Revista de Psicología Vol. 37 (1), 2019 (ISSN 0254-9247)

Predictor variables for burnout among nursing professionals

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The aim of the study was to analyze how occupational commitment and perceived job opportunities (organizational factors), career adaptability and Coping (individual factors) contribute to the prediction of burnout. This quantitative study had a sample of 246 nurses from three hospitals in the south region of Brazil. Data were submitted to stepwise backward multiple regressions using the software SPSS 22. Predictive analysis of all the independent variables with respect to the characterization burnout revealed an R^2aj (predictive factor) of 49.5%. The results confirm that the organizational factors trigger burnout. However, it is possible to also see the importance of individual factors that trigger burnout syndrome. There is a need to build an environment that minimizes the predictive variables of burnout.
Keywords: nursing, burnout, working conditions, career, occupational health

Variables de predicción para burnout entre profesionales de enfermería
El objetivo del estudio fue analizar cómo el compromiso ocupacional y las oportunidades de trabajo percibidas (factores organizacionales), la adaptabilidad de carrera y el Coping (factores individuales) contribuyen para la predicción de burnout. Este estudio cuantitativo contó con una muestra de 246 enfermeros y enfermeras de tres hospitales de la región sur del Brasil. Los datos fueron sometidos a regresiones múltiples stepwise backward utilizando

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https://doi.org/10.18800/psico.201901.011

el *software* SPSS 22. El análisis predictivo de todas las variables independientes con relación a la caracterización de burnout reveló un R^2aj (factor predictivo) del 49.5%. Los resultados confirman que los factores organizacionales desencadenan el burnout, aunque, entre los resultados, también es posible percibir la importancia de factores individuales para desencadenar el burnout. Es posible destacar la necesidad de construir un ambiente que minimice las variables predictivas de burnout.
Palabras clave: enfermería, burnout, condiciones de trabajo, carrera, salud ocupacional

Variaveis preditoras para burnout entre profissionais de enfermagem
O objetivo do estudo foi analisar como o comprometimento ocupacional e oportunidades de trabalho percebidas (fatores organizacionais), adaptabilidade de carreira e Coping (fatores individuais) contribuem para a predição de burnout. Este estudo quantitativo contou com uma amostra de 246 enfermeiros de três hospitais da região sul do Brasil. Os dados foram submetidos a regressões múltiplas stepwise backward utilizando o software SPSS 22. Análise preditiva de todas as variáveis independentes com relação à caracterização de burnout revelou um R^2aj (fator preditivo) de 49.5%. Os resultados confirmam que os fatores organizacionais desencadeiam o burnout, embora, entre os resultados, seja possível perceber também a importância de fatores individuais desencadearem a síndrome de burnout. É possível destacar a necessidade de construir um ambiente que minimize as variáveis preditivas de burnout.
Palavras-chave: enfermagem, burnout, condições de trabalho, carreira, saúde ocupacional

Variables prédictives de l'épuisement chez les professionnels des soins infirmiers
L'objectif de l'étude était d'analyser comment l'engagement professionnel et les possibilités de travail perçues (facteurs organisationnels), l'adaptabilité de carrière et la capacité d'adaptation (facteurs individuels) contribuent à la prédiction de l'épuisement professionnel. Cette étude quantitative a comporté un échantillon de 246 infirmières de trois hôpitaux de la région sud du Brésil. Les données ont été soumises à des régressions multiples pas à pas descendantes en utilisant le logiciel SPSS 22. L'analyse prédictive de toutes les variables indépendantes en ce qui concerne la caractérisation de l'épuisement professionnel a révélé un R^2aj (facteur prédictif) de 49.5%. Les résultats confirment que les facteurs organisationnels déclenchent l'épuisement professionel, bien que, parmi les résultats, il soit possible de percevoir également l'importance des facteurs individuels déclenchant le syndrome de l'épuisement professional. Il est possible de mettre en évidence la nécessité de construire un environnement qui minimise les variables prédictives de l'épuisement professionnel.
Mots clés: soins infirmiers, épuisement professionnel, conditions de travail, carrière, santé au travail

The hospital organization is one of the places where workers are more likely to develop burnout, a psychological disorder resulting from chronic stress due to psychic and work overload, which particularly affects nursing professionals (Maslach, 2017; Silva, Oliveira & Nora, 2017). In this group of professionals, it is intrinsically related to individual and organizational factors, and it is triggered, among other aspects, by work overload, occupational risks, low remuneration, precariousness of material resources, lack of staff, conflicting interpersonal relationships and organizational pressure (Barros, Nunes, Bezerra, Ribeiro, Santos & Sousa, 2017; Silva et al., 2017).

The progressive exposure to these factors leads to physical and emotional exhaustion, interfering with the quality of life and impairing the interaction with work activities and with the work environment (Fernandes, Nitsche & Godoy, 2017). Studies with nursing workers indicate that high levels of burnout vary from 3 to 29%, and the higher this value, the greater the damage to the professional and to the institution. In the case of nursing, they may hamper the nursing work and patient care (Barros et al., 2017). Burnout represents, therefore, a serious problem in the nursing area, which, along with other factors, such as job dissatisfaction and turnover, has been related to nursing shortage at the global level (Labrague, Mcenroe-Petitte, Gloe, Tsaras, Arteche & Maldia, 2017; Silva, et al., 2017). Its repercussion, however, goes beyond the organizational limits and needs to be considered as a problem in people's lives and careers.

Concerning the impacts of burnout on the performance at work, researchers have provided consistent empirical support to the negative relationship between emotional exhaustion and organizational commitment, which directly impacts on the Turnover intention (Felix, Machado, and Sousa, 2017; Silva et al., 2017), on the quality of life, and on the professional competence of workers (Boas & Morin, 2017).

Another variable possibly related to burnout is Career Adaptability. It is defined as the readiness and the resources presented by individuals when confronted with current and anticipated tasks of vocational development, occupational transitions and personal traumas in order to be able to solve problems that are usually unknown and that are part of the construction of a career (Savickas, 2013; Maggiori, Rossier & Savickas, 2017).

For this, it is necessary to look at the nursing professionals (as well as to professionals in other fields) as people who must be embedded in their own career and who must be aware that this is part of their life history. That is one of the main assumptions of the Theory of Career Construction or Life Design (Savickas, 2013), which proposes that there are several factors interfering in the career in the contemporary world that must be taken into account when discussing health and illness at work. Examples are the current conjuncture of the working world, characterized by constant changes, economic instability, occupational transitions and creativity, which demand that workers establish new standards of relationships with colleagues and services (Ambiel, Campos & Campos, 2017).

The proposition of the construct of Career Adaptability (Savickas, 2005; 2013) represents an update and advancement in relation to Super's (1957; 1980) seminal theory of vocational development to make it more applicable to a multicultural society and global economy. The Theory of Career Construction (Savickas, 2005; 2013), proposes to consider the career as a constructive, personal and social process. It takes into account the current work environment, characterized by constant changes, instability, occupational transitions and creativity, aiming at the worker, as well as the creation of new patterns of relationship for the provision of their services. This paradigm aims to establish patterns of intervention in the context of professional enterprises from the point of view of building life projects (Savickas et al., 2009; Ambiel, Campos, Campos, 2017). That is, the career is understood as a subjective construction formed by the meanings of past memories, current experiences, as well as of future aspirations and

expectations related to work (Ambiel, 2014). Career adaptability can be defined as resources as the "strengths or self-regulating capabilities that a person can use to solve unknown, complex and ill-defined problems presented by vocational development tasks, transitions, and work traumas." Thus, these resources contribute to developing and determining coping strategies that individuals use to target adaptive behaviors (Maggiori, Rossier & Savickas, 2017). Coping strategies are the ways in which people commonly react to stress, and they are influenced by personal factors, situational requirements and available resources of the individual (Lazarus & Folkman, 1984; Pinheiro et al., 2003).

Given its impact on organizations, and especially on individuals and their work teams, exploring the role of coping strategies for labor problems (Coping) seems to be fundamental to the evaluation of burnout (Hamid & Musa, 2017). According to Costa and Pinto (2017), burnout is a quite prevalent phenomenon among health professionals. As these professionals have a fundamental role in patient care, it is extremely important that they feel well physically and psychologically, as to fulfill its functions well as caregivers. In this way, it becomes important that organizations find strategies to help individuals facing burnout to use social and personal resources to gain control over the circumstance that induce stress.

Based on coping, it is possible to understand that burnout is affected by the way professionals cope with individual and organizational issues that can deeply interfere with their life and career structure.

Considering this, it is possible to make an approximation between burnout and other career variables, highlighting those, which may help professionals to cope with difficulties (Maslach, 2017). Some of them are: the valuation of organizational and contextual variables, such as career counseling (with emphasis on self-concept) (Maggiori, Rossier & Savickas, 2017); the development of positive coping abilities before problems, such as workload reduction, relaxation, meditation, and longer sleep time (Cardoso, Baptista, Sousa & Júnior, 2017). It is possible, therefore, to place burnout at the center of the attention not

only when evaluating the work context, but also the career, as part of a problem that affects the work and life roles and plans (Maslach, 2017). However, when the professional has already developed burnout, social support from family, friends and colleagues is even more necessary to help professionals who are affected by burnout to find comfort, understand their own feelings, and humor to identify healthy solutions for their suffering. Thus, it is evident that burnout is at the center of the professionals' life questions and needs to be evaluated for its relation with variables that can be predictive of its onset in order to enable early actions, before the illness is installed (Maslach (2017).

Taking into account that work is one aspect of the career, Maslach (2017) also proposes that changes be made in the work models towards a redesign of the work activities (Demerouti, 2015). More specifically, to make work arrangements be more flexible and organizations aware of personal values and motivations, therefore promoting the development of employees, as well as the redesign of their careers (Ambiel, Campos & Campos, 2017). In this context, the individual ability to adapt to changes in the work and in the career is critical (Ambiel, 2014; Maggiori, Rossier & Savickas, 2017). Changes in work may consist, among others, in leaving the current organization and seeking new employment options that meet the individual's professional reorientation goals (Morse, Weinhardt, Griffeth & Oliveira, 2014). Based on the analysis of the organizational and individual aspects investigated in this study, and on their relationship with burnout, we hypothesize that:

Hypothesis 1. Considering that Organizational Commitment, Career Adaptability and Coping Strategies are evidences of the capability of being flexible, adapting to problems and facing traumatic events at work, they will be negative predictors of burnout.

Hypothesis 2. Perceived Employment Opportunity will predict positively burnout. This variable illustrates the turnover process, and the intricate relationship between burnout and the different levels of turnover intentions.

Hypothesis 3. Considering its relevance, the organizational commitment will be the most relevant predictor of burnout.

Method

Participants

The calculation of the sample size needed to conduct linear regression analysis followed the recommendations of Tabachnick and Fidell (1996), and Hair et al. (2009). A total of 246 nursing professionals (nurses, nursing technicians and nursing assistants) from two large and one small hospital located in the southern region of Brazil participated in the study. The mean age of participants was 34.6 (SD = 7.9) years (minimum of 19 and maximum of 61 years), most of them were female (n = 209; 85.0%), married (n = 139; 56.5%), and had children (n = 135; 54.9%). Among the participants, 37% (n = 91) had concluded high school and 28.9% had a college degree (n = 71). Nursing technicians represented 63.0% of the sample (n = 155), while Nurses represented 36,9% of the sample (n=91). Most participantes in the sample worked an average of 40 hours weekly (n = 139; 56.5%), in the morning shift (n = 172; 69.9%), in General Clinic (n = 101; 41.1%), and Intensive Care Unit (n = 77; 31.3%). Their tenure ranged from one month to approximately 30 years (M = 3.5 years). According to the third quartile, 75.0% of the sample worked at the same employer for at least six years.

Measures

An online survey with questions to assess the sociodemographic profile and psychological scales was used to collect data. Sociodemographic variable data was collected through 15 questions that aim at characterizing the profile of the participants.

The variable employment opportunity was assessed through the Employment Opportunity Index (EOI). This instrument was originally developed by Griffeth, Steel, Allen and Bryan (2005) and validated for the Brazilian reality by Morse et al. (2014). The EOI consists 14 items developed to investigate five dimensions: Ease of Movement (α= .76), Desirability of Movement (α= .84), Networking (α= .75), Crystallization of Alternatives (α= .77) and Mobility (α= .66). Respondents should indicate how strongly they agreed with each item

according to a point Likert Scale where 1 = strongly disagree and 7 = strongly agree.

The variable organizational commitment was collected through the Scale of Organizational Commitment Bases (SOCB). This scale was developed by Medeiros, Albuquerque, Marques, and Siqueira (2005) to measure seven bases of organizational commitment: Affective (α= .84); Obligation to Remain in the Job (α= .87); Obligation to Perform Well in the Work (α= .77); Affiliative (α= .80); Lack of Rewards and Opportunities (α= .59); Conscious Line of Activity (α= .65) and Scarcity of Alternatives (α= .73). The SOCB consists of 28 items (four items per base). To respond to the instrument, participants must respond to a six points Likert Scale where 1 = strongly disagree and 6 = strongly agree.

The variable career adaptability was gauged using the Revised Career Adaptability Scale. This is a review of the career adaptability scale of Teixeira, Bardagi, Lassance, Magalhães, and Duarte (2012), performed by Audibert and Teixeira (2015). The scale has 24 items (α: .94) divided equally into four dimensions: Concern (α= .88), Control (α= .83), Curiosity (α= .88), and Confidence (α= .89). To answer, the participants use a five-point Likert scale with descriptive anchors varying from 1 (I developed it little or nothing) to 5 (I developed it extremely well).

The variable coping strategies were estimated via the Coping Strategies Scale (CSS). This scale was developed by Latack (1986) and validated and adapted to the Brazilian reality by Pinheiro, Tróccoli, and Tamayo (2003) to measure Coping in the occupational environment. This is a five-points Likert scale ranging from 1 = I never do this, to 5 = I always do this, consisting of 29 items. The scale is formed by three dimensions: control factor (α= .79), avoiding factor (α= .77), and management of symptoms factor (α= .81). The scores of each CSS classifying factor are obtained by the average of the items that compose them. Thus, the factor that presents the highest average is considered the prevalent for a participant.

Finally, Burnout variable was measured with the burnout Characterization Scale (BCS). This scale was developed by Tamayo and Troccoli (2009) and has the dimensions: Emotional Exhaustion (α= .94); Dehu-

manization (α= .88) and Disappointment at Work (α= .80). The instrument contains 35 questions and uses a point Likert scale ranging from 1 = never to 5 = always. The BCS has psychometric properties superior to those of other Brazilian versions of the Maslach Burnout Inventory.

Procedure

Participants were recruited at the participating hospitals in the three work shifts (morning, afternoon and evening). Following a brief presentation of the research objectives, in person, personalized messages were sent through digital media, e-mail and Whatsapp to those professionals who demonstrated interest in participating in the research. The messages contained the link for the questionnaire, hosted at Qualtrics. Data collection was from October 2016 to February 2017.

This study was approved by the Independent Ethics Committee (IEC) of the Pontifical Catholic University of Rio Grande do Sul (PUCRS) under the number: 51784515.1.0000.5336. The voluntary nature of participation was ensured through an Informed Consent Term (ICT). Field work and contact with the study population only occurred after the approval of the study by the IEC.

Data analysis

Data were analyzed in the software Statistical Package for Social Sciences version 20.0 (SPSS Inc., Chicago, IL, USA, 2010) for Windows and the significance level of 5% was adopted for statistical decision criteria. Frequency (absolute and relative) analyses of the variables of interest were performed, and measures of central tendency (mean and median) and dispersion (standard deviation) were calculated.

Comparisons of categorical variables were performed using the Pearson's Chi-square test or Fisher's exact test. A t-test for paired samples was used for comparisons of quantitative (discrete and continuous) variables, when the distribution was symmetric, or the Mann-Whitney test when they presented an asymmetric distribution. When the comparison occurred between three or more groups, the

Kruskal-Wallis test followed by the Dunn Post Hoc test (asymmetric distribution) or One-Way ANOVA followed by the Tukey Post Hoc test (symmetric distribution) were used.

The Pearson correlation coefficient was estimated to evaluate the existence of a linear relationship between burnout dimensions and the other variables. Considering that, the significant correlation coefficient between two variables does not assume a causal relationship among them, according to Anderson, Sweeney, and Williams (2013), a Simple Linear Regression analysis. In this type of analysis, univariate models were estimated for each burnout dimension, treating the other dimension as independent variables. By this method, it was possible to identify the significance of the regression coefficients, evidencing if the contribution of each independent variable. In this step, minimum levels of significance of the univariate models were used to pre-select factors (independent variables) to be used in a multiple linear regression at a level of 20% significance ($p \leq .200$) (Hair, Black, Babin, Anderson & Tatham, 2009). The coefficients obtained were then compared to the estimates reached by the multiple models, seeking to identify behaviors that reveal potential mediating or moderating variables (Baron & Kenny, 1986).

To investigate the power of the explanatory variables over burnout dimensions, the independent factors were organized into hierarchical blocks. Instruments with intermediate explanatory power were also considered (Victora, Huttly, Fuchs & Olinto, 1997).

In each block, the backward and stepwise procedures were adopted to build the multiple regression model. The models were adjusted by removing one-on-one factors that lost their explanatory power compared to the remaining factors. The percentage of variance explained through the model was calculated by the adjusted coefficient of determination (R^2_{aj}). The assumptions for the linear regression – linearity of the parameters, homoscedasticity (constant variance of errors), independence of terms (zero covariance), normality in the distribution of residues and absence of multicollinearity – of each model were tested per block. Linearity was evaluated by the graphical analysis of residuals of the dispersion diagram and by the correlation coefficient.

The diagnosis of homoscedasticity was based on the graphical analysis of residues. The independence of the terms was verified by the Durbin-Watson test. The normal distribution of the residues was tested by means of the normal probability plot for residues and by the Kolmogorov-Smirnov (KS) adherence tests with Levene's correction (as well as by the Central Limit Theorem theory). Multicollinearity was evaluated by the analysis of the tolerance value and its inverse, the variance inflation factor, where a commonly used reference value is a tolerance of .10, which corresponds to a VIF above 10 (VIF ≤10 implies controlled collinearity) (Abbad & Torres, 2002; Field, 2009).

Results

To describe the results, we stratified them into low (< 2.99), intermediate (3.00 – 3.99) and high (> 4.00) (Table 1). The stratification of the results followed the example of other studies (Tamayo, 2009; Souza, Souza, Barbosa, Lopes & Fernandes, 2016).

Table 1

Stratification of the scores for burnout dimensions

Dimensions	Classifications					
	Low (<2.99)		Medium (3.00 - 3.99)		High (> 4.00)	
	N	%	N	%	N	%
Exhaustion	179	72.8	43	17.5	24	9.8
Dehumanization	240	97.6	05	2.0	01	0.4
Disappointment	217	88.2	23	9.3	06	2.4

Table 1 reveals that 9.80% (n = 24) of the sample presented High scores in the Exhaustion dimension, 2.4% (n = 6) were high in Disappointment, while only .40% (n = 1) had high scores in Dehumanization. It should be noted that participants who had high scores in the Exhaustion dimension also presented high scores in the other dimensions, that is, the sample studied presented 24 professionals

who achieved high scores in at least one dimension of burnout (emotional exhaustion). The results obtained by Tamayo (2009) in a study with 190 nursing professionals from different areas of a public hospital in the district of Brasilia, Brazil, evidenced that 12.6% of the sample had low levels of burnout; 8.4% had intermediate levels and 17.4% showed high levels. Table 2 presents the measures of central tendency and dispersion for the scales used in this study.

Pearson correlation analysis between BCS dimensions and explanatory variables

The Employment Opportunity Index (EOI), Scale of Organizational Commitment Bases (SOCB), Career Adaptability Scale (ADAPT) and Coping Strategies Scale (CSS) were compared to the burnout dimensions to investigate possible relationships of multicollinerity. The correlation between the dependent variable and possible explanatory variables is one of the assumptions for the application of multiple linear regression analysis. According to the results exhibited in Table 3, most of the coefficients of correlation were statistically significant.

A multiple linear regression model including all the independent variables was generated to predict burnout scores. The final model, selected by the backward stepwise method, was listed in step 13, and excluded 12 estimated dimensions that did not contribute to explain the overall burnout score, compared to other more relevant dimensions. Thus, seven dimensions were able to account for 49.5% (R^2_{aj} model) of the variation in the overall burnout score. Among the seven dimensions listed, five belong to SOCB, and scarcity of alternatives was the dimension with greater predictive power (bp= - .18; p<.001; R^2_p=.10) followed by variables obligation to remain in the job (bp= -.153; p<.001; R^2_p=.07) and lack of rewards and opportunities (bp = .08; p= .001; R^2_p = .04). However, this result does not seem to represent the real relationship among the dimensions of the scales, because the model excluded variables with significant explanatory dimensions. Therefore, the discussion will be presented considering each block of the multiple regression analysis the three dimensions of the BCS.

Table 2

Mean, standard deviation and median for BCS, EOI, SOCB, Adaptability and CSS scales (n=246)

				Quartiles		
	Dimensions	M	SD	1st (25%)	Median (50%)	3rd (75%)
Burnout Characterization Scale	Exhaustion	2.48	.96	1.75	2.33	3.00
	Dehumanization	1.53	.56	1.10	1.40	1.80
	Disappointment	2.14	.72	1.62	1.92	2.54
Employment Opportunity Index	Desire for job change	4.26	1.22	3.33	4.33	5.00
	Crystallization of alternatives	2.90	1.74	1.00	2.75	4.00
	Mobility	3.43	1.66	2.00	3.33	4.67
	Ease of changing jobs	4.23	1.01	3.67	4.33	5.00
	Networking	4.47	1.32	3.67	4.67	5.33
Scale of Organizational Commitment Bases	Affective	2.78	1.47	1.50	2.50	4.00
	Obligation to remain in the job	4.06	1.16	3.25	4.25	5.00
	Obligation to perform well in the work	2.90	1.13	2.00	2.75	3.56
	Affiliation	5.14	.87	4.75	5.25	5.81
	Lack of rewards and opportunities	3.24	1.37	2.25	3.00	4.25
	Conscious line of activity	4.34	1.02	3.50	4.50	5.00
	Scarcity of alternatives	4.56	1.12	4.00	4.75	5.50
Adaptability	Concern	3.74	.86	3.00	3.83	4.33
	Control	4.03	.75	3.67	4.00	4.67
	Curiosity	3.79	.79	3.33	3.83	4.33
	Confidence	4.16	.74	3.83	4.17	4.83
Coping Strategy Scale	Control	3.90	.56	3.55	3.91	4.20
	Avoidance	2.78	.71	2.33	2.78	3.22
	Symptom management	2.69	.83	2.22	2.56	3.22

BCS: Burnout Characterization Scale, CSS: Coping Strategies Scale, ADAPT: Revised Career Adaptability Scale. SOCB: Scale of Organizational Commitment Bases, EOI: Employment Opportunity Index.

Note: The minimum and maximum scores of the different instruments are as follows: BCS (1 - 5); EOI (1-7); SOCB (1-6); ADAPT (1-5); CSS (1-5).

Table 3

Pearson correlation analysis of the burnout dimensions in comparison to the other instruments.

Scale	Dimensions	Burnout		
		Exhaustion	Dehumanization	Disappointment
Employment Opportunity Index	Desire for job change	.201**	.033	.206**
	Crystallization of alternatives	.206**	.069	.208**
	Mobility	.008	.117	.067
	Ease of changing jobs	.095	.054	.121
	Networking	.125	-.044	.122
Scale of Organizational Commitment Bases	Affective	-.394**	-.310**	-.367**
	Obligation to remain in the job	-.544**	-.407**	-.532**
	Obligation to perform well in the work	.321**	.275**	.382**
	Affiliation	-.331**	-.266**	-.412**
	Lack of rewards and opportunities	.129*	.128*	.132*
	Conscious line of activity	-.059	.045	-.105
	Scarcity of alternatives	-.505**	-.417**	-.548**
Adaptability	Concern	-.228**	-.239**	-.224**
	Control	-.240**	-.254**	-.256**
	Curiosity	-.198**	-.209**	-.194**
	Confidence	-.175**	-.221**	-.183**
Coping Strategy Scale	Control	-.211**	-.317**	-.272**
	Avoidance	.129*	.253**	.161*
	Symptom management	-.163*	-.033	-.131*

* Significant correlation at 5%; ** Significant correlation at 1%.

Analysis of variability of the BCS according to the dimensions of the explanatory scales

The Multiple Linear Regression technique was used to answer the variations observed in the burnout dimensions, using the dimensions of each scale used in the study (EOI, SOCB, ADAPT and CSS) as explanatory variables. Models were tested for each of the three dimensions of the burnout scale, being only the dimensions of the same scale inserted as independent variables. Thus, for each burnout dimension, four regression models were generated. Each of the scales, defined as independent variables, were characterized as blocks according to predictability in each of the dimensions of the burnout scale. The selection of the independent variables to compose the multiple regression model for each scale was based on the correlations with the dimensions of the burnout scale, with significance lower than or equal to 20% ($p \leq .200$) (Hair et al., 2009). In the regression model, the selection of representative independent variables was performed by the backward stepwise method and the percentage of the variance explained by the model was estimated using the adjusted coefficient of determination for the models (adjusted R^2). Table 4 shows a summary of the predicting factors of burnout.

Table 4

Prediction Values (R^2_{aj}) for the dimensions of the burnout variable

Explanatory Variables (IVs)	Exhaustion	Dehumanization	Disappointment
1. Organizational commitment	38.3%	29.3%	41.5%
2. Coping Strategies	19.8%	38.2%	26.1%
3. Career Adaptability	25.4%	26.1%	26.2%
4. Employment Opportunity	15.2%	11.8%	15.3%

Note: Variables presented in sequence from highest to lowest predictive factor.

Table 5 shows presents the final models to explain variations in the burnout dimensions. It is noticeable that organizational commitment stands out, encompassing most of its dimensions as potential predictors

of burnout variations, result that confirmed Hypothesis 3. Meanwhile, Hypothesis 1 was partially confirmed, once it stated that all the dimensions of organizational commitment would negatively predict burnout, but three of them (obligation to perform well in the work, lack of rewards an opportunities and conscious line of activity) were positive predictors. In this sense, the estimated model for the burnout dimension disappointment, with respect to organizational commitment ($F_{1;\ 244}$: 44.9; $p < .001$), the power of explanation reached 41.5% (R^2_{aj} model = .41), with emphasis on items scarcity of alternatives (b_p = -.31, p <.001, R^2_p = .20) and obligation to perform well in the work (b_p = 0.20, $p < .001$, R^2_p =.10). In the model for the dimension of the exhaustion, 38.3% of the variation of the scores can be explained by the independent variables of the model (R^2_{aj} model = .38), and those that exerted the greatest influence were obligation to remain in the job (b_p= -.28; $p < .001$; R^2_p = .13) and scarcity of alternatives (b_P = -0.24; $p < .001$; R^2_p = .12).

Regarding the model to predict the dehumanization dimension, it was observed that 29.3% (R^2_{aj} model = .29) of the variation observed in this dimension can be explained by the independent variables listed in the organizational commitment, being conscious line of activity (b_p = .18, R^2_p = -.07) and scarcity of alternatives (b_p = -.29, R^2_p = .26; R^2_p = .13) the items with greater predictive power.

The second block that stood out to respond for the variations in burnout was the coping Strategies, with emphasis on the burnout dimension dehumanization, being 38.2% (R^2 model = .38) of this dimension be explained by the dimensions control (b_p = -.34, $p < .001$, R^2_p = .25) and avoidance (b_p = .29, $p < .001$, R^2_p = .18). In the disappointment dimension, the three coping Strategies items were able to explain 26.1% (R^2 model = .261), and the most representative item in the control model was responsible for explaining 12.8% (R^2_p = .128) of the variations in dimension disappointment. The emotional exhaustion dimension was the least explained by Coping Strategies items (R^2_{aj} model = .198). Hypothesis 1 was not confimed for this variable, because although the dimensions of control e symptom management were negative predictors, the dimension avoidance predicted positively burnout.

Table 5

Multiple Linear Regression Model (Stepwise Backward Method) for each block of variables to explain the variation of the scores of the burnout scale dimensions

	Burnout																	
	Mean Exhaustion						Mean Dehumanization						Mean Disappointment					
Instruments/Items	B	EPb	b_p	P	R^2_p	R^2aj	B	EPb	b_p	p	R^2_p	R^2aj	B	EPb	b_p	p	R^2_p	R^2aj
Employment Opportunity Index						.152						.118						.153
Desire for job change	.112	.054	.142	.037	.036								.082	.040	.138	.042	.034	
Crystallization of alternatives	.084	.038	.152	.026	.041								.066	.028	.158	.021	.044	
Mobility							.038	.022	.111	.087	.026							
Scale of Organizational Commitment Bases						.383						.293						.415
Affective	-.105	.041	-.162	.011	.053		-.051	.026	-.133	.054	.031		-.061	.030	-.125	.043	.034	
Obligation to remain in the job	-.232	.056	-.280	.000	.131		-.100	.036	-.207	.005	.064		-.143	.041	-.229	.001	.095	
Obligation to performe well in the work	.112	.047	.131	.019	.046								.126	.035	.197	.000	.105	
Lack of rewards and op opportunities	.086	.038	.123	.023	.043		.041	.024	.101	.092	.024		.053	.028	.101	.055	.031	
Conscious line of activity							.097	.033	.176	.004	.068							
Scarcity of alternatives	-.207	.054	-.241	.000	.116		-.147	.035	-.293	.000			-.201	.039	-.311	.000	.196	
Adaptability						.254						.261						.262
Control	-.309	.080	-.240	.000	.115		-.191	.046	-.254	.000	.129		-.248	.060	-.256	.000	.131	
Coping strategy scale						.198						.382						.261
Control	-.310	.112	-.179	.006	.062		-.349	.059	-.345	.000	.252		-.336	.083	-.258	.000	.128	
Avoidance	.263	.087	.194	.003	.073		.228	.046	.287	.000	.181		.225	.064	.220	.001	.096	
Symptom management	-.190	.078	-.164	.015	.048								-.101	.058	-.115	.081	.025	

b: Regression coefficient; *EPb*: Standard error for the regression coefficient; b_p: Standardized regression coefficient; R^2: Determination coefficient; R^2_p: Partial determination coefficient; *p*: minimum level of significance for the regression coefficient.

Note: In the table was maintained only as a measure with some level of predictive value for a dependent variable.

The third block, which explained more variation in the levels of burnout was composed of adaptability and sshowed high predicting values: R^2_{aj} = 25.4% for exhaustion, 26.1% for dehumanization and 26.2% for disappointment. Hypothesis 1 was confirmed only for the dimension control, which was a negative and significant predictor of burnout.

The fourth block includes the perceived employment opportunities with an R^2_{aj} of 15.2% for exhaustion, R^2_{aj} of 11.8% for dehumanization and R^2_{aj} of 15.3% for disappointment. Hypothesis 2 was confirmed for this variable, once it was a positive predictor of burnout. Even though perceived employment opportunity was the least important predictor of burnout, the values of all independent variables were significant making them be considered important when evaluating burnout.

Discussion

This study assessed, among personal variables (career adaptability, occupational coping) and organizational variables (occupational commitment, employment opportunities), which variables had higher predictive values of the occurrence of burnout in nursing professionals. Predictive analysis of all independent variables with respect to BCS revealed a R^2_{aj} (predictive factor) of 49.5%. However, it is important to know the predictive value of each independent variable in relation to burnout. The predictive values of each scale are detailed below and can be seen in Table 5.

The explanatory variable, Employment Opportunity was the least important in the model that predicted burnout. Only Desirability of Movement and Crystalization of Alternatives helped predict Exhaustion (15.2%) and Disappointment at Work (15.3%) and does not predict the dehumanization dimension. These two variables had positive relations with Exhaustion and Disappointment at Work, in which burnout increases the Desirability of Movement and the Crystallization of Alternatives and vice versa (Morse et al., 2014). In this sense,

although the Employment Opportunity does not measure Turnover Intentions, its dimensions (Desirability of Movement and Crystallization of Alternatives) indicate a relation between intention of turnover and burnout.

On other hand, the variable Career Adaptability was a negative predictor of burnout (R^2_{aj} = 26.2%), as well as its dimension Control which was a negative predictor of three dimensions of burnout, namely, Exhaustion (R^2_{aj} = 25.4%), Dehumanization (R^2_{aj} = 26.1%), and Disappointment at Work (R^2_{aj} = 26.2%). The Control dimension is defined by Teixeira, Bardagi, Lassance, Magalhães & Duarte (2012) as the sense of being responsible for designing one's own career, which implies actively making choices that may influence the professional future. This competence leads individuals to face work and vocational issues assertively. Our results indicate that the Control dimension predicts burnout negatively. Therefore, it stresses the importance of intrinsic factors in triggering burnout, since the more the professional is proactive and feels in charge of his or her career, the lower are the scores of burnout. On the other hand, high scores in burnout can interfere with career motivation, reducing the occurrence of assertive and proactive behaviors (Maslach, 2017).

The third variable analyzed were the Coping Strategies, which had different correlations with the burnout. The Control and Management dimensions were negative predictors while the avoidance dimension was a positive predictor. The predictive factor for burnout was R^2_{aj} = 19.8% for exhaustion, R^2_{aj} = 38.2% for dehumanization and R^2_{aj} = 26.1% for disappointment at work. Although Pinheiro et al. (2003) explain that the dimension with the highest score is the one which represents the result from the coping estrategy, the control and avoidance dimensions had very close values and must be considered. The Control dimension consists of proactive cognitive actions and reevaluations in terms of coping with problems. The avoidance dimension is related to actions and reevaluations that suggest the individual is avoiding the occupational problem (Pinheiro, et al., 2003). The research by Cardoso, Baptista, Sousa, and Júnior (2017) indicates that

coping strategies to face burnout in nursing professionals are related to high levels of stress, dissatisfaction and unhealthy working conditions, which can also lead to minor psychic depression, and disorders such as anxiety. In this sense, the coping strategies are very important to predict burnout. In our study, the control factor was more related to proactive and motivational measures to solve problems at work and had a negative relation with burnout. Such result suggests that when professionals, for some reason, have difficulties to actively cope with problems at work, their vulnerability to burnout is increased. In the opposite direction, the avoidance dimension had a positive relation and a high predictive power for burnout, indicating that professionals who avoid facing their occupational problems are also vulnerable. Thus, the more the professionals use the avoidance strategy to cope with occupational problems, greater are the chances they will develop burnout (Lima, Sabino, Gouveia, Avelino & Fernandes, 2015).

The variable that best predicts burnout is the organizational commitment. Results showed that the Affective dimension Obligation to remain in the job, and the dimension scarcity of alternatives are negatively related to burnout. They indicate how much the professional strives to create and maintain a favorable climate for his or her permanence in the employment. They also refer to their belief in the organization and reflection on the disadvantage of leaving employment (Mello, Lehnhart & Losekann, 2016). In our study, the exhaustion dimension had a R^2_{aj} = 38.3%, the dehumanization dimension had a R^2_{aj}: 29.3% and the disappointment at work dimension had a R^2_{aj} = 41.5%. The affective, obligation to remain in the job, and the scarcity of alternatives dimensions were negatively related to burnout. Obligation to perform well at work, affiliation and lack of reward were positively related. The affiliative dimension did not score in any dimension of burnout and scored only in the dimension Dehumanization.

When explaining the Disappointment and Exhaustion dimensions of burnout, the explanatory dimensions scarcity of Alternatives and obligation to Remain in the Job stood out and showed a negative relationship. These two variables are intrinsic to the individuals and

reflect loyalty to the organization and the fear that they will not find better working conditions outside in other working places. These variables were protective of burnout, since the higher their scores were, the lower were the scores of burnout. On other hand, the Obligation to perform well and Lack of reward dimensions were positively related to burnout. These dimensions refer to the personal belief that individuals who show extra effort in the organization should be rewarded with new opportunities and that certain attitudes and rules must be kept, to stay in the organization. Lack of reward and Opportunities and the Obligation to perform well indicate that the higher the occurrence of these beliefs, the greater is the propensity to develop burnout (Virgolino, Coelho & Ribeiro, 2017). The study of Virgolino et al. (2017) shows that lack of autonomy, work overload, and lack of recognition and support to workers lead to dissatisfaction, decreased commitment and the manifestation of burnout. The professional who faces burnout shows exhaustion when creativity and greater commitment to work are required. A similar result showed that Chronic occupational stress was one of the main causes of decreased job satisfaction and low organizational commitment in the nursing routine (Felix, Machado & Sousa, 2017).

These results indicates that the greater the belief in that individuals should strive for the benefit of the organization and seek to fulfill their tasks and goals, the higher are the chances of developing Dehumanization. This can have detrimental effects not only for the workers, but also for their patient (Nascimento, Miranda, Ferreira & Morais, 2017; Silva, Souza, Santos & Vitório, 2017).

Implications for Practice

The results of this study have practical significance because they bring important contribution to the prevention and management of burnout among nursing professionals. Labrague et al. (2017) demonstrated that burnout may be related to the lack of satisfaction of patients

and family members with the assistance received, which may be due to lack of professional recognition, lack of autonomy and authority at work. Results showed, as previous literature, that organizational factors are important predictors of burnout. However, the personal and career factors also stood out and must be considered the context in which burnout is installed. We highlight that burnout invades the world of the professional life and interferes in the work and career construction. Despite having a job which was desired, suffering can diminish the professionals' creative potential and even make them change jobs, resulting in losses which impact themselves, their family, the organization and its clients. About the risks of burnout for patients, the study by Nascimento, Miranda, Ferreira, and Morais (2017) shows that high levels of dehumanization can menace the quality of patient care. Similarly, Silva, Souza, Santos, and Vitório (2017) show that the shortage of nursing personnel is caused, among other reasons, by burnout. The results found by Hercos, Vieira, Oliveira, Buetto, Shimura, and Sonobe (2014), show that are mostly related to the high rates of exhaustion of nursing professionals and are associated to the quality of health care, evidencing that nursing work as extremely stressful and unsatisfactory, once that many professionals do not have a good income for the service provided.

Limitations of the study

The description of the limitations of the research is of great importance to the advancement of the study on the variables present in the work environment. In this sense, although the study has brought results of great scientific relevance, it had some limitations. Firstly, although our research sample have met the requirements for data analysis, it was composed of 85% of female nursing professionals – a fact that may have implied in gender issues not explored in this study. Secondly, the sample was composed by professionals from the southern region of Brazil. Being the country of great territorial extension and of great

cultural and social differences, one must be cautious when generalizing the findings to the whole country or other cultures. Thirdly, this cross-sectional study was carried out from the final months of 2016 and beginning months of 2017, when the country was in a state of great economic crisis. The period was characterized by a decrease in the number of jobs and professionals' income, according to the 2003 to 2016 report of the Brazilian Institute of Statistics and Geography (IBGE, 2016). Due to the scenario of economic crisis, the use of a longitudinal design could be a more adequate choice for examining the dynamic relationship among the variables over time.

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Recibido: 2 de junio, 2018
Revisado: 4 de octubre, 2018
Aceptado: 5 de octubre, 2018