Empirical Articles

Predictors of Burnout Syndrome in Dentistry Students

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Abstract

Aims: To estimate the contribution of social support and demographic factors in the development of burnout syndrome in dentistry students.

Method: A total of 169 Brazilian students participated via internet. For identification of the syndrome, we used the Maslach Burnout Inventory (MBI-SS). Social support was assessed by the Satisfaction with Social Support Scale (ESSS). The validity and reliability of the instruments were estimated. To check the effect of variables on burnout syndrome, linear regression using structural equation modelling (SEM) was performed to estimate causal trajectories (β).

Results: The participants’ mean average age was 21.6 (SD = 3.3) years, 64.5% were female and 59.2% were enrolled in private schools. An appropriate adjustment of the instruments’ factor models to sample was observed (MBI-SS: χ²/df = 2.173, CFI = .943; GFI = .888; RMSEA = .084; ESSS: χ²/df = 2.378, CFI = .904; GFI = .888; RMSEA = .091). The reliability of the scales was adequate (MBI-SS: α = .799-.903; ESSS: α = .653-.799). The model explained 33% of the variation of burnout with a significant contribution of social support (ESSS) (β = -.136, p = .042), gender (β = -.186, p = .005), housing (β = .124, p = .050), student performance in the course (β = -.293, p ≤ .001) and the thought of quitting the course (β = .333, p ≤ .001).

Conclusion: Social support and demographic variables may play an important role in the burnout syndrome and therefore should be considered when implementing preventive actions and/or interventions (self-help or guided) in college students.

Keywords: occupational health, burnout, social support, psychological adjustment, dentistry

Introduction

There are many studies reporting the presence of sources of stress in the university environment (Seyedfatemi, Tafreshi, & Hagani, 2007; Sreeramareddy et al., 2007). Among these, one can cite the organizational characteristics (few books in the library, inadequate transportation, lack of ergonomic chairs in the classroom), group (relationship with peers and/or teachers, competition) and individual characteristics (test anxiety and/or charges regarding the course, professional concern for the future, lack of time for leisure, family and friends) (Pöhlmann, Jonas, Ruf, & Harzer, 2005; Salanova, Schaufeli, Martinez, & Breso, 2010). The constant exposure to stressors coupled with the inability to face reality can trigger the burnout syndrome (Beehr & Newman, 1998; Silveira et al., 2005). This syndrome is multifactorial and consists of emotional exhaustion, disbelief, and reduced personal accomplishment (Maslach & Jackson, 1986).
Early research on burnout was only focused on care-related professionals, however, more recently it is noted that the syndrome has affected different occupational areas including health professionals (Bonafé, Trotta, Campos, & Maroco, 2012; Pavlakis, Raftopoulos, & Theodorou, 2010) and college students (Barboza & Beresin, 2007; Campos, Jordani, Zucoloto, Bonafé, & Maroco, 2012; Jordani, Zucoloto, Bonafé, Maroco, & Campos, 2012).

According to Carlotto, Nakamura, and Câmara (2006), students from courses in the health areas are more likely to develop burnout, since, in addition to the usual stressors of the teaching environment there is contact with patients, which often acts as a source of conflicts and problems due to anxiety, fear and insecurity.

The development of burnout syndrome, however, is directly related to the way individuals behave regarding stressors, which may result in a risk or in protection behaviours (Crockett et al., 2007). The perception of stress, the reactions triggered and how they are managed are unique to each individual and depend on the satisfaction with social support (Luo & Wang, 2009; Santos, Pais-Ribeiro, & Lopes, 2003; Seyedfatemiet al., 2007).

The individual’s perception of being inserted in a communication network, and acquiring psychological and material resources (such as being supported and loved, esteemed and valued by the people of this network), is known as social support (Maroco, Campos, Vinagre, & Pais-Ribeiro, in press). There are different ways to classify social support, however, there is consensus regarding its multidimensionality and the fact that it has a different impact on different individuals (Maroco et al., in press; Pais-Ribeiro, 1999).

Thus, given the importance that demographic variables and social support may assume, this study was carried out to identify and estimate their contribution to the development of burnout syndrome in dentistry students.

**Method**

**Participants**

The participants were students enrolled in 2011 in the undergraduate Dentistry course, at both public and private Brazilian higher education institutions, located in the south-eastern region. The invitation to participate was sent to each institution, through an e-mail to the school’s Directorate. The institutions’ contact information was acquired through the Ministry of Education and Culture’s (MEC) webpage (http://portal.mec.gov.br/index.php).

A total of 169 students participated in this study, with a mean age of 21.6 years ($SD = 3.3$), and 64.5% were female. As for the course year, 24.8% were enrolled in the first year, 28.6% in the second, 9.3% in the third, 23.6% in the fourth, 9.3% in the fifth, and 4.3% in the sixth year. Of these students, 58.4% were enrolled in private schools and 41.6% in public.

The remaining characteristics of the sample are presented in Table 1.
### Table 1

**Demographic Characteristics of the Sample**

| Characteristic                                                      | n (%)       |
|--------------------------------------------------------------------|-------------|
| DEMq1. Did you resort to private teachers?                         |             |
| Many times                                                         | 6 (3.6)     |
| Sometimes                                                          | 16 (9.7)    |
| Never                                                              | 143 (86.7)  |
| DEMq2. Order of preference of the course at the entrance exam:     |             |
| 1\(^{st}\) option                                                  | 125 (75.3)  |
| 2\(^{nd}\) option                                                  | 38 (22.9)   |
| ≥3\(^{rd}\) option                                                 | 3 (1.8)     |
| DEMq3. Regarding your initial expectations this course is:         |             |
| Much better                                                        | 37 (22.6)   |
| Better                                                             | 75 (45.7)   |
| The same                                                          | 42 (25.6)   |
| Worse                                                              | 10 (6.1)    |
| Much worse                                                        | -           |
| DEMq4. How do you classify your performance in the course?         |             |
| Excellent                                                          | 28 (17.0)   |
| Good                                                               | 109 (66.1)  |
| Regular                                                            | 25 (15.1)   |
| Bad                                                                | 3 (1.8)     |
| DEMq5. In general terms, how would you classify your professors?   |             |
| Very competent                                                     | 46 (27.7)   |
| Competent                                                          | 100 (60.3)  |
| Reasonable                                                        | 16 (9.6)    |
| Incompetent                                                        | 3 (1.8)     |
| Very incompetent                                                   | 1 (0.6)     |
| DEMq6. In general terms, how would you classify the conditions (facilities) of your school? |             |
| Very good                                                          | 44 (26.7)   |
| Good                                                               | 86 (52.1)   |
| Reasonable                                                        | 31 (18.8)   |
| Bad                                                                | 4 (2.4)     |
| Very bad                                                          | -           |
| DEMq7. Who do you live with?                                       |             |
| Alone                                                              | 39 (23.4)   |
| Family                                                             | 67 (40.1)   |
| Friends, colleagues                                               | 61 (36.5)   |
| DEMq8. Who mostly finances your studies?                           |             |
| You                                                                | 6 (3.7)     |
| Family                                                             | 149 (90.8)  |
| Studentship                                                        | 9 (5.5)     |
### Study Variables and Instruments

To characterize the study population demographic information was collected.

To identify the presence of burnout syndrome the Maslach Burnout Inventory - Students version (MBI-SS) (Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002) was used. This is the most commonly employed instrument for burnout assessment in the international literature. It is a three-dimension (Emotional Exhaustion, Disbelief, and Low Professional Effectiveness) self-completion questionnaire, consisting of 15 questions, with answers given on a 7-point Likert-type scale (0: never, 6: always). In this study we used the Portuguese version of the instrument validated for the university students’ population by Campos and Maroco (2012).

To assess the individuals’ satisfaction regarding their social support we used the Portuguese version of the Satisfaction with Social Support Scale (ESSS) (Pais-Ribeiro, 1999), validated for college students by Maroco et al. (in press). It is a self-completion instrument, comprised by 15 phrases divided into 4 factors (Satisfaction with friendships, Intimacy, Satisfaction with family and Social activity), and the respondents must indicate the extent to which they agree with each statement on a 5-point Likert scale (1: strongly agree, 5: strongly disagree).

### Procedures

The instruments used in the study were placed on a website, developed by the researchers resorting to google-docs, for a three-month period. The link to access the questionnaire was sent to the e-mails of the institutions registered with the Ministry of Education. The institutions that agreed to participate forwarded the e-mail to their students. It should be noted that this methodology has been tested and validated by the researchers in a previous study (Campos, Zucoloto, Bonafé, Jordani, & Maroco, 2011).

### Data Analysis

To assess the adequacy of the factor models to the sample, for each instrument independently, a confirmatory factor analysis was performed using as goodness of fit indices the ratio chi-square by the degrees of freedom.
(\(\chi^2/df\)), Comparative fit index (CFI), Goodness of fit index (GFI), and Root mean square error of approximation (RMSEA). Internal consistency was estimated by standard Cronbach’s alpha coefficient (\(\alpha\)).

We developed a second-order hierarchical model (SOHM) of each scale, estimating the standardized regression weights of the sub-constructs (\(\beta\)) in order to assert an overall score for the variables Burnout and Social Support. From these models, we obtained the standardized factor weights that enabled the formulation of an algorithm, which allowed the development of a final score for each latent variable.

To verify the effect of social support and demographic variables on the burnout syndrome, a multivariate regression model was developed to estimate the parameters through the maximum likelihood method, using AMOS (v.19, IBM SPSS Statistics, Chicago, IL).

The existence of outliers was assessed by the Mahalanobis squared distance (\(D^2\)). Normality was estimated by the coefficients of skewness and kurtosis, and no severe violations to the normal distribution were observed (Maroco, 2010). Multicollinearity was assessed through the VIF statistic (Maroco, 2010), and it was not observed among the study variables. The level of significance was set at 5%.

**Ethical Aspects**

The questionnaires were not identified and only individuals who gave their consent participated in the research. The subjects were informed that their participation was voluntary and anonymous. The development of this study was approved by the Ethics Committee on Human Research of the Faculty of Pharmaceutical Sciences - UNESP (CEP FCF 01/2011).

**Results**

The fit indices of the factorial structures of the instruments and the proposed second-order model are presented in Table 2.

**Table 2**

| Instruments               | \(\lambda/\beta\) | \(\chi^2/df\) | CFI  | GFI  | RMSEA | \(\alpha\)  |
|---------------------------|-------------------|----------------|------|------|-------|-------------|
| MBI-SS\(^a\)             | .53-.96           | 2.173          | .943 | .888 | .084  | .799-.903   |
| ESSS\(^b\)               | .51-.96           | 2.378          | .904 | .888 | .091  | .653-.799   |
| Second-order model        |                   |                |      |      |       |             |
| Burnout                  | .56-.1.00         | 2.173          | .943 | .888 | .084  | -           |
| Satisfaction with support | .46-.1.00         | 2.211          | .899 | .878 | .085  | -           |

Note. \(^a\)MBI-SS: Maslach Burnout Inventory. \(^b\)ESSS: Satisfaction with Social Support Scale.

An appropriate fit of the factor models and internal consistency of the four instruments were observed. However, for the adjustment to be adequate it was necessary to remove item 9 of MBI-SS’ Disbelief dimension, and item 15 of ESSS’ Social Activities dimension, for presenting factor weights < .50.

**Table 3** presents the linear regression model between social support and the demographic variables on burnout syndrome.
Table 3

Linear Regression Between Social Support, Obtained From the Second-Order Hierarchical Model, and Between the Demographic Variables with Burnout

| Variable                        | \( \beta \) | \( B \) | \( SE \) | \( p \) | \( r^2 \)
|---------------------------------|-------------|---------|---------|--------|-------|
| **Demographic**                 |             |         |         |        | .37   |
| Gender                          | -.191       | -.477   | .159    | .005   |       |
| Age                             | -.110       | -.037   | .025    | .142   |       |
| Course semester                 | .117        | .047    | .031    | .124   |       |
| Type of school (public, private)| -.015       | -.033   | .178    | .851   |       |
| DEMq1                           | .038        | .093    | .157    | .552   |       |
| DEMq2                           | -.070       | -.164   | .152    | .282   |       |
| DEMq3                           | .066        | .086    | .097    | .374   |       |
| DEMq4                           | -.281       | -.499   | .133    | <.001  |       |
| DEMq5                           | -.096       | -.155   | .119    | .194   |       |
| DEMq6                           | -.022       | -.034   | .110    | .761   |       |
| DEMq7                           | .142        | .174    | .170    | .027   |       |
| DEMq8                           | .029        | .110    | .249    | .659   |       |
| DEMq9                           | .027        | .045    | .121    | .706   |       |
| DEMq10                          | .366        | .677    | .144    | <.001  |       |
| ESSS\(^a\)                     | -.097       | -.117   | .085    | .170   |       |

Note. \(^a\)ESSS: Satisfaction with Social Support Scale. \(^b\)Burnout variability explained by the variables.

The proposed model explains 37% of the variation in Burnout, with a significant contribution of the variables gender, performance (DEMq4), housing (DEMq7) and thought of quitting the course (DEMq10).

The definition of the final regression model was established step-by-step. First, the variables with \( p < .20 \) were removed from the model. The variables semester, DEMq5 (teachers’ classification), age, and ESSS remained non-significant. Then, we removed those that presented the highest \( p \)-values (DEMq5 and age). Finally, the variable semester remained non-significant, and was removed from the analysis.

Figure 1 shows the linear regression model including social support, and the demographic variables considered significant to explain the burnout syndrome.
The variables included in the model explained 33% of the variation in Burnout, with a significant contribution of the variables gender ($p = .005$), performance in the course (DEMq4) ($p < .001$), ESSS ($p = .042$), housing ($p = .050$) and thought of quitting the course (DEMq10) ($p < .001$). Women were the most affected by burnout syndrome, with a poor performance, less social support, living alone and thinking about quitting the course.

**Discussion**

The university environment has characteristics that can act as a source of stress, and a constant exposure can trigger symptoms related to the burnout syndrome (Carlotto et al., 2006; Jordani et al., 2012). Studies such as those by Folkman and Lazarus (1980) and Carver, Scheier, and Weintraub (1989) claim that individual, behavioural/social and demographic factors, are fundamental and decisive for adaptation and perception of stressors and, therefore, should be considered.

In this way, the development of this work is interesting given that it contributes to the understanding of the variables related to the development of burnout syndrome in dentistry students, which can provide input for preparation of educational and preventive strategies more directed and adequate.

In this study, we observed a significant relation between the syndrome onset and the students’ gender. However, this relation is not consensual in the literature. Divaris, Lai, Polychronopoulou, Eliades, and Katsaros (2012), found a higher level of burnout among female dentists in Switzerland; while Alemany Martínez, Berini Aytés, and Gay Escoda (2008) found a higher prevalence of burnout among male dentistry students in Spain. Backović, Živojinović, Maksimović, and Maksimović (2012) found no statistically significant differences between gender and burnout in medical students of Serbia. However, it is important to note that the comparison between the results from different
studies must be made with caution, since the different individual and sociocultural characteristics between samples should be considered.

A significant relationship between performance in the course and burnout points to a greater impact on students whose performance is bad, which can be explained by the fact that these course-related activities are more wearing for these students (Campos et al., 2012). The thought of quitting the course was also significantly related to burnout.

Students who live alone had higher burnout scores. One can speculate that this fact is related to the increased sense of insecurity, not having company and/or being away from the protection of the family environment (Humphris et al., 2002).

The negative relationship between satisfaction with social support and burnout (Table 2) had already been reported by Halbesleben (2006) and Yildirim (2008). Pais-Ribeiro (1999) stresses the positive role of social support when facing a crisis, resulting in the protection of the individual against the deleterious effects of stress.

To measure the social support variable, one should take into account its latent nature, i.e., it is not directly measurable. Thus, it is necessary to evaluate the psychometric properties of the measuring instruments before their use, to attest to the reliability and validity of the information obtained. In our study we observed an acceptable psychometric quality of the instruments in this sample, after the removal of some items. It is important to highlight that this concern, although not commonly presented in the literature, should exist in all works using scales, since the properties of the instruments depend on the study sample (Campos et al., 2011).

Moreover, it is important to note that when using latent variables as manifest variables, by means of regression models, an attenuation of regression coefficients is obtained, but this attenuation is lower the greater the reliability (internal consistency) of the constructs. Considering that the constructs assessed (satisfaction with social support and burnout) presented good internal consistency, the possible attenuation of the regression coefficients was reduced, ensuring the quality of the estimate of the regression model.

Another important fact is the lack of consensus in the literature on the establishment of cut-off points for the classification of social support and burnout syndrome. Based on the knowledge that the theoretical conceptualization of these variables predicts the existence of a global latent state, and that the factors that compose the different scales have significant correlations among themselves, it is understood that the inclusion of a second order factor (SOHM) creates the possibility of estimating an overall score for each scale (Maroco, 2010). Thus, although this is not an analysis commonly used in dentistry literature, mainly because of its specificity and complexity, it is a widely accepted strategy in the psychometric literature and, therefore, it was the one used in this study.

The adjusted model (Figure 1) explained 33% of the variation in burnout, which on one hand provides information on the characteristics that must be considered in the study of burnout, and on the other points to the need to identify other variables that may influence the development of the syndrome among dentistry students, as for example, those directly related to the academic context.

We further suggest that more studies are conducted with the goal of integrating in the model individual, behavioural and/or psychosocial variables that may be associated to the development of burnout syndrome both in dentistry students, and in students from other areas.
We can conclude that social support and demographic variables played an important role in the burnout syndrome in dentistry students and therefore should be considered when implementing preventive actions and/or self-help/professionally guided interventions in college students. Satisfaction with social support, gender, housing, student performance and the thought of giving up the course determined 33% of the variability of the burnout scores.

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**Competing Interests**
The authors have declared that no competing interests exist.

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