

## Original Article

**Cite this article:** Ramaci T, Santisi G, Curatolo K, Barattucci M (2024) Perceived organizational support moderates the effect of job demands on outcomes: Testing the JD-R model in Italian oncology nurses. *Palliative and Supportive Care* **22**(5), 1338–1346. <https://doi.org/10.1017/S1478951524000890>

Received: 26 June 2023

Revised: 17 April 2024

Accepted: 6 May 2024

**Keywords:**

Job demand; perceived organizational support; burnout; oncology; nurse

**Corresponding author:**

Massimiliano Barattucci;

Email: [massimiliano.barattucci@unibg.it](mailto:massimiliano.barattucci@unibg.it)

# Perceived organizational support moderates the effect of job demands on outcomes: Testing the JD-R model in Italian oncology nurses

Tiziana Ramaci, M.D.<sup>1</sup>, Giuseppe Santisi, M.D.<sup>2</sup>, Krizia Curatolo, M.D.<sup>1</sup> and Massimiliano Barattucci, PH.D.<sup>3</sup> 

<sup>1</sup>Faculty of Human and Social Sciences, Kore University of Enna, Enna, Italy; <sup>2</sup>Department of Educational Sciences, University of Catania, Catania, Italy and <sup>3</sup>Department of Human and Social Sciences, University of Bergamo, Bergamo, Italy

**Abstract**

**Objectives.** The research aimed to test the job demands-resources (JD-R) model on a sample of Italian oncology workers, and the role of perceived organizational support (POS) as a moderator of the effects of JD on outcomes (job satisfaction and burnout [BO]).

**Methods.** Based on the JD-R model, a correlational study was designed to investigate the relationships between JD, POS as a job resource, self-esteem (as a personal resource), and job outcomes (BO and job satisfaction); the research involved a sample of oncology nurses ( $N = 235$ ) from an Italian public hospital, who completed a questionnaire during working hours. Relationships between variables were investigated with multiple regressions and moderation analysis.

**Results.** Results confirmed that JD predict both BO and job satisfaction; POS is a weak predictor of job outcomes, but its mediator role in the JD-outcomes relationship was confirmed: the more the nurses perceive a supportive organization, the weaker the positive relationship between JD and BO.

**Significance of results.** Findings are consistent with other contributions that highlighted that organizational job resources may attenuate the adverse effect of JD on positive and negative outcomes: POS may play a central role in employee well-being and health, acting as a possible moderator, and somehow defusing the positive association between JD and outcomes.

**Introduction**

Nurses in health-care environments, in daily contact with suffering patients, terminal situations, and impacting treatments, are one of the categories most exposed to the risk of work stress, turnover, dissatisfaction, and burnout (BO) (e.g., Gama et al. 2014; Gómez-Urquiza et al. 2020; Jennings 2008); the main organizational determinants of negative work outcomes among healthcare workers (HCWs) include the quality of working conditions, interpersonal relationships, role conflict, and high work demands (e.g., Gómez-Urquiza et al. 2020; Maslach et al. 2001; Rizo-Baeza et al. 2018); among the organizational factors that are instead considered protective of negative outcomes, employee perception of how attentive the organization is in evaluating and enhancing both the contributions received from its workers and their state of well-being (perceived organizational support [POS]) appears to have a relevant role (Bao and Zhong 2019; Xu and Yang 2021; Yi et al. 2018; Zeng et al. 2020).

Numerous studies have explored the role of cognitive and emotional demands and resources on workers' outcomes (i.e., emotional exhaustion, commitment, job satisfaction, etc.) within the job demands-resources (JD-R) model (e.g., Bakker and Demerouti 2017; Li et al. 2022).

The model (Schaufeli and Taris 2014; Xanthopoulou et al. 2012) hypothesizes the development of job strain and BO when the individual perceives an imbalance between JD and resources at work (Bakker and Demerouti 2017); the JD-R model, furthermore, theorizes that work outcomes are the result of the interaction between work demands and resources (i.e., support) to deal with them.

Based on the JD-R model, correlational research was designed with the participation of a homogeneous sample of oncology nurses from an Italian public hospital, who filled out a questionnaire that investigated the relationships between JD, POS, intended as job resource, self-esteem, as personal resource, and job outcomes (BO and job satisfaction). More specifically, as regards the theoretical contribution, the research aimed to test the JD-R model on

© The Author(s), 2024. Published by Cambridge University Press. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

the sample of Italian oncology workers, and the role of POS as a moderator of the effects of JD on outcomes.

The results of the research can provide indications both for the development of practices for managerial and peer support, the implementation of policies for the prevention of BO (e.g., training, empowerment, prevention, team building, operational solutions, etc.), and one-to-one support tools (e.g., sick days, absences, turnover, etc.) (Ahmad et al. 2022; Crawford et al. 2010; Serban et al. 2022).

### JD-R model in the oncology setting

The JD-R model (Bakker and Demerouti 2017; Brauchli et al. 2015) is one of the most used conceptual frameworks in the study of the relationship between organizational factors, personal factors, and job outcomes. According to this model, the work environment is composed of: (a) JD (physical, social, and organizational factors that require effort and costs) (Bakker and Demerouti 2017; Bakker and de Vries 2021) which are not necessarily negative but may require an activation effort; (b) job resources which represent a set of variables of different nature (organizational, relational, and psychological) that have a positive relationship with work outcomes, but an inverse relationship with work demands (Bakker et al. 2007; Broetje et al. 2020).

There are a limited number of studies that have used the JD-R model on samples of oncology HCWs, despite this being one of the categories with the highest levels of JD (Costeira et al. 2022; Wazqar 2018), BO, and dissatisfaction (Adil and Baig 2018; Lazarescu et al. 2018).

### Job resources and the role of perceived organization support

Recent studies underline that POS, as an organizational resource (Kurtessis et al. 2017; Lee and Peccei 2007), may impact work outcomes, and play a role in perceptions related to JD.

The POS represents the set of perceptions of the worker relating to how attentive the organization is to the aspects of well-being, operational support, and staff development (Zeng et al. 2020). Organizational support theory (Caesens and Stinglhamber 2020; Rhoades and Eisenberger 2002) theorizes that perceptions of support are determined not only by aspects of operational management support, but also by environmental, remuneration, and fairness aspects.

In HCWs, a high level of POS seems generally associated with better job outcomes and a positive psychological state (e.g., Zeng et al. 2020), lower strain symptoms such as anxiety, fatigue, and BO (Grama and Băiaș 2018; Lecca et al. 2020; Rhoades and Eisenberger 2002; Wu et al. 2016), and higher job satisfaction (Canboy et al. 2021; Kurtessis et al. 2017). Similar indications have been provided by other research on nurses in public and private hospitals (Özyer et al. 2016; Riggle et al. 2009); however, few studies have explored the relationship between POS and job outcomes in oncology workers (Guveli et al. 2015; Head et al. 2019; Yi et al. 2018).

Referring to recent evolutions of the JD-R model, furthermore, some job resources seem to have a possible moderating role on the effects of JD on outcomes (e.g., Bao and Zhong 2019; Tummers and Bakker 2021; Xu and Yang 2021); however, very few contributions on the health-care sector have tested it, and equally few with a sample of nurses; since several studies in other work sectors have confirmed the role of POS as a possible moderator between some

organizational determinants of stress and outcomes, it appears useful to explore these relationships in samples of oncology nurses (Canboy et al. 2021; Serban et al. 2022).

### Personal resources: The role of self-esteem

Among the so-called personal resources, self-esteem has developed some interest in the JD-R model of work outcomes; HCWs with higher self-esteem seem to better cope with job stress, as having a healthy confidence in one's skills and self-concept helps them to put in place efficient stress management with clarity and composure of thought. Since it is clear that self-esteem affects the way people consider themselves, and influences their professional development, some studies have investigated its relationship with work outcomes (Johnson et al. 2020; Kupcewicz and Józwiak 2020; Molero Jurado et al. 2018). In HCWs, self-esteem is proven to be positively associated with job satisfaction (Lee and Peccei 2007), as well as for intensive care unit nurses (Liu et al. 2017); nevertheless, no research has yet examined the role of self-esteem on the outcomes of oncology nurses. Based on the above-described framework and rationale (Bakker and Demerouti 2017), the present research integrated insights provided by literature (Serban et al. 2022; Turnell et al. 2016; Zeng et al. 2020) in a model in which JD, POS (as an organizational resource), and self-esteem (as a personal resource) are considered as antecedents, and BO and job satisfaction as the outcomes (Figure 1).

Given the assumptions of the JD-R model (Bakker and Demerouti 2017), and based on the evidence provided in the literature, we, therefore, hypothesized as follows:

*Hp1: Job demands will significantly predict job outcomes; more specifically, we expect that high levels of JD will positively predict high BO levels (Hp1a), and negatively high job satisfaction levels (Hp1b).*

Overall, from a review of the literature, it is clear that in HCWs, support from colleagues and from management is negatively associated with BO (Rizo-Baeza et al. 2018; Wazqar 2018), and positively with job satisfaction (Assiri et al. 2020; Courtneage et al. 2020; Kitajima et al. 2020). Consequently, it seems correct to assume that:

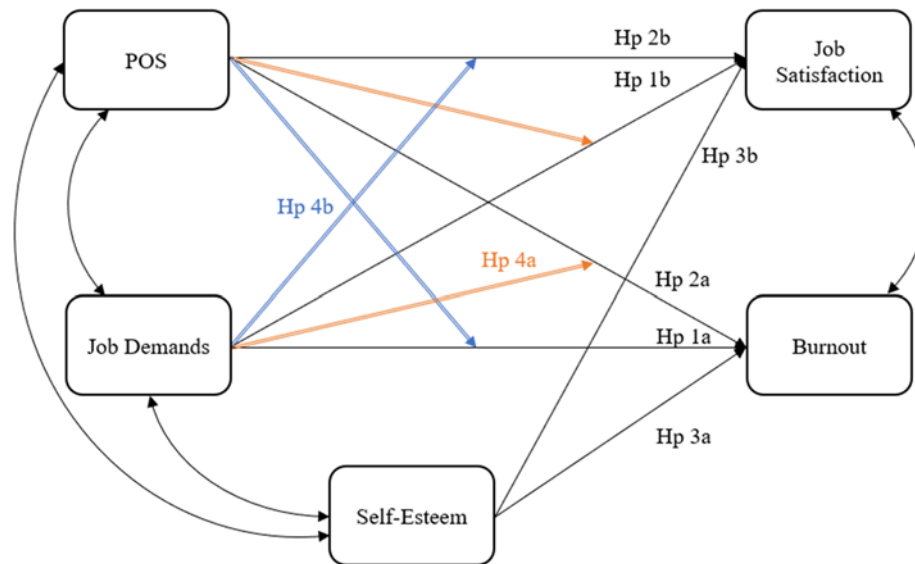
*Hp2: POS will significantly predict job outcomes; more specifically, we hypothesize that high levels of POS will negatively predict high BO levels (Hp2a), and positively high job satisfaction levels (Hp2b).*

Based on the indications provided by the theoretical framework and previous research (Costeira et al. 2022; Gama et al. 2014), it is possible to assume that:

*Hp3: Self-esteem will significantly predict job outcomes; more specifically, we hypothesize that high levels of self-esteem will negatively predict high BO levels (Hp3a), and positively high job satisfaction levels (Hp3b).*

As a result of the abovementioned indications and again referring to the JD-R model, we hypothesized as follows:

*Hp4: The interaction effect of JD × POS will be significant both for BO (Hp4a) and job satisfaction (Hp4b). The association between*



**Figure 1.** Tested conceptual model (the colored lines refer to moderated effects): moderation model in which the effect of both determinants (JD and POS) on outcomes is moderated by the other determinant.

JD and outcomes will vary as a function of POS levels. The tested model and research assumptions are shown in Figure 1.

## Methods

### Research design

This research adopts a quantitative approach with a cross-sectional design.

### Participants

The Italian National Health Service guarantees health care for cancer patients, the provision of palliative care, and through collaboration with the rich network of voluntary associations, also guarantees home care. The hospital, with over 1500 employees, operates in an area with a high population density. The oncology department is organized into 3 services: an oncology hospital, an operational unit, and a hospice.

### Measures

Participants completed the first section of the questionnaire with sociodemographic information and then they filled out a questionnaire made up of the following measures:

*The POS scale*, originally developed by Eisenberger et al. (2014), and based on literature indications (the majority of studies on POS use a short form developed from the 17 highest-loading items in the POS; Eisenberger et al. 2020), is a scale that measures the perceptions of beneficial treatment received by employees (e.g., “The organization where I work cares about my mental and physical well-being”). In the present study, POS was measured by the Italian version (8 items) (Di Stefano et al. 2020; Muse and Stamper 2007). All items were on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Cronbach’s alpha coefficient was .95.

*The Rosenberg Self-Esteem Scale* (Rosenberg 1965; Italian adaptation by Sartirana et al. 2013), is a 10-item scale that estimates

global self-worth by measuring positive and negative feelings about the self (e.g., “I feel that I have a number of good qualities”). Items are answered using a 4-point Likert scale format ranging from “strongly agree” to “strongly disagree.” Cronbach’s alpha coefficient was .79.

*The Professional Quality of Life Scale* (ProQoL; Stamm 2009; Italian adaptation by Palestini et al. 2009), aims to gauge the professional quality of life, through the measurement of 3 aspects of professional quality of life: compassion satisfaction (CS), compassion fatigue, and BO. In the present study, only the CS and BO dimensions of the ProQOL were utilized. The satisfaction subscale (8 items) measures the employees’ satisfaction with their ability (e.g., “My work makes me feel satisfied”). The BO subscale (7 items) measures if the worker is experiencing symptoms of BO (e.g., “I feel worn out because of my work”). Items were rated on a 5-point scale. Participants were asked: *in the last month how many times*, ranging from 1 (never) to 5 (very often). Cronbach’s alpha coefficient for CS was .86, and .88 for BO.

JD were measured with a *scale* from the literature (Bakker and Demerouti 2017; Lesener et al. 2019), that measures work pressure and emotional demands. (e.g., “I have to work very fast/my job requires me to keep a lot of information in mind at once”). In the present study, JD was measured by the Job Demands Italian 27-item scale version (De Carlo et al. 2008). The items were rated on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree.) The scale is believed to be unidimensional. Cronbach’s alpha coefficient was .83.

*Sociodemographic variables*, participants were asked to give information on their sociodemographic characteristics, such as gender, age, education, marital status, shift work, and seniority.

In order to address response bias and common method variance, we recurred to the suggested methods in literature (Baumgartner et al. 2021; Kock et al. 2021; Podsakoff et al. 2003) and various scale endpoints and formats for the measured variables were used to reduce method biases caused by commonalities in scale endpoints and anchoring effects, and scales were graphically separated.

**Data analyses**

The analytical approach was correlational. Cronbach's alphas and zero-order correlations were used to assess the scales' internal consistencies and examine associations between pairs of continuous variables; with the purpose of exploring the differences in the measured variables related to sociodemographic and work variables, independent sample *t*-tests, Analysis of Variance (ANOVAs), and correlational analysis were carried out, using IBM SPSS 23. Relationships between measured variables were examined through correlation analysis and multiple regressions, using SPSS 23 and SPSS PROCESS Macro 3.3.

More specifically, 2 moderation analyses were run to verify whether POS moderated the relationship between JD (and vice versa) and outcomes (BO and job satisfaction). For each analysis, PROCESS model number 1 with the macro developed by Hayes was run, estimating the relationship between the predictor and the criterion at low, medium, and high levels; the PROCESS

**Table 1.** Sample description

Ward	Gender		Age (years)	Seniority (years)	Night shift	
	N (%)	Woman	Man	Mean (SD)	Mean (SD)	N (%)
Oncology hospital	63 (27%)	37 (58%)	26 (42%)	48.4 (7.4)	14.3 (9.0)	43 (68%)
Hospice	145 (62%)	74 (51%)	71 (49%)	42.9 (9.2)	12.4 (9.8)	96 (66%)
Operational unit	27 (11%)	13 (48%)	14 (52%)	48.2 (8.1)	15.6 (7.9)	19 (70%)
Total sample	235	124 (53%)	111 (47%)	46.5 (8.4)	14.1 (9.2)	158 (67.5%)

**Table 2.** Descriptive statistics (mean and standard deviation) and correlations between measured variables

	M (SD)	1	2	3	4	5
1. Job demands	4.21 (.90)	-				
2. POS	3.38 (1.49)	-.283**	-			
3. Self-esteem	3.39 (.43)	-.055	-.057	-		
4. Burnout	.49 (.42)	.376***	-.252**	-.364***	-	
5. Job satisfaction	3.99 (.70)	-.292**	.208*	.251**	-.042	-

Note: *r*, Pearson correlation coefficient; \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

**Table 3.** Outcomes regressed on measured antecedents

	Burnout B 95% CI (LL, UL)	Job satisfaction B 95% CI (LL, UL)
Job demands	.374*** (.14, .59)	-.274*** (.15, .41)
POS	-.15** (-.25, -.01)	.16*** (.07, .21)
Self-esteem	-.314*** (-.64, -.46)	.220** (.16, .50)
Job demands × POS	-.224*** (-.24, -.02)	-.118*** (-.20, -.13)
R <sup>2</sup>	.27***	.23***

Note: \*\**p* < .01, \*\*\**p* < .001.

**Table 4.** Result of regression analysis concerning the moderation effect of POS on the job demands-burnout relationship and the conditional influence of POS based on the Johnson–Neyman technique

Variables > burnout	Coefficient	SE	<i>p</i>
Job demands	.43	.097	.000
POS	-.08	.059	n.s.
Job demands × POS	-.13	.055	.021
Constant	1.88	.085	.001
<i>R</i> <sup>2</sup> = .16; <i>F</i> = 10.79; <i>p</i> = .000.			
<i>R</i> <sup>2</sup> change = .027; <i>F</i> = 5.40; <i>p</i> = .021.			

macro allows bootstrapping (Hayes 2018), a nonparametric resampling procedure that does not assume normality and involves the extraction of several thousand subsamples (5000, in the present case) from a dataset. Through bootstrapping, the distribution of effects is empirically approximated and used for calculating confidence intervals (Preacher and Hayes 2004). For each association, the unstandardized B coefficient along with the 90% lower and upper limits of its respective confidence interval will be provided. Interactions were probed through the Johnson–Neyman technique. This technique provides a region of significance of the effect of X on Y; that is, it provides a continuum where the conditional effect of X on Y transitions between statistically significant and not significant at the alpha level of significance (Hayes 2018).

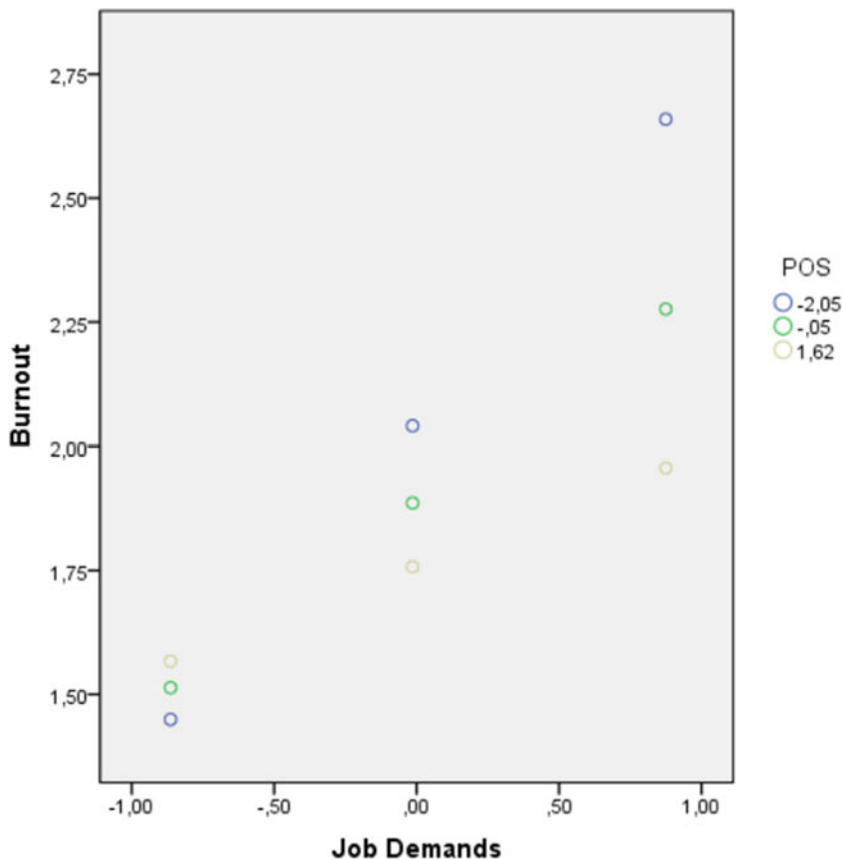
**Results**

**Recruitment**

The hospital was approached through a formal request to participate in the project, which was presented to managers and the head of the unit. A project on “Work-related stress and organizational resources” dedicated to all the nurses (*N* = 275) in the oncology ward of a Sicilian public hospital started in June 2021; a cross-sectional study was then carried out from 10 September 2022 to the end of December 2023, involving 262 voluntarily participating nurses from 3 different units: oncology hospital, hospice, and operational unit, from the same geographical area (Southern Italy) (Table 1). At the end of a short training meeting conducted by 2 researchers relating to the aforementioned project, during working hours, the nurses were given a paper and pencil questionnaire to complete and return in 5 days. A link was sent to complete the questionnaire online via Google form to those absent from the meeting. Missing data treatment was necessary (questionnaires completed with a missing percentage greater than 5%) and reduced the final analysis sample from 262 to 235 nurses.

**Descriptives**

The final analysis sample was made up of 235 nurses working in the oncology ward of a Sicilian public hospital, mostly in the hospice (*N* = 145, 62.7%), who completed the questionnaire in full. The sample was fairly balanced by gender (*N* = 124 women, 52.4%), with an average age of 46.47 years (SD = 8.36), mostly married (*N* = 164, 69.9%), with children (*N* = 176, 74.9%), and graduates (*N* = 127, 54.2%). Nurses mainly worked shifts (*N* = 209, 89.3%), including night shifts (*N* = 158, 67.5%), and the average seniority was 14.1 years (SD = 9.2).



**Figure 2.** The association between job demands and burnout as a function of POS.

No gender differences occurred for any of the variables, and no relationships between age or seniority and measured variables resulted from statistical analyses. Moreover, the ANOVA did not reveal any significant differences between groups regarding the level of education, marital status, and work structure for any of the considered variables. A barely significant difference between nurses with night and day shifts was found for JD ( $t_{233} = -2.1$ ;  $p < .05$ ; day shift, mean = 4.02, SD = .98; night shift, mean = 4.39, SD = .87).

### Correlational analysis

JD resulted significantly positively correlated with BO and negatively with job satisfaction; moreover, both POS and self-esteem were significantly negatively correlated with BO and positively with job satisfaction. Table 2 depicts descriptive statistics and correlations between study variables.

### Regression analysis

With the aim of testing hypotheses, 2 multiple linear regressions including BO and job satisfaction as criterion variables, JD, POS, and self-esteem as main predictors, were performed (Table 3).

BO was positively predicted by JD, and negatively by POS and self-esteem, confirming hypotheses 1a, 2a, and 3a. The interaction term (POS  $\times$  JD) was statistically significant (Table 3), therefore, confirming hypothesis 4a. Predictors explained about 27% of the BO's variance.

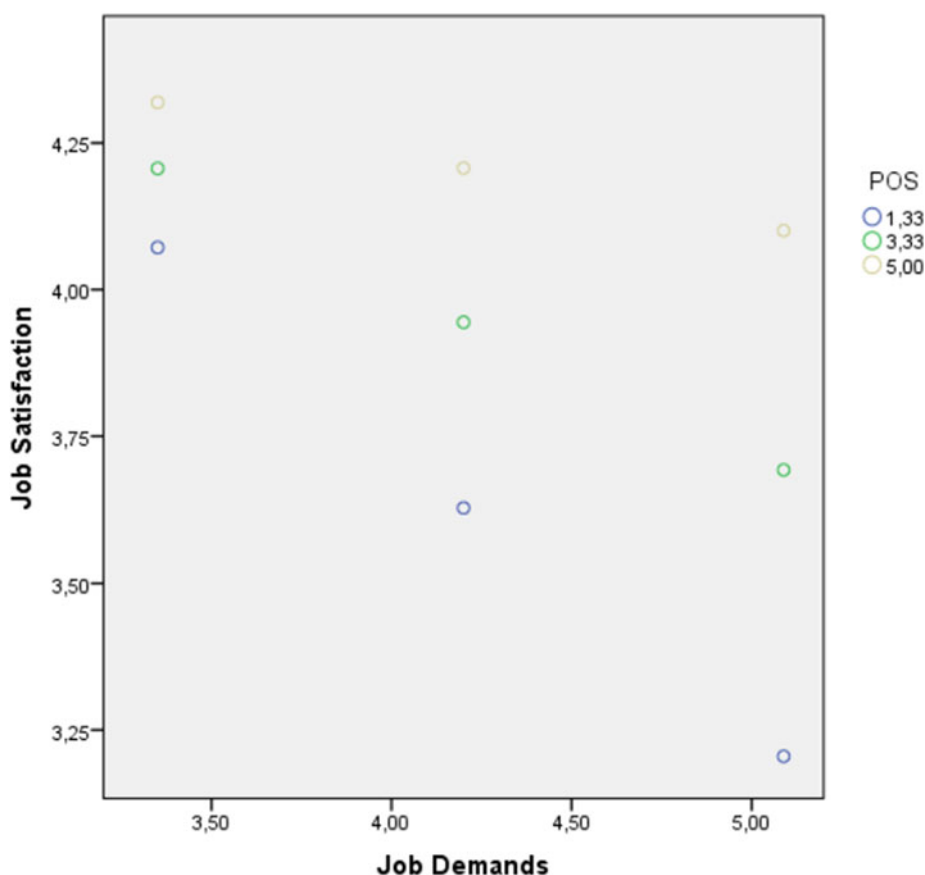
**Table 5.** Result of regression analysis concerning the moderation effect of POS on the job demands-satisfaction relationship and the conditional influence of POS based on the Johnson–Neyman technique

Variables > satisfaction	Coefficient	SE	P
Job demands	.29	.058	.000
POS	.16	.035	.000
Job demands $\times$ POS	-.10	.033	.026
Constant	3.95	.051	.000
$R^2 = .18$ ; $F = 12.42$ ; $p = .000$ .			
$R^2$ change = .047; $F = 9.37$ ; $p = .026$ .			

Regression analysis revealed that job satisfaction was positively predicted by POS and self-esteem, and negatively by JD, thus confirming hypothesis 1b, 2b, and 3b. The interaction term (POS  $\times$  JD) was statistically significant, confirming hypothesis 4b. Predictors explained about 23% of the job satisfaction's variance.

### Moderation role of POS between JD and outcomes

The interaction between JD and POS, with respect to outcomes, was probed through the Johnson–Neyman technique (value = 30.03). The positive association between JD and BO was significant at low ( $b = .69$ , CI: [.379, 1.011]) and medium levels of POS ( $b = .43$ , CI: [.246, .631]), while it was not significant at high levels of POS ( $b = .22$ , CI: [-.016, .464]) (Table 4 and Figure 2); the overall equation was significant ( $R^2 = .16$ ;  $F(3, 230) = 33.01$ ;  $p < .000$ ), and the JD by POS interaction significantly increased the



**Figure 3.** The association between job demands and satisfaction as a function of POS.

explained variance ( $R^2$  change = .027,  $F(1, 232) = 5.40$ ;  $p = .021$ ). This outcome indicates that the more the nurses perceive a supportive organization, the weaker the positive relationship between JD and BO (Figure 2).

The negative association between JD and satisfaction was significant at low ( $b = .49$ , CI: [.308, .688]) and medium levels of POS ( $b = .29$ , CI: [.179, .41], while it was not significant at high levels of POS ( $b = .125$ , CI: [-.018, .269]) (Table 5 and Figure 3); the overall equation was significant ( $R^2 = .18$ ;  $F(3, 230) = 12.42$ ;  $p < .000$ ), and the JD by POS interaction significantly increased the explained variance ( $R^2$  change = .047,  $F(1, 232) = 9.37$ ;  $p = .0026$ ). This outcome indicates that the more the nurses perceive a supportive organization, the weaker the negative relationship between JD and satisfaction (Figure 3).

## Discussion

Oncology nurses are particularly prone to BO and dissatisfaction due to various professional practice circumstances and working conditions that can lead to physical and emotional exhaustion, turnover, or sick leave (e.g., Woo et al. 2020): they are asked to provide care with patience and empathy (Khamisa et al. 2015) and at the same time, must cope with a stressful environment as a result of daily contact with patient suffering and emotional demands.

In line with the theoretical framework, results confirmed that JD predict both BO and job satisfaction, in the present sample of oncology nurses; POS, on the other hand, is a weak predictor of job outcomes, but the results confirm the possible mediator

role proposed by the JD-R model and the references in the literature (e.g., Serban et al. 2022); self-esteem, furthermore, proves to be a predictor of BO, in particular (Johnson et al. 2020). Overall, the most significant result appears to be the interaction between the JD and POS: this latter may be responsible for a possible buffer effect on the relationship between JD and outcomes.

## Theoretical implications

The present results are in line with the JD-R theory (Bakker et al. 2023; Li et al. 2022), confirming that outcomes are predicted by JD and consistently with the idea that high demands at work are related to poorer outcomes (e.g., satisfaction, BO) (e.g., Li et al. 2022), and performance (Rao and Krishna 2021).

Always in line with the JD-R Model, as regards self-esteem, findings suggest that personal resources predict BO and, to a lesser extent, satisfaction levels. From an empirical standpoint, our findings are also consistent with other contributions that have shown that organizational job resources may attenuate the adverse effect of JD on positive and negative outcomes: POS may play a central role in employee's well-being and health, acting as a possible moderator, and somehow defusing the positive association between JD and outcomes, also in oncology setting; POS is considered an organizational resource that can generate a range of positive emotional perceptions and experiences in the workplace (Özyer et al. 2016), and can replenish resources consumed by emotional labor and counter time pressure (Riggle et al. 2009); as also reported by other

studies on oncology workers, human resource (HR) management focused on support and team collaboration will lead to workers perceiving high level of job satisfaction and lower level of BO (Courtneage *et al.* 2020).

In work contexts with high emotional demands, POS appears to be able to modulate the effects of JD on outcomes with a sort of buffer effect; according to the organizational support theory (e.g., Eisenberger *et al.* 2020; Xu and Yang 2021), POS has been shown to have significant benefits for workers and organizations: high POS workers suffer less BO at work, are more inclined to return to work after injury, and show better performance indicators (Kurtessis *et al.* 2017; Rhoades and Eisenberger 2002), possibly because employees value POS partly because it meets their needs for approval, esteem, and affiliation, and provides comfort during times of stress (Lecca *et al.* 2020). Overall, the present research provides a valuable contribution to the literature on the relationship between the main organizational and personal factors considered in the JD-R model, on positive and negative outcomes among oncology nurses.

### Practical implications

The results provide indications to HR managers in oncology departments and institutions. It seems clear that it is possible to intervene on organizational and personal variables to weaken the natural impact of JD on outcomes in oncology settings. Measures should focus on primary and secondary prevention and be aimed at avoiding negative consequences for nurses and their patient's quality care, such as job BO, as well as reduced nurse satisfaction (Riggle *et al.* 2009). Furthermore, both training and individual and organizational interventions (e.g., job design, empowerment, increasing job control, etc.), in addition to BO prevention, should focus on the optimization of the balance between JD and resources.

The need to ensure oncology workers' well-being should involve the periodic monitoring of specific psychosocial and organizational factors linked to outcomes and motivation. Flexible training designed to generate a high level of work engagement and self-esteem (e.g., emotional strength, coping strategies, acceptance, etc.), by virtue of the feedback effect of these outcomes on organizational perceptions (e.g., perceptions of management support) and JD (Crawford *et al.* 2010; Serban *et al.* 2022), should be implemented by health-care institutions. Moreover, since the type of behavior triggered by resources would lead to advantages both for the individual and the organization (Schaufeli and Taris 2014), measures should focus on the exploration of emotional demands, enhancement of management-supporting activities, and personal resources (e.g., self-esteem). In organizations characterized by supportive management and sustainable HR management, workers have higher levels of job satisfaction, sense of citizenship, and loyalty, and are more inclined to share corporate values and goals; the POS as evidence that the organization intends to assist everyone's work, but also a tool to take care of performance (Eisenberger *et al.* 2016).

### Limitations and further research

It is important to underline that the results of this study are to be considered with caution and at the same time it is necessary to consider its various limitations.

First, the cross-sectional design of the study precludes conclusions about the possible causal direction of the observed

relationships between variables. The nature (of convenience), the extension, and the homogeneity of the sample, moreover, limit the generalizability of the results, which should certainly be confirmed in similar samples in other cultural and organizational contexts. Considering some indications in the literature (Johnson *et al.* 2020; Kupcewicz and Jóźwik 2020), we preferred not to explore the possible role of moderator of self-esteem between JD and outcomes; however, given that self-esteem is also clearly related to perceptions of the work environment and good relationships at work, it is possible that the research has missed an opportunity to better explore its role in the reference model.

It is therefore necessary that future studies should: (a) given that past research suggested that these constructs may influence each other over time (e.g., Bakker *et al.* 2023; Xu and Yang 2021), investigate with longitudinal studies the relationships and interactions between JD, resources, and outcomes; (b) consider the differential role of specific dimensions of JD (e.g., cognitive, emotional, physical, etc.), different job resources (e.g., autonomy, leadership, role ambiguity, leader-member exchange, etc.), and personal resources (e.g., self-efficacy, optimism, resilience, flexibility) that may be relevant for oncology workers; (c) although the indications in the literature seem to be in line with our assumptions (e.g., Li *et al.* 2022), explore the tested causal direction through studies with larger samples, experimental or longitudinal designs, and in different geographical and cultural contexts; (d) to overcome the limitations imposed by self-report measures, consider implementing third-party evaluations by supervisors or colleagues as well as objective data and possibly measurements of variables at different level (individual, group, team, organizational, etc.).

### Conclusions

Oncology nurses are a population of workers exposed to multiple risk factors for psychological health, both environmental, relational, and role-related. The results of the present study support the need for organizations to create work environments that through favorable relationships and support at work can improve dedication to organizational objectives, prevent negative outcomes, and increase performance (Baran *et al.* 2012; Barattucci *et al.* 2020).

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/S1478951524000890>.

**Author contributions.** TR and MB worked on the original idea and carried out the detailed conceptualization and investigation of this research. MB finalized the methodology. KC carried out the data collection. MB carried out data analysis and wrote the results section. TR, GS, and MB carried out the write-up of this project, including the writing of the original draft.

**Competing interests.** The authors declare that there are no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

**Ethical approval.** Before administration of the questionnaire, according to the Helsinki Declaration and APA ethical standards, employees (a) were advised about their right to decline or withdraw to participate at any time, (b) confirmed that the instructions were clear, (c) were informed about all relevant aspects of the study, and (d) agreed to participate in the study. Data were managed in line with the EU General Data Protection Regulation (GDPR); the study was approved by the ethics committee of the Faculty of Human and Social Sciences at the "Kore" University of Enna with code: UKE-IRBPSY-09.22.02.

## References

- Adil MS and Baig M** (2018) Impact of job demands-resources model on burnout and employee's well-being: Evidence from the pharmaceutical organisations of Karachi. *IIMB Management Review* **30**(2), 119–133. doi:10.1016/j.iimb.2018.01.004
- Ahmad MS, Barattucci M, Ramayah T, et al.** (2022) Organizational support and perceived environment impact on quality of care and job satisfaction: A study with Pakistani nurses. *International Journal of Workplace Health Management* **15**, 6. doi:10.1108/IJWHM-09-2021-0179
- Assiri S, Shehata S and Assiri M** (2020) Relationship of job satisfaction with perceived organizational support and quality of care among Saudi nurses. *Health* **12**, 828–839. doi:10.4236/health.2020.127060
- Bakker AB and Demerouti E** (2017) Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology* **22**(3), 273–285. doi:10.1037/ocp0000056
- Bakker AB and de Vries JD** (2021) Job Demands–Resources theory and self-regulation: New explanations and remedies for job burnout. *Anxiety, Stress, & Coping* **34**(1), 1–21. doi:10.1080/10615806.2020.1797695
- Bakker AB, Hakanen JJ, Demerouti E, et al.** (2007) Job resources boost work engagement, particularly when job demands are high. *Journal of Educational Psychology* **99**(2), 274–284. doi:10.1037/0022-0663.99.2.274
- Bakker AB, Xanthopoulos D and Demerouti E** (2023) How does chronic burnout affect dealing with weekly job demands? A test of central propositions in JD-R and COR-theories. *Applied Psychology: An International Review* **72**(1), 389–410. doi:10.1111/apps.12382
- Bao Y and Zhong W** (2019) How stress hinders health among Chinese public sector employees: The mediating role of emotional exhaustion and the moderating role of perceived organizational support. *International Journal of Environmental Research & Public Health* **16**(22), 4408. doi:10.3390/ijerph16224408
- Baran BE, Shanock LR and Miller LR** (2012) Advancing organizational support theory into the twenty-first century world of work. *Journal of Business and Psychology* **27**, 123–147. doi:10.1007/s10869-011-9236-3
- Barattucci M, Lo Presti A, Bufalino G, et al.** (2020) Distributed leadership agency and work outcomes: Validation of the Italian DLA and its relations with commitment, trust, and satisfaction. *Frontiers in Psychology* **11**, 512. doi:10.3389/fpsyg.2020.00512
- Baumgartner H, Weijters B and Pieters R** (2021) The biasing effect of common method variance: Some clarifications. *Journal of the Academy of Marketing Science* **49**, 221–235. doi:10.1007/s11747-020-00766-8
- Brauchli R, Jenny GJ, Fülleman D, et al.** (2015) Towards a job demands-resources health model: Empirical testing with generalizable indicators of job demands, job resources, and comprehensive health outcomes. *BioMed Research International* **2015**, 959621. doi:10.1155/2015/959621
- Broetje S, Jenny GJ and Bauer GF** (2020) The key job demands and resources of nursing staff: An integrative review of reviews. *Frontiers in Psychology* **11**, 84. doi:10.3389/fpsyg.2020.00084
- Caesens G and Stinglhamber F** (2020) Toward a more nuanced view on organizational support theory. *Frontiers in Psychology* **11**, 476. doi:10.3389/fpsyg.2020.00476
- Canboy B, Tillou C, Barzantny C, et al.** (2021) The impact of perceived organizational support on work meaningfulness, engagement, and perceived stress in France. *European Management Journal* **41**(1), 90–100. doi:10.1016/j.emj.2021.12.004
- Costeira C, Ventura F, Pais N, et al.** (2022) Workplace stress in Portuguese oncology nurses delivering palliative care: A pilot study. *Nursing Reports* **12**, 597–609. doi:10.3390/nursrep12030059
- Courtnage T, Bates NE, Armstrong AA, et al.** (2020) Enhancing integrated psychosocial oncology through leveraging the oncology social worker's role in collaborative care. *Psychooncology* **29**(12), 2084–2090. doi:10.1002/pon.5582
- Crawford ER, LePine JA and Rich BL** (2010) Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology* **95**(5), 834–848. doi:10.1037/a0019364
- De Carlo NA, Falco A and Capozza D** (2008) *Stress, Benessere Organizzativo E Performance. Valutazione & Intervento per l'Azienda Positiva*. Milano: Franco Angeli.
- Di Stefano G, Venza G and Aiello D** (2020) Associations of job insecurity with perceived work-related symptoms, job satisfaction, and turnover intentions: The mediating role of leader–member exchange and the moderating role of organizational support. *Frontiers in Psychology* **11**(1329), 1–9. doi:10.3389/fpsyg.2020.01329
- Eisenberger R, Malone GP and Presson WD** (2016) Optimizing perceived organizational support to enhance employee engagement. *Society for Human Resource Management and Society for Industrial and Organizational Psychology* **2**, 3–22.
- Eisenberger R, Shanock LR and Wen X** (2020) Perceived organizational support: Why caring about employees counts. *Annual Review of Organizational Psychology and Organizational Behavior* **7**, 101–124. doi:10.1146/annurev-orgpsych-012119-044917
- Eisenberger R, Wang Z, Mesdaghinia S, et al.** (2014) *Perceived Follower Support as a Source of Supportive Leadership*. Philadelphia, PA: Academy of Management.
- Gama G, Barbosa F and Vieira M** (2014) Personal determinants of nurses' burnout in end of life care. *European Journal of Oncology Nursing: The Official Journal of European Oncology Nursing Society* **18**(5), 527–533. doi:10.1016/j.ejon.2014.04.005
- Gómez-Urquiza JL, Albendín-García L, Velando-Soriano A, et al.** (2020) Burnout in palliative care nurses, prevalence and risk factors: A systematic review with meta-analysis. *International Journal of Environmental Research & Public Health* **17**(20), 7672. doi:10.3390/ijerph17207672
- Gramá BG and Băiaş M** (2018) Organizational support, emotional labor and burnout regarding the medical staff. *Public Health and Management* **19**(1), 16–19/549. doi:10.3390/ijerph19010549
- Guveli H, Anuk D, Oflaz S, et al.** (2015) Oncology staff: Burnout, job satisfaction and coping with stress. *Psychooncology* **24**, 926–931. doi:10.1002/pon.3743
- Hayes AF** (2018) *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach (Methodology in the Social Sciences)*, 2nd edn. New York, NY: The Guilford Press.
- Head B, Middleton A and Zeigler C** (2019) Work satisfaction among hospice and palliative nurses. *Journal of Hospice and Palliative Nursing: JHPN: The Official Journal of the Hospice and Palliative Nurses Association* **21**(5), E1–E11. doi:10.1097/NJH.0000000000000562
- Jennings BM** (2008) Work stress and burnout among nurses: Role of the work environment and working conditions. In Hughes RG (ed), *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville, MD: Agency for Healthcare Research and Quality (US), 135–158.
- Johnson AR, Jayappa R, James M, et al.** (2020) Do low self-esteem and high stress lead to burnout among health-care workers? Evidence from a tertiary hospital in Bangalore, India. *Safety and Health at Work* **11**(3), 347–352. doi:10.1016/j.shaw.2020.05.009
- Khamisa N, Oldenburg B, Peltzer K, et al.** (2015) Work related stress, burnout, job satisfaction and general health of nurses. *International Journal of Environmental Research & Public Health* **12**(1), 652–666. doi:10.3390/ijerph120100652
- Kitajima M, Miyata C, Tamura K, et al.** (2020) Factors associated with the job satisfaction of certified nurses and nurse specialists in cancer care in Japan: Analysis based on the Basic Plan to Promote Cancer Control Programs. *PLoS One* **15**(5), e0232336. doi:10.1371/journal.pone.0232336
- Kock F, Berbekova A and Assaf AG** (2021) Understanding and managing the threat of common method bias: Detection, prevention and control. *Tourism Management* **86**, 104330. doi:10.1016/j.tourman.2021.104330



- Kupciewicz E and Jóźwik M** (2020) Role of global self-esteem, professional burnout and selected socio-demographic variables in the prediction of Polish nurses' quality of life – A cross-sectional study. *Risk Management and Healthcare Policy* **13**, 671–684. doi:10.2147/RMHP.S252270
- Kurtessis JN, Eisenberger R, Ford MT, et al.** (2017) Perceived organizational support: A meta-analytic evaluation of organizational support theory. *Journal of Management* **43**(6), 1854–1884. doi:10.1177/0149206315575554
- Lazarescu I, Dubray B, Joulakian MB, et al.** (2018) Prevalence of burnout, depression and job satisfaction among French senior and resident radiation oncologists. *Cancer Radiotherapie: Journal de la Societe Francaise de Radiotherapie Oncologique* **22**(8), 784–789. doi:10.1016/j.canrad.2018.02.005
- Lecca LI, Finstad GL, Traversini V, et al.** (2020) The role of job support as a target for the management of work-related stress: The state of art. *Quality - Access to Success* **21**, 152–158.
- Lee J and Peccei R** (2007) Perceived organizational support and affective commitment: The mediating role of organization-based self-esteem in the context of job insecurity. *Journal of Organizational Behavior* **28**, 661–685. doi:10.1002/job.431
- Lesener T, Gusy B and Wolter C** (2019) The job demands-resources model: A meta-analytic review of longitudinal studies. *Work & Stress* **33**(1), 76–103. doi:10.1080/02678373.2018.1529065
- Li Y, Tuckey MR, Bakker A, et al.** (2022) Linking objective and subjective job demands and resources in the JD-R model: A multilevel design. *Work & Stress* **37**(1), 27–54. doi:10.1080/02678373.2022.2028319
- Liu H, Zhang X, Chang R, et al.** (2017) A research regarding the relationship among intensive care nurses' self-esteem, job satisfaction and subjective well-being. *International Journal of Nursing Sciences* **4**(3), 291–295. doi:10.1016/j.ijnss.2017.06.008
- Maslach C, Schaufeli WB, Michael P, et al.** (2001) Job burnout. *Annual Review of Psychology* **52**, 397–422. doi:10.1146/annurev.psych.52.1.397
- Molero Jurado M, Pérez-Fuentes M, Gázquez Linares JJ, et al.** (2018) Burnout in health professionals according to their self-esteem, social support and empathy profile. *Frontiers in Psychology* **9**, 424. doi:10.3389/fpsyg.2018.00424
- Muse LA and Stamper CL** (2007) Perceived organizational support: Evidence for a mediated association with work performance. *Journal of Management Issues* **19**, 517–535.
- Özyer K, Berk A and Polatçı S** (2016) Does the perceived organizational support reduce burnout? A survey on Turkish health sector. *International Journal of Business Administration and Management Research* **2**(1), 22–27.
- Palestini L, Prati G, Pietrantonio L, et al.** (2009) La qualità della vita professionale nel lavoro di soccorso: Un contributo alla validazione italiana della Professional Quality of Life Scale (ProQOL). *Psicoterapia Cognitiva E Comportamentale* **15**, 205–227.
- Podsakoff PM, MacKenzie SB, Lee JY, et al.** (2003) Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology* **88**, 879–903. doi:10.1037/0021-9010.88.5.879
- Preacher KJ and Hayes AF** (2004) SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers* **36**(4), 717–731. doi:10.3758/BF03206553
- Rao B and Krishna G** (2021) Employee stress and its impact on employee performance among women employees in Mysore district. *Natural Volatiles and Essential Oils* **8**(4), 13997–14015.
- Rhoades L and Eisenberger R** (2002) Perceived organizational support: A review of the literature. *Journal of Applied Psychology* **87**(4), 698–714. doi:10.1037/0021-9010.87.4.698
- Riggle RJ, Edmondson DR and Hansenc JD** (2009) A meta-analysis of the relationship between perceived organizational support and job outcomes: 20 years of research. *Journal of Business Research* **62**(10), 1027–1030. doi:10.1016/j.jbusres.2008.05.003
- Rizo-Baeza M, Mendiola-Infante SV, Sepehri A, et al.** (2018) Burnout syndrome in nurses working in palliative care units: An analysis of associated factors. *Journal of Nurse Management* **26**, 19–25. doi:10.1111/jonm.12506
- Rosenberg M** (1965) *Society and the Adolescent Self-image*. Princeton, NJ: Princeton University Press.
- Sartirana M, Camporese L and Dalle Grave R** (2013) *Vincere la Bassa Autostima*. Verona, Italy: Positive Press.
- Schaufeli WB and Taris TW** (2014) A critical review of the job demands-resources model: Implications for improving work and health. In Bauer GF, and Hämmig O (eds), *Bridging Occupational, Organizational and Public Health: A Transdisciplinary Approach*. Dordrecht: Springer, 43–68.
- Serban A, Rubenstein AL, Bosco FA, et al.** (2022) Stressors and social resources at work: Examining the buffering effects of LMX, POS, and their interaction on employee attitudes. *Journal of Business and Psychology* **37**, 717–734. doi:10.1007/s10869-021-09774-z
- Stamm BH** (2009) *The Professional Quality of Life Scale: Compassion Satisfaction, Burnout, and Compassion Fatigue/Secondary Trauma Scales*. Lutherville, MD, USA: Sidran Press.
- Tummers LG and Bakker AB** (2021) Leadership and job demands-resources theory: A systematic review. *Frontiers in Psychology* **12**, 722080. doi:10.3389/fpsyg.2021.722080
- Turnell A, Rasmussen V, Butow P, et al.** (2016) An exploration of the prevalence and predictors of work related well-being among psychosocial oncology professionals: An application of the job demands-resources model. *Palliative and Supportive Care* **14**(1), 33–41. doi:10.1017/S1478951515000693
- Wazqar DY** (2018) Oncology nurses' perceptions of work stress and its sources in a university-teaching hospital: A qualitative study. *Nursing Open* **6**(1), 100–108. doi:10.1002/nop2.192
- Woo T, Ho R, Tang A, et al.** (2020) Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis. *Journal of Psychiatric Research* **123**, 9–20. doi:10.1016/j.jpsychires.2019.12.015
- Wu S, Singh-Carlson S, Odell A, et al.** (2016) Compassion fatigue, burnout, and compassion satisfaction among oncology nurses in the United States and Canada. *Oncology Nursing Forum*. **43**(4), E161–169. doi:10.1188/16.ONF.E161-E169
- Xanthopoulou D, Bakker AB, Demerouti E, et al.** (2012) A diary study on the happy worker: How job resources relate to positive emotions and personal resources. *European Journal of Work & Organizational Psychology* **21**, 489–517. doi:10.1080/1359432X.2011.584386
- Xu Z and Yang F** (2021) The impact of perceived organizational support on the relationship between job stress and burnout: A mediating or moderating role? *Current Psychology* **40**, 402–413. doi:10.1007/s12144-018-9941-4
- Yi J, Kim J, Akter J, et al.** (2018) Pediatric oncology social workers' experience of compassion fatigue. *Journal of Psychosocial Oncology* **36**(6), 667–680. doi:10.1080/07347332.2018.1504850
- Zeng X, Zhang X, Chen M, et al.** (2020) The influence of perceived organizational support on police job burnout: A moderated mediation model. *Frontiers in Psychology* **11**, 948. doi:10.3389/fpsyg.2020.00948