Burnout, Perceived Stress, and Depression Among Cardiology Residents in Argentina

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Objective: *Because medical residency is a stressful time for training physicians, placing residents at increased risk for psychological distress, the authors studied the prevalence of burnout, perceived stress, and depression in cardiology residents in Argentina and examined the association between sociodemographic characteristics and these syndromes.*

Methods: *The authors conducted a cross-sectional observational study of 106 cardiology residents in Argentina and a comparison group of 104 age- and gender-matched nonmedical professionals. The main outcome measures included the prevalence of burnout with the Maslach Burnout Inventory, distress with the Perceived Stress Scale, and depression with the Beck Depression Inventory.*

Results: *One hundred six residents completed the survey. Of these, 31.3% were women, the mean age was 29.1 years old, and half were married. Respondents worked an average of 64 hours per week, and 60% of the residents needed a second job. High emotional exhaustion and depersonalization was found in the majority of respondents. Significant depressive symptoms were found in less than half of residents, and stress was on average 21.7 points on the Perceived Stress Scale. Residents who had a second job showed high levels of depersonalization. No other association was found with sociodemographic characteristics. There were no differences in sociodemographic characteristics of residents compared with nonmedical professionals, but nonmedical professionals worked less hours per week, had a lower percentage of second jobs, and higher salary. Burnout, depressive symptoms, and perceived stress were significantly lower in the reference group.*

Conclusion: *Cardiology residents in Argentina exhibit high levels of burnout, perceived stress, and depressive symptoms, which warrants greater attention to the psychological needs of residents.*

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Medical residency is a pivotal period in becoming a physician and universally associated with high levels of physical and emotional demands (1, 2). Residents have to cope with increased responsibility and workload, sleep deprivation, physical exhaustion, and low wages (3). During this time, residents have to learn how to use their time efficiently, acquire the necessary knowledge and technical skills to perform at a high level, and develop empathy and compassion for the medically ill. Residents are often asked to make quick decisions in which their judgment is closely scrutinized. The residency training program provides frequent exposure to death and dying, producing a great deal of anxiety and self-doubt (4–7). As a result, medical residency training can be a time of high stress and may contribute to feelings of burnout, distress, and depression (8).

Although there has been increased attention on the well-being of medical residents, literature on residents' psychological profiles and burnout is relatively limited (1, 2). The reported prevalence of burnout is highly variable, ranging from 18% to 82% (2, 9–15), and the prevalence of depressive symptoms in residents has been estimated to range from 7% to 56% (15–20). This variability can be attributed to small samples, different measurement instruments, and methodological shortcomings in most studies (1, 2). Moreover, surveys have primarily involved North American medical centers, and relatively little attention

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has been given to assessing the psychological adaptation of medical residents in other medical residency programs. Therefore, the purpose of this study was to determine the prevalence of burnout, perceived stress, and depression in cardiology residents in Argentina using well-standardized, psychometrically sound instruments and to examine potential sociodemographic factors associated with distress among medical residents.

Methods

We conducted a cross-sectional observational study of cardiology residents in Argentina between January 2007 and May 2007. All third- and fourth-year cardiology residents, whose residency programs are associated with the Argentinean Council of Cardiology Residents (CONAREC), were eligible for participation in this study.

Four self-report questionnaires were administered anonymously to participants. Because the questionnaires contained no personal identifying information, our institutional review board determined that the return of the questionnaires implied consent to participate in the study, and no formal informed consent was needed. The questionnaires included the Maslach Burnout Inventory–Human Services Survey (21), the Perceived Stress Scale (25–27), the Beck Depression Inventory (BDI, 30), and a survey of general sociodemographic and work characteristics.

The Maslach Burnout Inventory is a 22-item survey that considers a three-dimensional structure of burnout: emotional exhaustion, depersonalization, and personal accomplishment (21, 22). These three components of burnout assess the frequency of feelings associated with work. The Maslach Burnout Inventory employs a Likert scale with responses ranging from 0 to 6 (0=never, 1=a few times a year, 2=once a month or less, 3=a few times a month, 4=once a week, 5=a few times a week, 6=every day). We employed the Spanish version, which has been shown to have adequate reliability and validity in previous studies (23). Cut-offs for emotional exhaustion (scores of 27 or higher), depersonalization (scores of 10 or higher), and personal accomplishment (scores lower than 33) have been established previously (21, 22). Burnout is present when high levels of emotional exhaustion or depersonalization are found (1, 22, 24).

The Perceived Stress Scale is a 10-item, self-reported instrument developed to measure the degree to which situations in one's life are perceived as stressful in the prior 30 days. It is not a diagnostic instrument but intended to compare participants' perceived stress related to current, objective events. We employed the European Spanish version, which has been shown to have adequate reliability and validity in previous studies (28). It is rated with a 5-point Likert scale (0=never, 1=almost never, 2=once in a while, 3=often, 4=very often), with higher scores reflecting higher levels of perceived stress (28).

The BDI is a 21-item, self-report measure of depressive symptoms over the previous 2 weeks. Individual items assess mood, pessimism, sense of failure, self-dissatisfaction, guilt, punishment, self-dislike, self-accusation, suicidal ideation, crying, irritability, social withdrawal, body image, work difficulties, insomnia, fatigue, appetite, weight loss, bodily preoccupation, and loss of libido. The severity of each item is scored on a scale of 0 to 3, with total scores ≥10 suggestive of clinically significant depression (30, 31). The BDI has been translated to several languages, including a Spanish (Argentine) validated version, which was used in this investigation (32).

The general sociodemographic and work characteristics survey included age, gender, marital status, number of offspring, work hours/week, need of a second job, and annual wage.

A sample of university graduates from nonmedical professions who graduated in the previous 10 years, included in a university graduates database, served as a comparison group. These graduates were randomly chosen by one of the investigators (SVW), who did not participate actively in the data analysis, and then matched by age and gender to complete a 104-reference sample.

Statistical analysis was conducted by using the intercoded STATA 9.0 Statistical Package (STATA Corporation, College Station, TX). The results of continuous variables are presented as mean±SD and in categorical variables as percentages.

All categorical variables were analyzed with chi-square; comparisons using continuous variables of residents and comparison subjects were evaluated by t test. We targeted as significant the differences of two-tailed p value <0.05.

A multivariate logistic regression was used to analyze the relationship between burnout, depressive symptoms, and perceived stress with the sociodemographic and work characteristics.

Results

A total of 185 cardiology residents received the questionnaires, from which 106 (57.3%) returned the survey. As shown on Table 1, 31.3% were women, the mean age

was 29.1 years old, and half were married. Residents worked a mean 64.5 (±30.5) hours per week, but only 35.8% had an annual income higher than the Argentinean minimum wage of $5,000 USD, and 60% reported the need of a second job (moonlighting).

A sample of 104 nonmedical, age- and gender-matched university graduates was used as a comparison group. There were no differences in age, gender, marital status, and percentage of couples with children in the comparison group relative to the residents. The nonmedical professionals worked a mean of 44.1 (±6.3) hours per week, and 8.7% needed a second job, significantly lower than for the cardiology residents ($p<0.0001$). Nonetheless, the comparison group had higher wages than the residents did; 75% of the comparison group had an annual income higher than $5,000 US ($p<0.0001$) (Table 1).

Burnout was reported in 80.2% (n=85) of cardiology residents: high levels of emotional exhaustion were found in 71.7% (n=76) and depersonalization in 67.9% (n=72) of residents. Nonetheless, only 10.4% (n=12) showed low personal accomplishment levels, and 50.9% (n=54) reported high personal accomplishment. Among the nonmedical graduates, burnout was reported only in 30% (n=31), with high emotional exhaustion found in 28.3% ($p<0.0001$) and high depersonalization in 24% ($p<0.0001$). Low personal accomplishment was present in 22.1% (n=23), and only 25.9% (n=27) reported high personal accomplishment, both significantly different ($p<0.001$) when compared with personal accomplishment in cardiology residents (Table 2).

Residents reported higher levels of perceived stress and more depressive symptoms relative to comparison subjects (Table 2). Indeed, significant depressive symptoms were found in 48% (n=49) of cardiology residents. In contrast, only 25% (n=26) of comparison subjects had BDI scores ≥10 ($p<0.0001$).

TABLE 1. Participant Demographics

Characteristics	Residents (n=106)	Nonresidents (n=104)
Age	29.16 (±2.4)	29.4 (±3.8)
Women	36 (31.3%)	38 (36.5%)
Single	54 (50.9%)	57 (54.8%)
Have offspring	12 (11.3%)	10 (9.6%)
Work hours/week	64.6 (±30.5)*	44.2 (±6.3)
Annual income >$5,000 USD	38 (35.9%)*	78 (75%)
Second job	67 (60%)*	9 (8.7%)

*p<0.0001

Depressive symptoms, high emotional exhaustion, and high depersonalization were closely related in the medical residents: 81.6% (n=40) of residents with significant depressive symptoms also scored high levels of emotional exhaustion and depersonalization.

We examined potential sociodemographic and work characteristic associations with symptoms of burnout, stress, and depression among cardiology residents. An association was found between residents who had a second job and high levels of depersonalization ($p<0.045$), and a tendency was found with the residents who worked more than 80 hours per week and depressive symptoms ($p<0.067$). No other differences were found when we analyzed gender, marital status, and annual income.

Discussion

Medical residency in Argentina is more than 60 years old. Residents are expected to play the role of a competent and caring physician-in-training, focusing on their studies and investing their time, knowledge, and passion in this journey. The original ideal of protected education of future physicians has evolved into a different reality. Burnout and stress are sometimes considered part of the rite of passage from student to physician. Residents work numerous hours and sacrifice many important life events. Often, they need to supplement their income by moonlighting, which subtracts valuable time from their medical training and is also associated with symptoms of depersonalization and depression. Burnout and stress may have a negative impact on physical and mental well-being, life satisfaction, and even patient care (33–37). Depression has been related with medical errors. A recent study by Fahrenkopf et al. (18) showed that residents who were depressed had a medication error rate six times higher than nondepressed residents, suggesting that patient safety is closely related with residents' mental well-being.

Symptoms of burnout are often considered to be job-related and situation specific (21, 22), whereas depressive symptoms may be viewed as more generalized and free of contexts (38). Nonetheless, during residency, the difference between work and private life can be subtle and often nonexistent. Thus, burnout and depression usually coexist and overlap, affecting the private and work environments (2). Moreover, the presence of stress and depression may exacerbate the perception of depersonalization and emotional exhaustion (39). Previous studies on burnout (1–12) reported that no gender or demographic factors seem to be reliably associated with the onset of burnout during resi-

TABLE 2. Results of the Maslach Burnout Inventory, Perceived Stress Scale, and Beck Depression Inventory

Psychosocial Questionnaires	Residents (n=106)	Nonresidents (n=104)	p
Burnout: emotional exhaustion (high)	76 (71.7%)	30 (28.3%)	p<0.0001
Burnout: depersonalization (high)	72 (67.9%)	25 (24%)	p<0.0001
Burnout: personal accomplishment (low)	12 (10.4%)	23 (22.1%)	p<0.001
Burnout: personal accomplishment (high)	54 (50.9%)	27 (25.9%)	p<0.001
Perceived Stress Scale score (±SD)	20.3 (±7.4)	16.7 (±6.7)	p<0.008
Beck Depression Inventory (% of residents with significant depression symptoms [scores >10])	49 (48%)	26 (25%)	p<0.0001

dency. These findings suggest that resident overwork, either by extended schedules or moonlighting, might favor the appearance of burnout and depression.

The education, safety, and well-being of residents are now in the spotlight. Since 2003 the Accreditation Council for Graduate Medical Education (ACGME) has implemented regulations on duty hours, limiting them to 80 hours per week, in the United States (40). The objectives of the regulation were to improve resident education and quality of life and to provide patients with optimal care (40–42). Nonetheless, studies conducted after the implementation of these regulations failed to demonstrate a definite decrease in burnout (43–50) or depression (19, 49–52). These findings suggest that sleep deprivation or long work schedules are not solely responsible for the development of these symptoms, but they also raise the question of whether 80 hours per week may still be excessive for residents. That may be the reason why differences in psychosocial distress could not be found, although more data are needed to evidence the lack of improvement.

Work-related stress has been identified as a contributing source of physician depression (49). Numerous factors associated with the high rate of physician suicide have been identified and may be extrapolated to medical residents. These factors include denial of depression (53), and even though residents and physicians have greater awareness about depression, diagnosis, and treatment, physicians are often unwilling or unable to seek help (54). Although the BDI is not a diagnostic tool, it is often used as a screening instrument to identify individuals who are likely to be clinically depressed. Because of the high rate of elevated depressive symptoms found among cardiology residents in our country, it is strongly recommended that residency programs focus on the identification of residents at risk or in need of psychological assistance.

There are several limitations to the present study. First, we do not have data on the nonresponders, so the extent to which the present sample of participants is representative of cardiology residents is not known. Still, no difference was found among age, sex, or residency year for participants and nonparticipants. Moreover, because we only surveyed cardiology residents in Argentina, the extent to which our results can be generalized to other residency programs in South America and other countries is not known. Finally, the effect of burnout, depression, and perceived stress on other aspects of quality of life, health, and work performance was not evaluated and needs to be examined in future studies.

Despite the high levels of perceived stress, burnout, and depression among residents, more than half of the residents reported a sense of high personal accomplishment. This finding suggests that the ideals, goals, and expectations of becoming a practicing physician are still important to many residents and the feeling of helping patients and of being able to contribute to society make such personal sacrifices worthwhile.

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