument regarding job-related and organisational factors was added to be able to correct for this influence during the analysis. These validated instruments were supplemented with demographical questions and job characteristics.

For measuring Type D personality, the DS-14 questionnaire was used: a short survey consisting of 14 questions that can be divided into two sub-scales – negative affectivity and social inhibition. In order to measure negative affectivity, statements such as "I often feel unhappy" and "I am often in a bad mood" were postulated. The score for social inhibition was determined through statements such as "I find it hard to start a conversation" and "I often feel inhibited in social interactions". For both subscales, participants were asked to rate to what degree the statements were true for them on a scale ranging from 0 to 4. Nurses were categorised as having Type D personality when they scored 10 or more on the negative affectivity scale as well as on the social inhibition scale. The questionnaire has shown convergent, discriminant and predictive validity and good reliability with Cronbach's alphas ranging from 0.86 to 0.88 (Denollet, 2005). In the present study, Cronbach's alpha totalled up to 0.90.

Burnout was evaluated using the Utrecht Burnout Scale (UBOS; Schaufeli & Van Dierendonck, 2000). This is the translated and validated version of the Maslach Burnout Inventory Human Service Survey (MBI-HSS), which can be applied specifically to nurses (Maslach, Jackson, & Leiter, 1996). The instrument consists of 20 items that measure the frequency of the main burnout symptoms on a six-point scale. For the burnout dimension of emotional exhaustion, statements such as "Working with people all day is really a strain for me" were given. The dimension of depersonalisation was measured through sentences like "I worry that this job is hardening me emotionally". Finally, personal accomplishment was examined through statements such as "I feel I'm positively influencing other people's lives through my work". Dutch cut-off values specified for nurses were used because Belgian cut-off values were not available (Schaufeli & Van Dierendonck, 2000). These cut-offs were applied to identify high or very high levels of emotional exhaustion (mean score > 2.12) and depersonalisation (mean score > 1.79 or > 1.59 for men or women, respectively) and low or very low levels of personal accomplishment (< 3.57) (Schaufeli & Van Dierendonck, 2000).

In keeping with the guidelines, burnout was defined as 'having a high to very high score of emotional exhaustion and depersonalisation combined with a low to very low score on personal accomplishment'. Another term that is often used in burnout research is 'a high risk of burnout'. Respondents were identified as having a high risk when they experienced high to very high emotional exhaustion in combination with either high to very high depersonalisation or low to very low personal accomplishment (Schaufeli & Van Dierendonck, 2000). In the current study,

Cronbach’s alpha for the total questionnaire was 0.70; 0.88 for the dimension of emotional exhaustion; 0.68 for the depersonalisation dimension; and 0.74 for personal accomplishment.

Furthermore, stress was assessed using the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). This questionnaire contains 10 items that ask about the level of stress that was experienced during the past day, using a five-point Likert scale. For example: “In the last day, how often have you been upset because of something that happened unexpectedly?” and “In the last day, how often have you felt that you were unable to control the important things in your life?” This resulted in a continuous stress score. According to Cohen et al. (1983) the questionnaire can measure an independent construct and can be classified as a reliable test for perceived stress. Cronbach’s alpha for this scale was 0.83.

Finally, a translated and validated version of the Revised Nursing Work Index (NWI-R-vl) was added to the survey. This instrument consists of three dimensions: nurse–physician relationship (e.g. “Physicians and nurses have good working relationships”), nurse management at the unit level (e.g. “A supervisory staff that is supportive of nurses”), and hospital management and organisational support (e.g. “Adequate support services allow nurses to spend time with patients”) (Aiken & Patrician, 2000; Van Bogaert, Clarke, Vermeyen, Meulemans, & Van de Heyning, 2009). Respondents indicated the extent to which they agree with the statements about various job-related and organisational factors in their current position on a 4-point Likert-type scale (strongly disagree, disagree, agree, strongly agree). A good model of fit was demonstrated for this questionnaire. In the present study, Cronbach’s alphas totalled up to 0.81, 0.78, and 0.79 for the dimensions of nurse–physician relationship, nurse management at the unit level, and hospital management and organisational support, respectively.

2.4. Statistics

SPSS version 20.0 was used to analyse the data (IBM, 2011). Only parametric statistics were applied. One-way-Anova and chi-square were selected for between group comparisons of Type D personality, stress and burnout within the different specialty areas. In addition, Pearson’s correlation was selected for calculating the relation between the total Type D score and the burnout dimensions. Furthermore, a multiple linear regression model was constructed using the enter method. Burnout risk was regressed on ‘Type D personality’, ‘working as a unit nurse manager’ and ‘employment percentage’.

Effect size was measured with Phi for chi-square. G-Power was used for calculating the effect size of One-way-Anova, Pearson’s correlations and the multivariate analysis. The level of significance was set at  $p < 0.05$ .

3. Results/findings

As presented in Table 1, the research sample consisted primarily of women (83%) with an average age of 40 years. Almost half of them were married (48%). It was mostly resident nurses (69%) with a mean employment percentage of 86%, working alternating shifts (67%). Table 1 also shows that the participants were equally divided over the various unit groups, ranging from 14% to 18% per group.

Within this nursing sample, the average prevalence of Type D personality totalled up to 28%. Fig. 1 shows the prevalence of Type D within the different specialty areas, indicating that medical and surgical units had the lowest percentage of Type D personalities (23%), and paediatric units had the highest with 36% meeting the criteria for Type D personality. These differences between the specialty areas were not significant ( $p = 0.885$ ).

**Table 1**  
Participant and job-related characteristics (N = 222).

Characteristics	%	Mean (SD)
Women	82.9	
Age		40.0 (10.5)
<i>Marital status:</i>		
Married	47.7	
Cohabiting	20.7	
Single	18.9	
Divorced	6.3	
Living with family or friends	5.9	
Newly reconstituted family	4.1	
Employment percentage		86.0 (16.4)
<i>Diploma:</i>		
Assistant nurse	24.2	
Resident nurse	68.9	
Master	3.7	
Management training	3.2	
<i>Function:</i>		
Nurse	87.8	
Assisting unit nurse manager	2.3	
Unit nurse manager	9.9	
Years working as a nurse		16.7 (10.9)
Years working at the unit		10.0 (8.7)
<i>Work regime:</i>		
Alternating shifts	67.1	
Day shifts only	25.2	
Night shifts only	7.7	
<i>Nurses per specialty area:</i>		
Technical	18.0	
ER-OR-ICU	17.6	
Medical and Surgical	18.0	
Psychiatric	16.2	
Paediatric	16.7	
Geriatric	13.5	

Note: SD = standard deviation.

Table 2 shows that 27% of the total sample experienced high to very high emotional exhaustion, with the highest prevalence of this burnout dimension in geriatric units (37%). High to very high depersonalisation was found in 23% of the total sample, with up to 33% of the ER, OR and ICU nurses suffering from this symptom. Furthermore, low to very low feelings of personal accomplishment were discovered in 10% of the participants. This feeling occurred most often in medical and surgical units (15%). Combined, these symptoms identified 1 in 10 nurses as having a high risk of burnout – ranging from 3% in psychiatric units, up to 20% in geriatric units. Except for the paediatric units, this risk of burnout corresponded to the mean stress scores of the units. Finally, using the cut-off

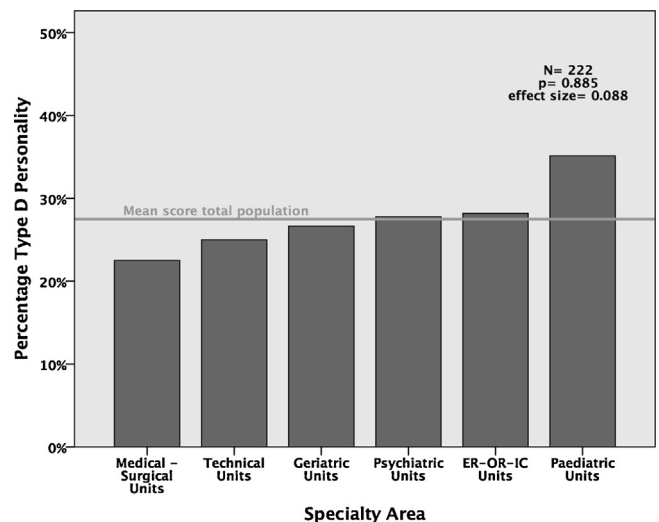


Fig. 1. Comparison of Type D prevalence among the nursing specialty areas.

**Table 2**  
Prevalence of burnout in the total sample and within the various unit groups.

Stress and burnout outcomes	Nursing specialty areas							p	Phi
	Total sample N = 222%	Technical N = 40%	ER-OR-ICU N = 39%	Medical Surgical N = 40%	Psychiatric N = 36%	Paediatric N = 37%	Geriatric N = 30%		
(Very) High emotional exhaustion	26.6	22.5	25.6	27.5	19.4	29.7	36.7	0.690	0.118
(Very) High depersonalisation	22.5	10.0	33.3	27.5	19.4	16.2	30.0	0.118	0.199
(Very) Low personal accomplishment	10.4	7.5	12.8	15.0	8.3	5.4	13.3	0.707	0.115
High burnout risk	9.9	7.5	10.3	15.0	2.8	5.4	20.0	0.171	0.187
Stress score mean (SD)	8.9(5.8)	8.5(5.1)	8.7(6.3)	9.1(5.2)	7.1(4.2)	10.3(6.5)	10.3(7.3)	0.189	0.183

score, burnout was diagnosed in 2% of the nurses. No percentages were calculated for the different unit groups because of the small numbers per group.

Regarding the relationship between Type D personality and emotional exhaustion, a strong positive correlation was observed ( $r=0.525$ ,  $p<0.001$ ). This positive relation could also be found for depersonalisation ( $r=0.338$ ,  $p<0.001$ ). Personal accomplishment had a negative correlation with type D personality ( $r=-0.304$ ,  $p<0.001$ ) (Fig. 2).

Besides the diathesis of Type D personality, stressors, such as organisational and job-related factors, may influence the risk of burnout. Therefore, a multivariate analysis was conducted (Table 3) to correct for these confounders. The relation to risk of burnout of the 'nurse-physician relationship', 'hospital management and organisational support' and 'nurse management at the unit level' and of all variables displayed in Table 1 were calculated. Only the stressors 'employment percentage' and 'working as a unit nurse manager' were found to be significantly related to the risk of burnout ( $p=0.002$ ;  $p=0.034$ , respectively). Therefore, these two variables were included in the multivariate analysis in addition to the variable comparing nurses with Type D personality to the remainder of nurses from the sample. The multivariate analysis resulted in only Type D remaining significant – with nurses who have this type of personality being five times more likely to have a high risk of burnout than nurses with any other type of personality (OR=5.249; CI [2.024–13.613]). In addition, this one factor explained 15% of the variance in risk of burnout. This analysis showed an observed power of 0.985.

#### 4. Discussion and conclusion

The fact that not all nurses who are exposed to the same organisational and job-related factors will develop burnout has led to the belief that individual factors may play an important role in the development of burnout. The results of this investigation confirm this theory.

The study established that nurses with Type D personality are five times more likely to have a high risk of burnout than nurses with a different personality type, even when taking into account the organisational and job-related factors. In addition, this personality type alone explained 15% of the variance in risk of burnout.

Moreover, an average of 28% of the nurses in our study sample exhibited this burnout-susceptible Type D personality. In comparison to the general Belgian and Dutch populations, this is a substantial percentage, as only 21% of the general population has

**Table 3**  
Multivariate analysis of risk of burnout (N = 222).

Variables	B	OR	CI	p	R <sup>2</sup>
Type D personality	1.602	5.249	2.024–13.613	0.001	0.149
Unit nurse manager	0.881	2.414	0.711–8.190	0.158	
Employment percentage	0.034	1.035	0.993–1.078	0.104	

Note: OR = Odds Ratio, CI = 95% confidence interval.

this personality type (Denollet, 2005). In addition, the prevalence of Type D personality varied across the different specialty areas – from 23% in medical and surgical units, up to 36% in paediatric units. However, further research concerning this topic in a larger sample is needed as the results in this study were not significant and had a small effect size.

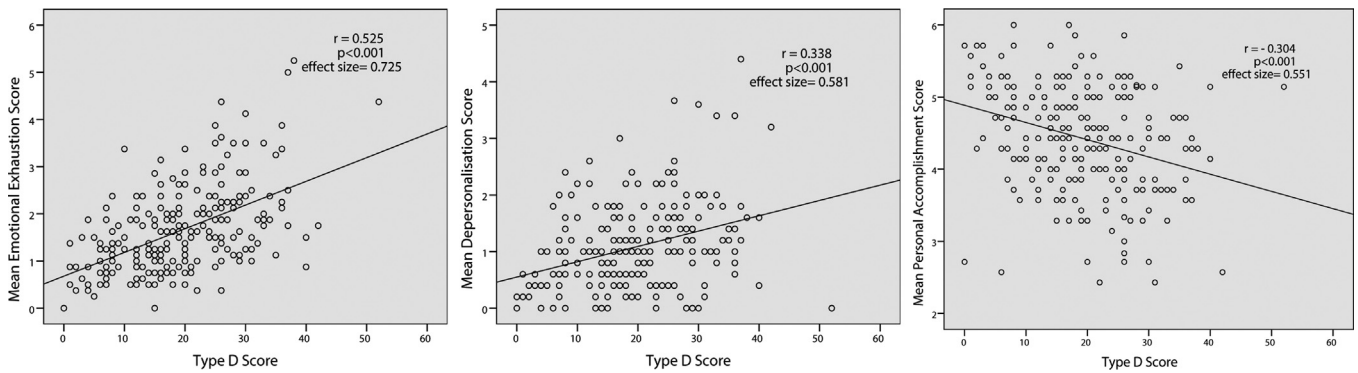
Furthermore, a high risk of burnout was observed in 1 out of 10 nurses. This prevalence is lower than that indicated in several other studies. For instance, Aiken et al. (2012) reported 25% burnout in Belgian nurses, and Vandebroek et al. (2012) measured 12% burnout in the same population. This difference in prevalence could be explained by the use of a different questionnaire for measuring burnout or by the studies being limited to several nursing specialty areas. For the frequency of risk of burnout and the mean stress score varied noticeably within the various specialty areas, ranging from 3% risk of burnout in psychiatrics, up to 15% in medical and surgical units, and 20% in geriatric units.

This varying prevalence across nursing specialty areas might be caused by additional factors that were overlooked in the current study and that vary across the different nursing specialties. However, personality types might also affect this variety in prevalence of burnout, since an association was observed between the three burnout dimensions and Type D – thus confirming previous findings regarding Type D personality and burnout within different populations (Kim et al., 2014; Mommersteeg et al., 2012; Oginska-Bulik, 2006; Polman et al., 2010).

Because personality has been described as a relatively stable trait (Denollet, 2005), it can be assumed that Type D personality is a vulnerable personality profile that increases the risk of the development of burnout. This causal connection cannot be confirmed due to the cross-sectional set-up of this study – although other personality types, such as neuroticism, have been related to impaired work functioning (Mommersteeg et al., 2012; Swider & Zimmerman, 2010).

However, the stability and strong genetic component (Kupper, Boomsma, de Geus, Denollet, & Willemsen, 2011) of Type D personality does not imply that a person's level of distress and risk of burnout is not modifiable (Mommersteeg et al., 2012). Individuals with a Type D personality have been shown to use maladaptive coping strategies at all levels of stress (Polman et al., 2010). Therefore, primary and secondary prevention should target this individual factor. Modification of both negative affectivity and social inhibition is desired. As a result, prevention could entail aspects of positive psychology and training in coping strategies, as well as a support group in which nurses can actively express and share their personal feelings, as this can defuse tension and lower burnout rates (Oginska-Bulik, 2006). Karlsson et al. (2007) have previously shown a reduction in Type D scores in patients with coronary artery disease due to a combination of group activities, training in social interaction, and a stress management programme based on cognitive-behavioural therapy.

Priority for this individual prevention should be given to several high-risk areas, such as geriatric and medical and surgical units, due to the high prevalence of burnout, along with specialty areas



**Fig. 2.** Correlation between the 3 burnout dimension and Type D personality ( $N = 222$ ).

with a high prevalence of Type D personality, such as paediatric units.

Some limitations of the study should be acknowledged. The number of nurses within each specialty area was relatively small. This resulted in small effect sizes for the comparison of Type D personality and burnout within the different specialty areas. In addition, it made it less meaningful to calculate the burnout prevalence using the cut-off. Therefore, the prevalence of the risk of burnout was used for further analysis. Thus, additional research investigating a larger sample of nurses is required. Furthermore, this study included self-report questionnaires alone, and the cross-sectional self-report methodology has its limitations. However, this design can be quite useful in providing a view of the inter-correlations among various feelings and perceptions. It provided important insights and was useful in deriving hypotheses about how Type D nurses react to their jobs. Additional methodologies will be needed to fully test these hypotheses. Using multiple methods or sources of data (such as observers or supervisors) can reinforce the confidence with which conclusions can be drawn from this data (Spector, 1994).

In sum, this study suggested Type D to be a vulnerable personality for the development of burnout. As a consequence, it can be advisable to target prevention programmes at this individual factor. A prevention programme including aspects of positive psychology, training in coping strategies, and a support group could possibly improve the individual's resilience against burnout.

### Conflict of interest

All authors declare that there are no financial or personal conflicts of interest.

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