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Impact of a brief intervention on the burnout levels of pediatric residents

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Abstract

Objectives: To estimate burnout prevalence among pediatric residents and to evaluate the impact of a brief intervention aimed at controlling burnout.

Methods: A randomized controlled trial was conducted on 74 pediatric residents. The Maslach Burnout Inventory was administered to all subjects, and demographic information was gathered (age, gender, children, cohabitants, and residency year). The experimental group (n = 37) participated in self-care workshops over the course of 2 months, and the control group (n = 37) did not receive any intervention. After the intervention, the Maslach Burnout Inventory was administered again to all participants. All potential predictors of burnout were included in a logistic regression model. The efficacy of the intervention was evaluated by the chi-square test. P values < 0.05 were considered significant.

Results: The burnout prevalence among pediatric residents was 66%. After controlling for age, gender, children, and cohabitants, the prevalence of burnout was significantly higher among third-year residents (odds ratio = 11.8; 95% confidence interval 2.3-59.3; p = 0.003). There were no significant differences regarding burnout prevalence in the experimental group between the baseline and post-intervention periods (p = 0.8) or between the two groups after intervention (p = 0.8). The only difference observed was an improvement regarding "depersonalization" in the experimental group (p = 0.031).

Conclusions: The burnout prevalence among pediatric residents was 66% and was higher among third-year residents. A brief intervention was not effective in reducing burnout prevalence, despite the achievement of an improvement in "depersonalization."

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Introduction

Burnout syndrome has been defined as a negative response to chronic interpersonal and emotional stress in the workplace, characterized by physical, emotional, and mental exhaustion due to one's exposure to emotionally demanding situations over a prolonged period of time.[1] This syndrome principally affects people whose activities are centered on providing services, especially professionals in healthcare and education.[2]

Burnout syndrome becomes important among doctors because of the direct repercussions it could have on the health of both the professionals and their patients.[3,4] Its prevalence is extremely variable, depending on the type of professional activity and how burnout is defined, but it can reach 60% among doctors[5] and can exceed 70% among medical residents.[6] Furthermore, this phenomenon begins early in professional training; it has been described in medical

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students (54%) and may be connected to abandoning university studies.[7]

As a result of high job and educational demands and a high level of work-home interference, residents may be particularly vulnerable to burnout. Factors such as lack of autonomy, supervisory support, and irregular working hours are characteristics of residency linked to burnout.[8,9]

Education about this subject and group supervision can be effective strategies to alleviate the emotional burden suffered by at-risk professionals.[10,11] Nonetheless, the particular characteristics of the residency system, with its rotations through different areas, complicate the implementation of long-term programs; therefore, brief interventions could be more readily applicable.

The objectives of this study were to estimate the burnout prevalence among pediatric residents and to evaluate the impact of a brief intervention aimed at controlling burnout.

Methods

We conducted a study with medical residents in pediatrics from a tertiary care pediatric hospital. We excluded medical residents who were not working within the hospital at the time of the study. All participants completed the Maslach Burnout Inventory,[12] which has been validated for use in Spanish among healthcare workers.[13] The inventory consists of a 22-item questionnaire that evaluates emotional exhaustion (nine items), depersonalization (five items), and personal accomplishment (eight items). For each item, one must indicate the frequency with which one experienced the situation described during the past year using a seven-point scale (from never [0] to every day [6]). High scores in the areas of emotional exhaustion and depersonalization and low scores in personal accomplishment reflect the presence of burnout. According to the score obtained in each area, we considered low, moderate, or high involvement with the disease, following cutoff points suggested by Maslach & Jackson.[12] In our study, we defined burnout as moderate or high scores in at least two of the three areas explored in the inventory.

After administration of the questionnaire, subjects were randomly assigned to one of the two study groups. The experimental group received a brief intervention consisting of two 2.5-hour workshops directed by mental health professionals, which covered repercussions of burnout syndrome on professional activity, recognition of risk indicators for burnout syndrome, and tools to cope (identification of strengths, coping behaviors, preventive and self-care behaviors). In the month in which the intervention was completed, we asked participants to fill in the Maslach Burnout Inventory again. At the end of this period, we also gave the inventory again to the members of the control group, who had not experienced any intervention.

We recorded data regarding age, sex, rotation area, year of residency, children, and cohabitants of each participant.

Ethical considerations

The project was conducted with the approval of the Institutional Review Board and the Ethics Committee of the institution. All study participants were offered information about the subject and asked for written consent prior to inclusion in the study. For those participants who presented high levels of burnout, the Mental Health Service offered assistance after the study.

Statistical analysis

Considering that the prevalence of burnout among medical residents can exceed 70%[4] and that a brief intervention could reduce this prevalence by 50%,[5] and considering a power of 80% and a 95% confidence level, the necessary sample size was calculated at 72 subjects (36 in each group). Continuous variables (age and scores in each area of the Maslach Burnout Inventory) were expressed as means and standard deviations, and categorical variables (sex, year of residency, cohabitants, children) were expressed in nominal form. The level of burnout was expressed as a percentage with its respective 95% confidence interval (95%CI). A *t* test was used to compare means, and the chi-square or the Fisher's exact test was used to compare proportions. The variables related to year of residency, age, sex, cohabitants, and children were included in a logistic regression model to analyze the association of each of these variables with the presence of burnout, estimating the odds ratio (OR) and its corresponding 95%CI. A significance level of $p < 0.05$ was adopted. Statistical analyses were performed with the SPSS program, version 11.5 (SPSS Inc., Chicago, 2002).

Results

Of the 117 residents (83% female) in our program, the participants consisted of 74 residents (28 in the first year, 12 in the second year, 24 in the third year, and 10 in the forth year) who were working in the hospital at the time of the study. A total of 81% were female; the mean age was 27.3±1.4 years; 57% were working in inpatient areas, 35% in the outpatient clinic, and 8% in the intensive care unit.

In total, 38% of the medical residents reported living with their families, while 36% reported living with a partner, and the rest reported living alone. A large majority of the medical residents surveyed did not have children (97%). A comparison of the characteristics of both groups (experimental and control) revealed no significant differences (Table 1).

Upon initial administration of the Maslach Burnout Inventory, a 66% prevalence of burnout was found (95%CI 55-76%), corresponding to 65% of the experimental group and 68% of the control group.

After controlling for age, sex, cohabitants, and children, the year of residency proved to be an independent predictor of burnout, with third-year residents having a higher risk of burnout than the others (OR = 11.8; 95%CI 2.3-59.3; p = 0.003) (Table 2). No differences in the prevalence of burnout were found between the experimental and control groups before the intervention (65% vs. 68%; OR = 0.79; 95%CI 0.28-2.26; p = 0.6) or after the intervention (61% vs. 72%; OR = 1.13; 95%CI 0.38-3.40; p = 0.8). No significant differences were found when comparing the

Table 1 - General characteristics of the medical residents who participated in the study

Variable	Experimental group (n = 37)	Control group (n = 37)	Significance*
Age	27.1±1.3	27.6±1.3	0.08
Sex			
Female	28	32	0.23
Male	9	5	
Children			
Yes	0	2	0.15
No	37	35	
Cohabitants			
None	8	9	0.52
Family	15	13	
Partner	14	13	
Other	0	2	
Year of residency			
First year	16	12	0.78
Second year	5	7	
Third year	11	13	
Forth year	5	5	
Rotation area			
Inpatient	19	23	0.29
Outpatient	16	10	
Intensive care unit	2	4	

* *t* test, chi-square test, or Fisher's exact test, as appropriate

Table 2 - Logistic regression analysis including potential predictors of burnout (n = 74)

	OR	95%CI	Significance
Sex	0.599	0.13-2.63	0.49
Age	1.020	0.68-1.52	0.92
Cohabitants	1.166	0.57-2.37	0.67
Children	0.000	0.000	0.99
Year of residency			
First year	1		
Second year	4.924	0.99-24.49	0.05
Third year	11.856	2.36-59.36	0.003
Forth year	4.979	0.52-47.46	0.16

95%CI = 95% confidence interval; OR = odds ratio.

prevalence of burnout before and after the intervention in either the experimental group (65% vs. 61%; OR = 0.89; 95%CI 0.3-2.5; p = 0.8) or the control group (68% vs. 72%; OR = 0.62; 95%CI 0.2-1.8; p = 0.3).

When each dimension of burnout syndrome was evaluated in both groups before and after the intervention, significant improvement was observed only in the experimental group, in the scores corresponding to depersonalization (p = 0.031) (Tables 3 and 4).

Discussion

In spite of producing a significant improvement in the area of depersonalization, our brief intervention did not prove effective in reducing the prevalence of burnout in medical residents.

Our results contrast with experiences of other researchers. Krasner et al.[5] performed a 1-year intervention among primary care residents that focused on aspects related to communication and included meditation exercises; their program succeeded in reducing the levels of burnout, improving mood, and increasing emotional stability. Shapiro et al.[14] achieved a decrease in stress and an improvement in quality of life in less time (8 weeks). In spite of the good results also obtained by relatively brief interventions, such as those by Ospina-Kammerer & Figley[15] (4 weeks) and McCue & Sachs[16] (4 hours), one ought to keep in mind that, in both cases, the intervention participants were not chosen randomly but rather by convenience (only residents with free time attended the workshops), with the attendance bias that this may imply. It is possible that our intervention, although including content similar to that of Krasner et al.[5], did not reach the same effectiveness due to its short duration. Nonetheless, one should consider that longer-duration interventions can experience difficulties in their implementation during residency, because of overlap with other training activities.

It is also important to consider that, according to Krasner et al.,[5] we estimated that our intervention could reduce the prevalence of burnout by half, a goal that was not achieved. Although a sample size calculated like ours could have underestimated the impact of the intervention, the small differences observed make it probable that the results would not be very different with a larger study population.

We found that 66% of residents showed burnout, which was similar to the numbers reported by Shanafelt et al. (76%),[4] Martini et al. (50%),[6] and Fahrenkopf et al. (74%).[17] However, these researchers have found it difficult to agree on whether to define burnout syndrome through its dimensions (emotional exhaustion, depersonalization, and personal accomplishment) separately (unidimensional model) or together (multidimensional model).[18]

Although Maslach & Jackson[12] recommend keeping the scores for each dimension separate and not combining them into a single score, many studies have combined the scores with the intention of simply quantifying the phenomenon. Unfortunately, the lack of consensus on the definition makes the burnout prevalence results hard to compare.

Table 3 - Experimental group: average scores for each dimension of burnout, before and after the intervention (n = 37)

	Initial	Final	Significance*
Emotional exhaustion	22.75	21.32	0.265
Depersonalization	7.27	5.54	0.031
Personal accomplishment	36.45	37.83	0.94

* *t* test.

Table 4 - Control group: average scores for each dimension of burnout, before and after the intervention (n = 37)

	Initial	Final	Significance*
Emotional exhaustion	22.03	23.27	0.41
Depersonalization	6.65	7.78	0.14
Personal accomplishment	34.78	34.03	0.38

* *t* test.

Thus, when defining burnout among residents as being comprised of all three dimensions, Álvarez-Hernández & Medécigo[19] reported a prevalence of 27%; when considering the involvement of only two dimensions, Fonseca et al.[20] reported a prevalence of 69%; and, when considering only a single dimension, Shanafelt et al.[4] reported a prevalence of 76%. Finally, Msaouel et al.[21] applied a multidimensional model (high emotional exhaustion combined with high levels of depersonalization or low levels of personal accomplishment) and reported a prevalence of 49.5% among residents.

We considered burnout to be present when at least two of the Maslach Burnout Inventory dimensions were affected, but, when we applied the same definition as that of Msaouel et al.,[21] the prevalence fell from 66% to 55%. Moreover, applying a more strict definition as Alvarez-Hernández & Medécigo (maximal involvement of the three dimensions), the prevalence fell to 27%. Although it is evident that a stricter definition decreases the prevalence of the syndrome, it is also probable that it increases the risk of underdiagnosis in professionals with growing levels of burnout, a population that would benefit from effective interventions.

We observed that third-year residents exhibited a higher risk of burnout. Similarly, Michels et al.[22] reported that third-year residents showed higher levels of depersonalization. We believe that this phenomenon could be explained by the characteristics of residency programs, in which the responsibilities increase as one advances through training. The third-year resident regularly coordinates and supervises younger residents, resolves complex clinical situations, and communicates information to peers and patients, activities that carry a high emotional burden and a self-imposed need to meet the demands of the environment.

Maslach & Leiter argue that the conditions for the development of burnout are more related to the characteristics of organizations than those of individuals, and identify some factors that may be present in the medical resident training system, which should be controlled in order to reduce burnout: excessively burdensome work schedules, a lack of control over one's own work, insufficient recognition of one's work, ambiguity in the division of roles, and a sense of injustice.[23] In particular, evidence exists of a relationship between a more burdensome work schedule and burnout.[8,24,25] In this sense, our results are comparable to those obtained in the northern hemisphere, although local regulations for our residents establish a work schedule limit of 60 hours per week,[26] midway between that established by the Accreditation Council for Graduate Medical Education (80 hours per week)[27] and the European Working Time Directive (48 hours per week).[28]

Much work remains to be done in medical training to avoid, or at least limit, some of the complications of professional practice, such as burnout syndrome. One ought not forget that the development and care of the doctor as an individual translates directly into better quality of attention and care of patients, and this concept should be considered beginning with the earliest stages of professional training.

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