Relationship between job demand and burnout in nurses: does it depend on work engagement?

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Aim The present study aimed to deepen the understanding of the relationships among job demands, control, social support, burnout and engagement in nurses.
Background Burnout is a prevalent phenomenon among nurses because of the interaction between high demands and low resources, according to the job demands–resources model.
Methods A descriptive, correlational design was used in a stratified random sample of 100 nurses recruited from two Spanish hospitals. Job demand, social support, control, engagement, and burnout were measured. Data were analysed by hierarchical regression analysis.
Results Social support is a significant predictor of nurses' engagement and demands is a predictor of nurses' burnout. Work engagement moderates the relationship between job demands and burnout.
Conclusions The process that leads to burnout and the process that leads to engagement are not isolated processes; engagement acts as a moderator of burnout.
Implications for nursing management The prevailing paradigm in combating burnout in nursing can be changed and could be based on the enhancement of nurses' strengths through increasing engagement.

Keywords: burnout, engagement, job demand–resources model, nurses

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Introduction

Nursing is a profession that requires face-to-face contact with patients and their families, and nurses must constantly address suffering and death; moreover, some degree of sensitivity is needed to establish a helping relationship. Furthermore, each nurse cares for a large number of patients, and the need for continued care requires an irregularity in work shifts. Finally, there is a lack of cohesion among multidisciplinary teams. All these factors support the conclusion that nursing is a profession with high emotional and physical demands, both of which promote a high prevalence of burnout (Greenglass *et al.* 2001). Moreover, burnout has several negative consequences, such as decreased commitment to the institution (Cho *et al.*

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2006), job dissatisfaction (Zangaro & Soeken 2007) and absenteeism (Beecroft *et al.* 2008, Rudman & Gustavsson 2011).

Although much is known about burnout and its causes, hospitals and nursing staff are far from having effective procedures to prevent or reduce it. A recent study conducted in Spain showed that the prevalence of burnout among nurses is increasing (Cañadas-De la Fuente *et al.* 2015); this study further supported the phenomenon of burnout in nursing and its potential predictors and relationships with other constructs.

Burnout

Burnout is a psychological response to chronic job stressors and is usually defined as '...a state of exhaustion in which one is cynical about the value of one's occupation and doubtful of one's capacity to perform' (Maslach *et al.* 1996). It consists of three components: emotional exhaustion, cynicism and personal efficacy. However, emotional exhaustion and cynicism are considered the 'core elements' of burnout (Maslach & Leiter 1997, Leiter & Maslach 2004). Emotional exhaustion is described as the feeling of being unable to give more of one's self. Cynicism is the development of negative and distant attitudes and responses to others, especially to the beneficiaries of the work. Finally, the lack of personal accomplishment refers to decreased feelings of competence and achievement at work (Maslach *et al.* 2001, Schaufeli *et al.* 2009b).

The extensive literature concerning burnout shows that it is a multi-cause phenomenon. First, individual factors, such as neuroticism and perfectionism, have been identified to play a significant role in the development of burnout, as they predispose individuals to develop negative coping skills with high job demands (Swider & Zimmerman 2010). There is also increasing evidence for the influence of structural causes in the workplace, especially the high demands and poor resources (Demerouti *et al.* 2001b, Laschinger *et al.* 2013), as well as the human resources organisation and leadership of the management (Spooner-Lane & Patton 2007, Aiken *et al.* 2012). In particular, aspects such as the autonomy of nurses and social support play a clear role in lowering vulnerability to burnout (Garrosa *et al.* 2010). All these factors are modifiable, whereas other structural factors, such as hospital size, geographical location or university status, which are not modifiable, have not been demonstrated as determining factors of burnout in nurses (Lindqvist *et al.* 2015).

Engagement

The concept of engagement was introduced by Kahn (1990), who postulated that employees with engagement put substantial effort into their work because they identify with it and are physically involved, cognitively vigilant and emotionally connected. Later, Maslach and Leiter (1997) added the concept of engagement to their previous conceptualisations of burnout, defined burnout as an erosion of engagement and suggested that burnout and engagement are opposite poles of a continuum. An alternative perspective considers that work engagement is a different psychological state and is defined as, 'a positive, fulfilling, work related state of mind characterised by vigour, dedication and absorption' (Schaufeli *et al.* 2002a). Vigour is characterised by a willingness to dedicate effort at work and persistence in facing difficulties. Dedication refers to being heavily involved with work and feeling enthusiasm, inspiration, pride, challenge and meaning. Absorption is characterised by being completely concentrated and happily immersed in work in such a way that time passes quickly.

The independence of engagement and burnout was empirically corroborated by additional research (Schaufeli & Bakker 2004, Schaufeli *et al.* 2009a, Demerouti *et al.* 2010).

The job demands–resources (JD-R) model

The job demands–resources (JD-R) model provides a framework in which we can understand the relationship between burnout and engagement. This model postulates that the wellbeing of employees is produced by the interaction of the demands (physical, social and organisational aspects of work that require physical and psychological effort by employees) and resources (physical, social and organisational aspects of job) that reduce the burden of demands (Demerouti *et al.* 2001a, Schaufeli & Bakker 2004, Bakker & Demerouti 2007).

The JD-R model suggests two interrelated psychological processes: one that leads to burnout by the demanding aspects of work (overwork, emotional demands, etc.) and another that leads to engagement through personal resources (autonomy, learning opportunities, etc.) (Hakanen *et al.* 2006, Bakker & Demerouti 2007). This model offers an explanation for burnout and work engagement, in which both the positive and negative aspects of work can be analysed together rather than separately. The model assumes

that there are two final results, engagement and burnout, which are influenced by various factors but act in parallel. However, the relationships that are established are more complex and may be mutually modified or interact, as shown by the research conducted by Garrosa *et al.* (2010) in which nurses with higher social support showed lower levels of emotional exhaustion. The study therefore showed a crosslink between the two processes discussed above because social support negatively affects the process that leads to burnout.

Present study

Based on the JD-R model, the present study examines the relationships among job demands, control, social support, burnout, and engagement in nurses who work in wards. Current available research seems to support the relationships between control and social support and engagement on the one hand and between demands and burnout on the other hand (Opie *et al.* 2010, Adriaenssens *et al.* 2011, Garrosa *et al.* 2011, Othman & Nasurdin 2012). However, it remains unclear whether engagement may interact with burnout. The present study aims to further investigate this topic by delving into the relationship between the two psychological processes: one leading to engagement and one leading to burnout. For this purpose, the following hypotheses were tested:

H1: When control and social support increase, work engagement increases
H2: Job demands are positively related to burnout, but not related to work engagement
H3: Work engagement has a moderating effect in the relationship between demand and burnout.

Methods

Participants and procedure

A stratified (according to wards) random sample of 100 nurses were recruited from two Spanish university general care hospitals located in Elche and Terrassa between January 2014 and December 2014, except for holiday periods. The wards involved included: internal medicine, surgery, gynaecology, geriatrics, palliative care, paediatrics and psychiatry. Critical care services and emergency services were excluded from the sample because of their distinctive features. The nurse to patient ratio in these hospitals ranged from 10 patients in the day shift to 30 patients in the night shift.

First, an anonymous list with all the nurses working in the hospital wards was provided by the hospitals. The inclusion criteria required that nurses had to have a full-time, ongoing contract; those nurses who were currently not working were excluded. From each ward (strata), a random sample of 80% of the nurses was selected. Voluntary participation of the nurses was then requested, and we individually explained the purpose of the study. After acceptance, questionnaires were provided in a sealed envelope and the nurses had 7 days to complete them. Seventeen nurses declined to participate in the study, so the final sample comprised 100 nurses, giving a response rate of 85.47%.

Ethical considerations

Ethical committee approval of the study was granted by the hospitals. The participants were informed about the purpose of the study and signed an informed consent. Their participation was voluntarily, and data confidentiality was guaranteed.

Measures

Demands, control and support

Demands were measured with the Job Content Questionnaire (JCQ; Karasek *et al.* 1998, adapted by Escribà-Agüir *et al.* 2001). This scale assesses the amount of work, the intellectual demands and the pressure of working. It is composed of six items that use a four-point scale ranging from 'completely disagree' (0) to 'completely agree' (3). An example of an item is, 'My work requires working very hard'. The Cronbach's α for this scale was 0.821.

Control over work was measured by the JCQ. This scale assesses the ability to make decisions, creativity and the implementation and development of one's skills. It is composed of seven items that use a four-point scale ranging from 'completely disagree' (0), to 'completely agree' (3). An example of an item is, 'I have substantial influence on what occurs in my job'. The Cronbach's α for this scale was 0.729.

Support was measured by the JCQ. This scale evaluates the support received from colleagues and superiors. It is composed of nine items that use a four-point scale ranging from 'completely disagree' (0) to 'completely agree' (3). An example of an item is, 'My supervisor cares about the wellbeing of people who are responsible'. The Cronbach's α for this scale was 0.836.

Engagement
Work engagement was measured by the core dimensions of the Utrecht Work Engagement Scale (UWES). The core dimensions are vigour and dedication, and it is composed of 11 items that use a seven-point scale ranging from 'never' (0) to 'always' (6). An example of an item is, 'My work is full of meaning and purpose' (Schaufeli *et al.* 2002a,b). The overall score can range from 0 to 66. The Cronbach's α was 0.767 for vigour and 0.873 for dedication.

Burnout
Burnout was assessed by the core dimensions of the Maslach Burnout Inventory (MBI), which are emotional exhaustion and cynicism. It is composed of 14 items that use a seven-point scale ranging from 'never' (0) to 'always' (6). An example of an item is, 'I have become more insensitive to people since I began working in this profession' (Maslach *et al.* 1996, Gil-Monte 2005). The overall score can range from 0 to 84. The Cronbach's α was 0.854 for emotional exhaustion and 0.533 for cynicism.

Data analysis

The STATISTICAL PACKAGE FOR SOCIAL SCIENCES (SPSS) version 20.0 software for Windows (SPSS Inc., Chicago, IL, USA) was used to analyse the data. Descriptive statistics, Pearson correlations and Cronbach's alpha coefficients were computed first.

The data were checked for multicollinearity using the tolerance and the variance inflation factor (VIF; Belsley *et al.* 1980). Any VIF values greater than 10 and tolerance values smaller than 0.10 may indicate multicollinearity. The data did not present signs of multicollinearity in the regression models.

To evaluate engagement, a hierarchical regression analysis tested the relationship between control and support with engagement, and we controlled for demographic characteristics by entering them first.

To evaluate burnout, a hierarchical regression analysis tested the main and interactive effects of demands and engagement on burnout. Demographic characteristics were controlled by entering them first. Demand, as a primary potential predictor identified in the literature, was entered second. Engagement was entered third, and the interaction between demand and engagement was entered fourth. Following the procedures described by Aiken and West (1991), the predictor variables were centred; specifically, the means of these variables were set to zero, and the standard deviations were consistent. Centring provides a meaningful zero-point for a predictor variable and moderator variable (i.e. provides the effects at the means of predictor and moderator, respectively). Having clearly interpretable zero-points is important because in a moderated regression the conditional effects of one variable are estimated when the other variable is fixed at 0.

Finally, to better explore the moderating effects, the interactions were plotted using the standardized regression coefficients of the regression lines for high (1 SD above the mean) and low (1 SD below the mean) levels of the moderator variable (Aiken & West 1991).

Results

Participants' sociodemographic descriptive statistics

The participants' shifts were distributed as follows: morning 21.87%, afternoon 17.71%, night 15.62%, and rotating 44.79%. In the entire sample, 89.58% were women and the mean age was 40.58 years (SD 8.54 years); 72.92% cohabited with a partner. Their average work experience as a nurse was 17.29 years (SD 8.39 years) and 76.59% of them had a permanent job contract, while 23.40% had a temporary contract.

Preliminary and descriptive statistics

Table 1 shows the Pearson's correlations between the variables that were studied and the correlations between the subscales of the variables. The data show high correlations between control and engagement, and between support and engagement (r_{xy} = 0.304 and r_{xy} = 0.361, respectively), as well as high correlations between demand and burnout (r_{xy} = 0.446). The reliability (Cronbach's α) of all the variables is also shown in Table 1.

Hierarchical regression

Table 2 shows the analysis of nursing engagement. The sociodemographic variables were entered in the first step, and none of them emerged as an engagement predictor. In the second step, control and support were entered, and only support was a significant predictor of engagement.

In the analysis of burnout (see Table 3), gender, marital status, number of children, shift, years as registered nurse (RN), postgraduate education, employment relationship and age were entered in

Table 1
Means, standard deviations and correlations of all variables described in the study

Measures	No. of items	M/ item	SD/ item	1	2	3	4	5	6	7	8	9
1. Demand	6	2.26	0.56	(0.821)								
2. Control	7	2.27	0.40	0.322**	(0.729)							
3. Support	9	2.01	0.47	0.015	0.261*	(0.836)						
4. Vigour	6	4.25	0.92	0.148	0.186	0.326**	(0.767)					
5. Dedication	5	4.29	1.19	−0.027	0.375**	0.349**	0.749**	(0.873)				
6. Exhaustion	9	2.46	1.18	0.452**	−0.096	−0.240*	−0.282	−0.403**	(0.854)			
7. Cynicism	5	1.13	0.90	0.284**	−0.014	−0.086	−0.214	−0.291**	0.440**	(0.533)		
8. Engagement	11	4.27	0.98	0.061	0.304**	0.361**	0.930	0.940**	−0.369	−0.272*	(0.893)	
9. Burnout	14	1.99	0.93	0.446**	−0.112	−0.242*	−0.343**	−0.475**	0.949**	0.701**	−0.441**	(0.833)

M/item, mean divided by the number of items; SD/item, standard deviation divided by the number of items.
Reliability coefficients (Cronbach's α) appear in parentheses along main diagonal.
*$P < 0.05$; **$P < 0.01$.

Table 2
Hierarchical regression analysis of the predictors of nursing engagement

	Step 1		*Step 2*		*Collinearity statistics*	
	B	*Significance*	*B*	*Significance*	*Tolerance*	*VIF*
Gender	−6.83	0.073	−5.65	0.112	0.917	1.091
Marital status	1.65	0.149	0.834	0.450	0.814	1.228
Number of children	1.59	0.288	0.311	0.829	0.697	1.435
Shift	−0.501	0.706	−0.811	0.519	0.556	1.798
Years as registered nurse	−0.126	0.651	−0.231	0.385	0.249	4.021
Postgraduate education	−3.968	0.156	−2.86	0.282	0.719	1.391
Employment relationship	0.405	0.874	0.500	0.834	0.748	1.337
Age	0.008	0.980	0.121	0.662	0.228	4.381
Control			0.736	0.121	0.761	1.314
Support			0.73*	0.024	0.706	1.417
R^2	0.145		0.280			
Change in R^2	0.145		0.135			
Significance of F Change	0.245		0.003			

VIF, Variance Inflation Factor
*$P < 0.05$.

Table 3
Hierarchical regression analysis of the predictors of nursing burnout.

	Step 1		*Step 2*		*Step 3*		*Step 4*		*Collinearity statistics*	
	B	*Significance*	*B*	*Significance*	*B*	*Significance*	*B*	*Significance*	*Tolerance*	*VIF*
Gender	1.388	0.762	1.125	0.792	−2.233	0.557	−0.135	0.972	0.817	1.223
Marital status	−1.95	0.158	−1.540	0.233	−0.545	0.634	−0.915	0.416	0.839	1.193
Number of children	−3.20	0.085	−2.567	0.140	−1.701	0.266	−2.418	0.113	0.699	1.430
Shift	2.187	0.193	1.389	0.378	.975	0.480	.699	0.603	0.562	1.778
Years as registered nurse	0.159	0.645	−0.138	0.681	−0.218	0.458	−0.303	0.293	0.244	4.092
Postgraduate education	4.831	0.181	0.722	0.840	−2.822	0.382	−3.063	0.329	0.583	1.715
Employment relationship	−1.96	0.529	−3.299	0.262	−3.536	0.170	−4.155	0.100	0.702	1.424
Age	−0.296	0.407	−0.026	0.940	−0.015	0.959	.077	0.793	0.227	4.397
Demands centred†			1.598*	0.002	1.879***	0.000	2.096***	0.000	0.641	1.560
Engagement centred†					−0.546***	0.000	−0.405*	0.004	0.652	1.534
Demands–engagement interaction‡							−0.087*	0.032	0.678	1.476
R^2	0.158		0.282		0.460		0.500			
Change in R^2	0.158		0.123		0.179		0.040			
Significance of F Change	0.246		0.002		0.000		0.032			

VIF, Variance Inflation Factor
*$P<.05$; ***$P<.001$.
†Demands and engagement are centred around the respective sample means.
‡Interaction is the crossproduct of demands centred and engagement centred.

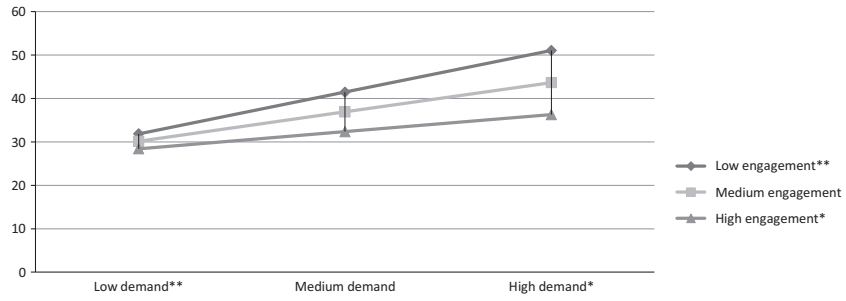

Figure 1
Interaction effect of engagement in predicting burnout. *Variables high levels are 1 SD above the mean; **variables low levels are 1 SD below the mean.

step 1, and none of them emerged as significant predictors. In Step 2, demand was entered and it was positively related to burnout and accounted for 28.2% of the variance ($\Delta R^2 = 0.123$, $P = 0.002$). In step 3, engagement was entered, and the amount of variance increased to 46% ($\Delta R^2 = 0.179$, $P < 0.001$); the effect of demand also remained significant.

Finally, in step 4, the interaction between factors was evaluated ($\Delta R^2 = 0.04$, $P = 0.032$) and was found to be significant; demand and engagement remained significant as well. The significant interaction between demand and engagement indicated that nurses with greater engagement reported lower levels of burnout when experiencing higher demands compared with less-engaged nurses (see Figure 1). Overall, the model variables accounted for 50% of the variance of burnout.

The model obtained a statistical power of 0.909, the type I error was 0.05 and the type II error was 0.091. Cohen (1992) considered values over 0.8 in statistical power as good values. This means, in this case, that the probability of rejecting the null hypothesis being false is high.

Discussion

The present study examined the relationships among job demands, control, social support, burnout and engagement in nurses. The present study expands, by introducing engagement as a moderator of the relationship between job demands and burnout, the relationships established in the JD-R model between the two psychological processes.

Hypothesis 1 stated that control and social support were associated with higher work engagement. In support of this hypothesis, the results identified a significant and positive correlation between control and support. However, in the regression analyses, when control and support were maintained as predictor variables and engagement was the outcome, only support appeared as a significant predictor. Previous studies have shown an association of support and control with engagement (Opie *et al.* 2010, Othman & Nasurdin 2012, Van Bogaert *et al.* 2013), whereas in other studies a relationship was only observed between social support and burnout (García-Izquierdo & Ríos-Rísquez 2012, Ariapooran 2014). Although the results are consistent with previous literature, the hypothesis is only partly supported. It can be argued that these differences may be because of the organisation of work and the nature of nursing tasks in inpatient wards. First, work in an acute hospital ward is structured in a very rigid way, leaving little flexibility for decision making and the implementation of changes. Nurses have a wider scope for decision making and full autonomy to respond to the requirements of the moment in exceptional situations outside the daily routines. Furthermore, a large percentage of working time is used in administering medication, which is a delegated task where the decision-making of nurses is minimal. Nurses perform autonomous nursing tasks only during a small proportion of their working time. These reasons may have caused control to not be a significant variable in the development of engagement.

Hypothesis two stated that job demands were positively related to burnout but not with engagement. Accordingly, job demands have a high correlation with burnout but no relationship with engagement. In the regression analysis, job demand was a significant predictor, even when engagement was introduced into the model. These results are consistent with the literature (Van der Ploeg & Kleber 2003, García-Izquierdo & Ríos-Rísquez 2012).

For the third hypothesis, which proposed that work engagement had a moderating effect on the relationship between job demands and burnout, the analysis resulted in some interesting finding. We found that

work engagement moderated the relationship between job demands and burnout. Previous studies have shown that job demands are closely related to burnout (Bakker *et al.* 2004, Garrosa *et al.* 2011), whereas engagement is highly related to personal resources (Bakker *et al.* 2005, Hakanen *et al.* 2006, Mauno *et al.* 2007, Xanthopoulou *et al.* 2007). Thus, the hypothesis of the relationship between the two processes was suggested based on research that shows that personal resources have a positive impact on the development of burnout, such as the moderating effect of optimism (Garrosa *et al.* 2011). The results of the present this study supported this hypothesis because engagement had a moderating effect on the process of burnout, showing that nurses with higher engagement present less burnout in facing high job demands.

The results obtained in the present study allow us to support the distinction between burnout and engagement as different constructs with different antecedents as the JD-R model states. In addition, the findings permit a step further to suggest that burnout and engagement interact with one another, with engagement having a moderating effect on burnout. This conclusion can be considered as a development of the JD-R model.

Limitations

It is important to note several limitations of the present study and directions for further research. First, as this study is limited by its cross-sectional design, it is not possible, therefore, to test causality arguments. Second, this study relied exclusively on self-report measures. Third, the sample size was not large enough for statistical analysis with latent variables through structural equation modelling producing the restriction of not being able to test more complex models. Despite these limitations, It can be noted the multicentre nature of the sample and the random sampling and the statistical power, which are characteristics that provide substantial validity to the results, allowing for the generalization of the results to other hospitals and nurses. In addition, research conducted in other Spanish provinces shows values for burnout and engagement similar to those found in this investigation (Garrosa *et al.* 2011, Jenaro *et al.* 2011, Cañadas-De la Fuente *et al.* 2015).

Future research in this topic will require a joint study of burnout and work engagement, in which other predictors that are related to both constructs and may redress the balance established by the JD-R model that require further elucidation. In contrast to our expectations, control was not a significant predictor of engagement. A possible cause may be the lack of autonomy perceived by nurses in the wards. This hypothesis should be confirmed with a detailed study of nursing tasks in the wards and the influence they have on the work engagement.

Conclusions

There are two different psychological processes: one that leads to burnout and another that leads to engagement. Work demands are the greatest predictor of burnout, and personal resources are the main predictors of engagement. Nevertheless, this research shows that they are not isolated processes and that engagement may act as a moderator of burnout. This assumption allows for a new approach to the growing burnout of nurses by addressing engagement, a process that is independent of work demands and modifiable through social support.

Implications for nursing management

Work engagement influences nurses' performance; therefore, it has an impact health-care outcomes (García-Sierra *et al.* 2016). Based on the results of this research, it is also useful in decreasing burnout.

The implications of this research are directed towards organisational tasks and nursing human resources, which encounter budget cuts that greatly affect the nurses who are the most important workforce in hospitals. These cuts affect the coverage of nurses, leading to an increase in work demands, both psychological and physical, which result in increased burnout and presenteeism (Demerouti *et al.* 2009). These factors inevitably degrade the quality of care.

The nurses' work environment is complex, and social support is one contributing factor to this complexity. Through social support, work engagement can be increased and engagement can reduce the level of burnout, especially if work demands are high.

The present study supports a new approach to research in understanding the burdens of the nursing profession based on positive aspects. The prevailing paradigm in combating burnout in nursing can be changed and could be based on the enhancement of nurses' engagement. Engagement can become a tool for nursing managers that is more effective than what has been used traditionally, which has been based only on reducing the negative aspects of people and work teams, such as demand and distress.

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Ethical approval

Comité de Etica de investigación Clínica del Consorci Sanitari de Terrassa, June 17, 2013 and Comité Ético de Investigación Clínica del Hospital General Universitario de Elche, January 23, 2013.

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