

Title: Predictors and correlates of burnout in residents working with cancer patients

Running title: Burnout in residents working with cancer patients

Authors : Isabelle Bragard (Ph.D.), Anne-Marie Etienne (Ph. D.), Yves Libert (Ph. D.), Isabelle Merckaert (Ph.D.), Aurore Liénard (M.A.), Julie Meunier (M.A.), Nicole Delvaux (Ph. D.), Isabelle Hansez (Ph.D.), Serge Marchal (M.A.), Christine Reynaert (M.D., Ph. D.), Jean-Louis Slachmuylder (M.A.), Darius Razavi (M.D., Ph. D.)³

Received from the Université de Liège, Liège, Belgium (I.B., A.M.E., I.H.), the Université Libre de Bruxelles, Brussels, Belgium (I.M., D.R.), the Institut Jules Bordet, Brussels, Belgium (Y.L., A.L., J.M.), the Hôpital Universitaire Erasme, Brussels, Belgium (N.D.), the C.A.M. (Training and Research group), Brussels, Belgium (S.M., J.L.S.), and the Université Catholique de Louvain, Louvain-la-Neuve, Belgium (C.R.).

Supported by the Fonds National de la Recherche Scientifique - Section Télévie of Belgium and by the C.A.M., training and research group (Brussels – Belgium).

Corresponding author (and contact person for manuscript processing) : Isabelle BRAGARD, Université de Liège, Faculté des Sciences Psychologiques et de l'Education, Bld du Rectorat, B33, B-4000 Liège, Belgium. Phone: +32-4-366-23-98; Fax: +32-4-366-28-08; E-mail: isabelle.bragard@ulg.ac.be

Abstract

Background. There are not enough studies which have investigated variables associated with the development of burnout among residents working with cancer patients. Study's aim is to identify variables leading to residents' burnout in order to develop effective interventions to reduce burnout.

Methods. Burnout was assessed with Maslach Burnout Inventory.

Results. Person- (i.e. emotional-focused coping) and work-related (i.e. changes in lack of organizational support index) variables explain 28% of the variance in changes in emotional exhaustion.

Conclusions. Training programs may be improved by adding specific modules for residents, about problem-focused coping in interview with patients, and for supervisors, about team working management.

Introduction

Burnout is defined by three dimensions: emotional exhaustion (feeling emotionally spent), depersonalization (displaying a detached attitude toward patients), and personal accomplishment (experiencing a low sense of efficacy at work) [1]. Literature focusing on residents' burnout is relatively scarce [2]. Widely varying burnout rates are reported among residents ranging from 18% to 82% depending on burnout criterion used [2]. Some person- and work-related variables are reported to be related to residents' burnout. Among person-related variables, being a men [3], young [4], unmarried [5] and introverted [6] have been reported to be weakly or moderately related to residents' burnout. Other variables such as stress to deliver bad news are reported by residents as preventing them from being effective in their roles [7] and may thus also contribute to their burnout. Among work-related variables, organization-related variables such as work overload [8] and work-home interference [9] have been reported to be strongly related to residents' burnout.

There are however not enough studies which have investigated person- and work-related variables associated with residents' burnout changes. In other words, there is a need to identify person- and work-related variables predicting or being associated with changes in residents' burnout in order to develop effective interventions to prevent burnout changes. The aim of this study is to identify predictors and correlates - person- (socioprofessional, psychological and communicational) and work-related variables – of changes in burnout.

Methods

Subjects and design

Residents included in a randomized controlled study which has failed to show the efficacy of an intervention designed to reduce burnout [10] were from various specialties (See Table 2). To be included in this study, residents had to work with cancer patients, to speak French, to shown an interest for a psychological training and to be willing to participate in the training program and its assessment procedure. Two assessment times were scheduled at an 8-month interval. Residents' burnout, person- and work-related variables which have been selected for this study were collected at each assessment time. The study was approved by the local ethics committee.

Assessment of burnout

Residents' burnout was assessed with Maslach Burnout Inventory [11]. This validated French-translated 22-item questionnaire assesses individuals' burnout. It is a 7-point Likert scale ranging from never (0) to daily (6) self-reported instrument assessing the 3 dimensions of the burnout syndrome with 3 separate subscales: emotional exhaustion, depersonalization and personal accomplishment.

Assessment of person-related variables

Assessment of person-related variables included socioprofessional (a socioprofessional data questionnaire), psychological (General Health Questionnaire (GHQ), State-Trait Anxiety Inventory-Trait (STAI-T) and Rotter I-E Scale) and communicational

variables (Stress to Communicate Scale, Self-Efficacy Scale, Ways of Coping Checklist (WCC) and Assessment of Communication Skills).

Socioprofessional data questionnaire. Data were collected about resident's age, gender, marital status, medical specialty, years of work experience, whether or not they have had some previous communication training and stress management training in the last year.

GHQ [12]. This validated French-translated 28-item questionnaire assesses short-term changes in mental health. It is a 4-point Likert scale ranging from "better than usually" (0) to "much less than usually" (3) self-reported instrument. Factor analysis showed 4 main factors: somatic symptoms, anxiety, social dysfunction, and depression.

STAI-T [13]. This validated French-translated 20-item questionnaire measures general trait anxiety, referring to relatively stable individual differences in anxiety-processes. It is a 4-point Likert scale ranging categories from "almost never" (1) to "almost always"(4).

Rotter I-E Scale [14]. This validated French-translated 30-item questionnaire measures residents' locus of control (LOC), referring to their perceived ability to influence events in their own life. This scale is a self-report scale with a scoring range from 0 (internal LOC) to 23 (external LOC) excluding six buffer items.

Stress to Communicate Scale. This scale assesses residents' stress to communicate in interview with a cancer patient on a 10-point visual analogue scale (VAS) ranging from 0 (not at all stressful) to 10 (extremely stressful). Other studies have already shown the validity of a single-item (VAS or Likert scale) to measure stress, quality of life or depression [15].

Self-Efficacy Scale. This 13-item scale adapted from Parle et al.'s scale [16] assesses residents' self-efficacy to communicate (9 items) and to manage stress (4 items) in interview with a cancer patient. It is a 5-point Likert scale ranging from "not at all able" (1) to "extremely able" (5) self-reported instrument. A factorial analysis has organized the 9-item part into 3 factors: elicitation of concerns, detection of distress and complex communication skills such as breaking bad news. The 4-item part is organized into 1 factor.

WCC [17]. This validated French-translated 27-item scale assesses coping responses. It is a 4-point Likert scale ranging from "no" (1) to "yes" (4) self-reported instrument. It includes three subscales: problem-focused coping aiming at solving the problem that faces the person, emotion-focused coping involving cognitive processes directed at lessening emotional distress and social support-focused coping aiming at finding others' support. The scale's instructions were adapted to assess residents' specific coping responses in the context of a patient interview.

Communication Skills. The communication skills were assessed by analysing the transcripts of a standardized simulated breaking bad news interview with a French communication analysis software 'LaComm'. This software allowed analyzing health care professionals' communication skills utterance by utterance and was adapted from the French translation and adaptation of the Cancer Research Campaign Workshop Evaluation Manual [18]. LaComm classifies utterances in terms of assessment, information and supportive skills. LaComm is written in Visual Basic 6 and use Microsoft.Jet.OLEDB.4.0 to link to ACCESS 2000.

Assessment of work-related variables

Assessment of work-related variables included Job Stress Survey (JSS) and Quality of Work Life Systemic Inventory (QWLSI).

JSS [19]. This validated French-translated 30-item questionnaire assesses the perceived intensity and frequency of occurrence of job-related stressor events that are likely to affect the psychological well-being of employees who have been exposed to them during the preceding 6 months. Summing the ratings of each item provides an overall Job Stress Index and two other indexes of Job Pressure and Lack of Organizational Support.

QWLSI [20]. This validated French-translated 33-item questionnaire measures individuals' areas of work likely to influence their quality of work life. The more the score is low, the more the quality of work life is high. Items are shared into 8 subscales: compensation and benefits, career path, arrangement of work schedule, atmosphere with colleagues, atmosphere with superiors, characteristics of physical environment related to task, factors influencing appreciation of tasks and support offered to employee.

Statistical analysis

T-tests for paired sample were conducted to compare residents' burnout at an 8-month interval. Changes in residents' burnout, person- and work-related variables were computed through the difference between residents' scores at baseline and 8 months later. Considering that STAI-T and Rotter I-E Scale are stable variables, changes were not computed for these. Stepwise Multiple Regression Analysis was computed to examine predictors and correlates of changes in residents' burnout. Three models have been tested respectively for changes in emotional exhaustion, depersonalization and personal accomplishment. A preliminary analysis was used to identify predictors and correlates among person- and work-related variables (Spearman correlations, t-tests for independent sample or one-way ANOVA as

appropriate). Variables were entered in the regression analyses if they satisfied the inclusion criteria (i.e., $p < .05$). The analyses were performed with SPSS 12.0 for PC (SPSS Inc, Chicago, IL).

Results

Recruitment

A total of 544 residents were actively contacted by phone and 351 residents were met. Following this process, 113 residents registered for the study. Barriers to participation included mainly personal and institutional reasons, time limitations, training duration and time consuming assessment procedures. Eleven participants were excluded because they did not complete assessment procedure 8 months later. The final sample included 102 residents. Comparison of included and excluded residents showed no statistically significant differences for age, number of years of practice and gender.

Changes in residents' burnout

As shown in Table 1, nearly 50% of residents had high emotional exhaustion or depersonalization at baseline. Twenty-four percent of residents had a low personal accomplishment. The t-test for paired sample was statistically significant for emotional exhaustion showing a significant decrease in the 8-month interval. No statistically significant results were found for depersonalization and personal accomplishment means and for categorization of emotional exhaustion, depersonalization and personal accomplishment.

Insert Table 1

Predictors and correlates of changes in residents' burnout

Changes in emotional exhaustion had a mean of -1.7 (SD = 7.5), changes in personal accomplishment had a mean of 0.9 (SD = 4.8), and changes in depersonalization had a mean of 0.2 (SD = 4.3).

A preliminary correlational analysis was used to identify predictors and correlates of changes in residents' burnout. Concerning person-related variables (Table 2), changes in residents' emotional exhaustion were significantly correlated with LOC ($r=.20$; $p=.049$), emotional-focused coping at baseline ($r=.27$; $p=.007$), assessment skills at baseline ($r=.21$; $p=.035$), and with changes in GHQ ($r=.31$; $p=.001$). Changes in residents' depersonalization were significantly correlated with work experience ($r=-.20$; $p=.046$), problem-focused coping ($r=.20$; $p=.042$) and social support-focused coping ($r=.22$; $p=.029$) at baseline and with changes in social support-focused coping ($r=-.23$; $p=.019$). Changes in residents' personal accomplishment were significantly correlated with supportive skills at baseline ($r=-.21$; $p=.035$), and with changes in emotional-focused coping ($r=-.29$; $p=.003$).

Insert Table 2

Concerning work-related variables (Table 3), changes in residents' emotional exhaustion were significantly correlated with quality of work life concerning compensation and benefits ($r=.20$; $p=.047$) and atmosphere with colleagues ($r=-.23$; $p=.022$) at baseline, and with changes in lack of organizational support index ($r=.27$; $p=.006$), in job stress index ($r=.24$; $p=.014$) and in quality of work life concerning atmosphere with colleagues ($r=.30$; $p=.003$), factors influencing appreciation of tasks ($r=.21$; $p=.035$) and global score ($r=.27$; $p=.007$).

Insert Table 3

As shown in Table 4, three models of regression have been tested. Person- and work-related variables explained 28% of the variance in changes in emotional exhaustion, 4% of the variance in changes in depersonalization and 6% of the variance in changes in personal accomplishment.

Changes in emotional exhaustion were explained by both person- and work-related variables. Concerning person-related variables, changes in residents' emotional exhaustion were significantly predicted by emotional-focused coping at baseline (Beta=.32; p=.001) and associated with changes in GHQ (Beta=.27; p=.005). Concerning work-related variables, changes in residents' emotional exhaustion were significantly associated with changes in JSS-lack of organizational support index (Beta=.31; p=.001) and in quality of work life concerning factors influencing appreciation of tasks (Beta=.23; p=.015). Changes in residents' depersonalization were significantly predicted by social support-focused coping at baseline (Beta=.22; p=.028). Changes in residents' personal accomplishment were significantly associated with changes in emotional-focused coping (Beta=-.26; p=.007) (See Table 4).

Insert Table 4

Discussion

The aim of this study was to identify predictors and correlates - person- and work-related variables - of changes in burnout among residents working with cancer patients. Three regressions have been tested. Person- and work-related variables which have been selected for this study explain 28% of the variance in changes in emotional exhaustion, 4% of the variance in changes in depersonalization and 6% of the variance in changes in personal accomplishment. In view of these results, discussion will only focus on emotional exhaustion. We will first discuss on person-related (socioprofessional, psychological and communicational) and secondly on work-related.

First, it must be recalled that nearly 50% of residents at baseline have high emotional exhaustion. High scores in emotional exhaustion have been considered indicative of clinically significant burnout [21]. Burnout prevention seems thus really necessary if this dimension is considered as the first phase of burnout development [22]. It must also be underlined that residents' emotional exhaustion decreases weakly over time.

Among person-related variables, improvement in general health (assessed with GHQ regrouping somatic symptoms, anxiety, social dysfunction and depression) is associated with a decrease in emotional exhaustion. This confirms a study reporting that the GHQ score was a significant predictor of emotional exhaustion [23]. These scores might have a common background although they assess different aspects in that GHQ mainly reflects physical conditions, while emotional exhaustion reflects mental conditions. This result indicates the need to implement person-directed interventions aimed to enhance residents' stress management skills in order to better manage the physical and mental outcomes of stress.

Among communicational variables, low emotional-focused coping level in interview at baseline (referring to a tendency to cope with stress in interview in a passive way) predicts a decrease in emotional exhaustion. This confirms another study showing that lower emotion-oriented coping was associated with lower burnout [23]. This result indicates the need to implement person-directed interventions aimed to develop other kind of coping such as problem-focused coping (i.e. positive orientation, working harder) in interview and in their work in general.

Among work-related variables, enhancement in organizational support (i.e. supervisor support) and in factors influencing appreciation of tasks (i.e. participation in decision-making, autonomy in performance) is associated with a decrease in emotional exhaustion. The first result confirms another study showing that the best predictor of burnout appeared to be dissatisfaction with support received from supervisors [2]. The second result confirms studies showing that job demands lead to job strain (and in extreme cases to burnout), when certain job resources are lacking (i.e. autonomy) [24, 25]. These results indicate the need to implement organization-directed interventions aimed to ensure residents' supervision, to increase their participation in decision-making and to promote multidisciplinary team working. However, more links between the work-related variables (job demands and job resources) and changes in residents' burnout would be expected [26].

It is particularly surprising that only two work-related variable is associated with emotional exhaustion. Moreover, this is not associated with the two other burnout dimensions. In one hand, it may be hypothesized that other variables than those tested in the study may be associated with physicians' depersonalisation and personal accomplishment. In fact, studies have showed that physicians' depersonalisation was associated with their personality (high neuroticism [6, 23] and low agreeableness [6]) and was predicted by work-family conflict

[27]. Studies have also showed that physicians' personal accomplishment was associated with greater extraversion and openness [6]. Future studies should include all these variables among the potential predictors of burnout. In the other hand, it may be hypothesized that the use of other questionnaires may be more appropriate. Concerning person-related variables, it may be interesting to use questionnaires assessing physicians' personality such as NEO-PI [28]. Concerning work-related variables, our QWLSI integrates emotional (like happiness) and cognitive (like satisfaction) dimensions, in reference to the concept of quality of live. This concept is defining as a state changing from moment to moment: the person adjusts his/her expectancies, cognitions and behaviours trying to maintain his/her quality of live in a satisfactory state. This questionnaire is thus very different from other questionnaires habitually used in work and organisational psychology. It may be interesting to add a questionnaire based on the Job Demands-Resources Model [26] assessing specific job demands and resources regarding medical profession in order to evaluate the work environment and also a questionnaire assessing work-home interaction [29].

This study also raises questions about the interrelationships of the burnout constituting components. According to Leiter and Maslach's model [30], emotional exhaustion arises first in response to environmental demands. Exhaustion, in turn, evokes negative attitudes toward recipients (depersonalization), as employees attempt to gain mental distance from their work as a way of coping with their exhaustion. Consequently, a negative attitude develops regarding one's accomplishment at work. In fact, in our study, high emotional exhaustion significantly predicts high depersonalisation after 8 months ($\beta=.455$; $p=.000$) and high depersonalisation significantly predicts low personal accomplishment after 8 months ($\beta=-.275$; $p=.014$). However, there is no links between emotional exhaustion and personal accomplishment after 8 months. This confirms Leiter and Maslach's process model of burnout. The early detection of emotional exhaustion seems to be essential to prevent burnout.

To conclude, results show the importance of investigating separately the three components of burnout. This study highlights that identifying person- and work-related variables predicting or being associated with changes in residents' emotional exhaustion is an essential step to further develop effective interventions to prevent burnout. Training programs may be improved by adding some specific modules for residents, about problem-focused coping in interview with patients and in their work in general, and for supervisors, about team working management.

References

1. Maslach, C., W.B. Schaufeli, and M.P. Leiter, *Job burnout*. *Annu Rev Psychol*, 2001. **52**: p. 397-422.
2. Prins, J.T., et al., *Burnout in medical residents: a review*. *Med Educ*, 2007. **41**(8): p. 788-800.
3. Hillhouse, J.J., C.M. Adler, and D.N. Walters, *A simple model of stress, burnout and symptomatology in medical residents: a longitudinal study*. *Psychology, Health and Medicine*, 2000. **5**(1): p. 63-73.
4. Nyssen, A.S., et al., *Occupational stress and burnout in anaesthesia*. *Br J Anaesth*, 2003. **90**(3): p. 333-7.
5. Martini, S., et al., *Burnout comparison among residents in different medical specialties*. *Acad Psychiatry*, 2004. **28**(3): p. 240-2.
6. McManus, I.C., A. Keeling, and E. Paice, *Stress, burnout and doctors' attitudes to work are determined by personality and learning style: a twelve year longitudinal study of UK medical graduates*. *BMC Med*, 2004. **2**: p. 29.
7. Dosanjh, S., J. Barnes, and M. Bhandari, *Barriers to breaking bad news among medical and surgical residents*. *Medical Education*, 2001. **35**(3): p. 197-205.
8. Biaggi, P., S. Peter, and E. Ulich, *Stressors, emotional exhaustion and aversion to patients in residents and chief residents - what can be done?* *Swiss Med Wkly*, 2003. **133**(23-24): p. 339-46.
9. Sargent, M.C., et al., *Stress and coping among orthopaedic surgery residents and faculty*. *J Bone Joint Surg Am*, 2004. **86-A**(7): p. 1579-86.

10. Bragard, I., et al., *Efficacy of a communication and stress management training on residents' stress to communicate, self-efficacy and burnout level: A randomized controlled study*. Submitted in Journal of Health Psychology, 2008.
11. Maslach, C., A. Jackson, and M.P. Leiter, *Maslach Burnout Inventory Manual*. 1986, Palo Alto: Consulting Psychologists Pr.
12. Goldberg, D.P. and V.F. Hillier, *A scaled version of the General Health Questionnaire*. 1979. **9**: p. 139-145.
13. Spielberger, C.D., R.R. Gorusch, and R.E. Lushene, *State-Trait Anxiety Inventory Test Manual*. 1983: P.A.C.P. Press.
14. Rotter, J.B., *Generalized expectancies for internal versus external control of reinforcement*. Psychol Monogr, 1966. **80**(1): p. 1-28.
15. de Boer, A.G., et al., *Is a single-item visual analogue scale as valid, reliable and responsive as multi-item scales in measuring quality of life?* Qual Life Res, 2004. **13**(2): p. 311-20.
16. Parle, M., P. Maguire, and C. Heaven, *The development of a training model to improve health professionals' skills, self-efficacy and outcome expectancies when communicating with cancer patients*. Social Science & Medicine, 1997. **44**(2): p. 231-240.
17. Vitaliano, P.P., et al., *The Ways of Coping Checklist: revision and psychometric properties*. Multivariate Behavioral Research, 1985. **20**: p. 3-26.
18. Booth, K. and P. Maguire, *Development of a rating system to assess interaction between cancer patients and health professionals*. 1991, London: Cancer Research Campaign.

19. Spielberger, C.D. and E.C. Reheiser, *The Job Stress Survey - Measuring Gender Differences in Occupational Stress*. Journal of Social Behavior and Personality, 1994. **9**(2): p. 199-218.
20. Martel, J.P. and G. Dupuis, *Quality of work life: Theoretical and methodological problems, and presentation of a new model and measuring*. Social Indicators Research, 2006. **77**: p. 333-368.
21. Rafferty, J.P., et al., *Validity of the Maslach Burnout Inventory for family practice physicians*. J Clin Psychol, 1986. **42**(3): p. 488-92.
22. Maslach, C., *Burnout: The Cost of Caring*. 1982, Englewood Cliffs, NJ: Prentice-Hall.
23. Narumoto, J., et al., *Relationships among burnout, coping style and personality: study of Japanese professional caregivers for elderly*. Psychiatry Clin Neurosci, 2008. **62**(2): p. 174-6.
24. Karasek, R.A., *Job demands, job decision latitude, and mental strain: implications for job redesign*. Administrative Science Quarterly, 1979. **24**(2): p. 285-308.
25. Siegrist, J., *Adverse health effects of high-effort/low-reward conditions*. J Occup Health Psychol, 1996. **1**(1): p. 27-41.
26. Bakker, A.B. and E. Demerouti, *The Job Demands-Resources model: state of the art*. Journal of Managerial Psychology, 2007. **22**(3): p. 309-328.
27. Adam, S., Z. Gyorffy, and E. Susanszky, *Physician burnout in hungary: a potential role for work-family conflict*. J Health Psychol, 2008. **13**(7): p. 847-56.
28. Costa, T.P.J. and R.R. McCrae, *The NEO-PI/NEO-FFI Manual Supplement*. 1989, Odessa, Fl: Psychological Assesment Ressources.
29. Geurts, S.A.E., *SWING: Survey work-home interaction Nijmegen (Internal research report)*. 2000, Nijmegen,the Netherlands: University of Nijmegen.

30. Leiter, M.P. and C. Maslach, *The impact of interpersonal environment on burnout and organizational commitment*. Journal of Organizational Behavior, 1988. **9**: p. 297-308.

Table 1. Changes over Time in Medical Residents' Emotional Exhaustion (n=102)

	Descriptive analysis				Changes over time	
	At baseline		8 months later		t	p
	Mean (SD)	n (%)	Mean (SD)	n (%)		
Burnout Level (MBI)						
Emotional exhaustion	25.9 (8.6)		24.2 (9.4)		2.31	0.023
Low <19		18 (17.6)		25 (24.5)		
Average 19-26		34 (33.3)		36 (35.3)		
High >26		50 (49.0)		41 (40.2)		

Abbreviations: SD, standard deviation; t, t-tests for paired sample; p, significance; MBI, Maslach Burnout Inventory

Table 2. Influence of Individual and Work Factors on Changes in Residents' Emotional exhaustion (n=102)

	Descriptive Analysis		Association ¹
	Mean	(SD)	Changes in Emotional Exhaustion
Individual factors			
Psychological variables			
Baseline			
Rotter I-E Scale	11.4	(3.2)	.20 *
Changes²			
GHQ	1.0	(11.9)	.31 **
Communicational variables			
Baseline			
WCC-Emotional-focused coping	21.8	(4.0)	.27 **
Assessment communication skills	27.6	(12.4)	.21 *
Work factors			
Baseline			
Quality of Work Life Systemic Inventory			
Compensation and benefits	6.1	(4.3)	.20 *
Atmosphere with colleagues	3.1	(4.1)	-.23 *
Changes²			
Job Stress Survey (JSS)			
Lack of organizational support index	0.6	(13.3)	.27 **
Job stress index	1.4	(28.1)	.24 *
Quality of Work Life Systemic Inventory			
Atmosphere with colleagues	0.2	(4.2)	.30 **
Factors influencing appreciation of tasks	0.0	(2.9)	.21 *
Global score	.19	(3.6)	.27 **

*p ≤ .05 **p ≤ .01 ***p ≤ .001

¹Computed through Spearman Correlation or t-tests for independent sample or oneway Anova as appropriate.

²Computed through the difference between residents' scores at baseline and 8 months later.

Abbreviations: SD, standard deviation; GHQ, General Health Questionnaire; WCC, Ways of Coping Checklist

Table 3. Factors related to Changes in Medical Residents' Emotional Exhaustion (Stepwise Multiple Regression Analysis) (n=102)

	Changes ¹ in Emotional Exhaustion ²		
	<i>b</i>	β	<i>p</i>
Individual factors			
Psychological variables			
Correlates¹			
General Health Questionnaire	.160	.265	.005
Communicational variables			
Predictors			
WCC-Emotional-focused coping	.590	.323	.001
Work factors			
Correlates¹			
JSS-Lack of organizational support index	.171	.313	.001
QWLSI-Factors influencing appreciation of tasks	.561	.226	.015
Constant	-14.53		.000
<i>Multiple R</i>		.554	
<i>% of variance explained (Adjusted R²)</i>		.275	
<i>F (p)</i>		9.42 (<.001)	

¹Computed through a difference between residents' scores at baseline and 8 months later.

²Variables entered in the regression and excluded: Rotter I-E Scale, assessment skills at baseline, QWLSI-Compensation and benefits at baseline, QWLSI-Atmosphere with colleagues at baseline and changes, changes in JSS-Job stress index, changes in QWLSI-Global score.

Abbreviations: WCC, Ways of Coping Checklist; QWLSI, Quality of Work Life Systemic Inventory; JSS, Job Stress Survey

