Journal of Athletic Training 2022;57(3):234–239
doi: 10.4085/1062-6050-630-20

www.natajournals.org

Burnout in and Commission of Medical Errors by Secondary School Athletic Trainers

Leslie W. Oglesby, PhD, LAT, ATC*; Andrew R. Gallucci, PhD, LAT, ATC†; Anna K. Porter, PhD*; Ashlyne Paige Vineyard, MAT, LAT, ATC†

*The University of Southern Mississippi, Hattiesburg; †Baylor University, Waco, TX

Context: Commission of medical errors by health care providers can be costly and potentially fatal for their patients. Previous researchers found a correlation between burnout and the commission of medical errors by physicians. The Smith Cognitive-Affective Model of Athletic Burnout suggests that emotional exhaustion and decreased personal accomplishment in athletic trainers (ATs) may be associated with behavioral outcomes such as commission of medical errors, but this association has not been examined.

Objective: To explore the association between burnout in and commission of medical errors by ATs.

Design: Cross-sectional study.

Setting: Web-based survey.

Patients or Other Participants: A total of 403 certified ATs working in the secondary school setting were recruited via multiple social media pages and the National Athletic Trainers' Association Research Survey Service.

Main Outcome Measure(s): An online questionnaire that consisted of 97 items from previously used scales was distributed to participants. A logistic regression model with personal accomplishment and emotional exhaustion as independent variables and a dichotomous variable for commission of medical errors (*yes* or *no*) as a dependent variable was calculated. A Poisson regression model with personal accomplishment and emotional exhaustion as independent variables and number of medical errors committed as a dependent variable was also calculated.

Results: Approximately 18.4% of our sample admitted to committing at least 1 medical error in the last 30 days. Both personal accomplishment (odds ratio = 1.06, $P = .005$) and emotional exhaustion (odds ratio = 1.02, $P = .037$) were significantly associated with commission of at least 1 medical error. Emotional exhaustion ($B = .02$, $P = .002$) was significantly associated with the number of medical errors committed.

Conclusions: Athletic trainers committed medical errors at a rate comparable with that of other health care professionals. Burnout was directly associated with both the likelihood of an AT committing a medical error and the number of errors an AT committed.

Key Words: emotional exhaustion, personal accomplishment

Key Points

- Approximately 18.4% of secondary school athletic trainers admitted to commission of at least 1 medical error in the last 30 days.
- Increased emotional exhaustion and a decreased sense of personal accomplishment both increased the risk of committing a medical error.
- Emotional exhaustion was directly associated with the number of medical errors committed.

The commission of medical errors by health care professionals is a constant concern, as researchers[1] estimated that approximately 251 000 deaths per year in the United States are attributable to some form of medical error. Nonlethal medical errors are even more common, occurring at an estimated rate 10 to 20 times higher than lethal errors.[2] Medical errors also carry a heavy financial toll, as the cost of medical errors committed in 2008 in the United States was estimated at $17.1 billion.[3]

Many researchers[4–6] have examined the commission of medical errors by residents and physicians. Among a sample of physicians, 10.5% (n = 6586) reported a major medical error in the previous 3 months.[4] Of those medical errors (n = 679), 39% involved an error in judgement; 20%, a wrong diagnosis; and 13%, a technical mistake during a procedure.[4] In 2 prospective longitudinal cohort studies of medical residents conducted over several years, investigators found that 34%[5] and 39%[6] of the samples reported committing at least 1 major medical error. Researchers studying nurses found that 30% of the sample (n = 393) admitted to committing at least 1 medical error in the previous month.[7] In the same study, 58% of errors involved a mistake in medication administration; 18%, a procedural error; and 12%, a charting mistake.[7]

Multiple causes of medical errors have been identified.[8] These causes include extrinsic factors (eg, too many tasks to complete and complexity of the case) and intrinsic factors (eg, fatigue and lack of experience), although specific analyses to determine which causes led to which types of errors were not reported.[8] Fatigue as an intrinsic factor that causes medical errors is of particular interest as emotional exhaustion is a component of burnout, which is commonly described in health care professionals.[9–11]

Physicians,[9] nurses,[11] and athletic trainers (ATs)[12] have been found to suffer from burnout. *Burnout* is a psychological syndrome that involves emotional exhaus-

tion, depersonalization of patients, and a decreased sense of personal accomplishment.[13] Causes of burnout include work-family conflict[9,14] and decreased job satisfaction.[15] Among collegiate ATs, 38.9% of the sample (n = 783) reported high emotional exhaustion; 33.6%, high depersonalization; and 17.7%, low personal accomplishment.[12] The same researchers[12] also observed a direct association between work-family conflict and emotional exhaustion along with an inverse association between work-family conflict and personal accomplishment. In addition, an increased number of hours worked per week, lower salaries, and decreased social support have been associated with increases in burnout among ATs.[12] The Smith Cognitive-Affective Model of Athletic Burnout[16] suggests that emotional exhaustion and decreased personal accomplishment in ATs are directly associated with various behaviors such as substance use[12] and intention to leave the profession of athletic training.[17]

Burnout and the commission of medical errors were directly associated in physicians.[4,18] For every 1-point increase in emotional exhaustion, the odds of committing a medical error increased 5%.[4] Furthermore, a 5% increase in the odds of error commission occurred for every 1-point decrease in personal accomplishment.[4] Other investigators[18] found that a 7% increase in the odds of committing a medical error occurred for every 1-point increase in emotional exhaustion. However, to our knowledge, the commission of medical errors by ATs or the possibility of these errors being a behavioral outcome of burnout have not been addressed. Therefore, the purpose of our study was 2-fold: to examine the occurrence of medical error commission by secondary school ATs and to determine if commission of medical errors was associated with burnout. We hypothesized that burnout would be directly associated with the commission of medical errors in a statistically significant manner.

METHODS

Before data collection, approval was granted by the institutional review board. The participants were all certified ATs who primarily worked in the secondary school setting at the time of data collection. We chose to examine ATs in the secondary school setting because they represented approximately 26% of certified ATs in the National Athletic Trainers' Association (NATA) membership directory, more than any other work setting.[19] We recruited participants from all regions of the country. All data were collected via a 1-time cross-sectional survey that was delivered (Qualtrics) to participants through social media first and then the NATA Research Survey Service. First, a recruitment message was shared along with a link to the survey on several social media pages that are dedicated to and populated by ATs. The recruitment message expressed the purpose of the study and indicated that it was intended only for ATs who practiced in the secondary school setting. When this recruitment method did not yield an adequate number of responses (n = 91), we then contacted the NATA Research Survey Service to have a recruitment email sent to 4000 NATA members who identified as practicing in the secondary school setting. Data collection through the NATA Research Survey Service lasted 4 weeks, and a reminder email was sent at every 1-week interval.

Questionnaire

The questionnaire was composed of items and scales that measure the variables of interest and were previously used in medical research. Descriptions of the variables of interest and the scales used to measure them follow.

Burnout. The Maslach Burnout Inventory (MBI)-Health Human Services edition[20] measured perceived burnout in our sample. This inventory has been previously used in athletic training research.[12,21] The MBI consists of 22 items divided into 3 subscales that assess emotional exhaustion, depersonalization, and decreased personal accomplishment. Each item is scored on a 7-point Likert scale ranging from *never* (0) to *every day* (6). Scores from all items in a subscale are then totaled to create a subscale score. These subscale scores are not added together, as each subscale measures a separate component of burnout. Higher scores on the emotional exhaustion and depersonalization subscales and lower scores on the personal accomplishment subscale suggest greater burnout. In a psychometric study, researchers[22] indicated the MBI had good internal consistency, with reported Cronbach α coefficients of 0.89 (emotional exhaustion), 0.77 (depersonalization), and 0.74 (personal accomplishment). For ease of interpretation, personal accomplishment was reverse coded so that a higher value of personal accomplishment indicated higher burnout.

Medical Errors. Two items in the questionnaire assessed the participant's perception of the commission of medical errors. The first item was derived from earlier investigators[4,5] and asked, "Are you concerned that you have made any medical errors in the last 30 days?" with answer options of *yes* and *no*. This language allows participants to report what they perceived to be medical errors regardless of the consequences (or lack thereof) associated with those possible errors.[5] The second item was a follow-up for those who answered *yes* to the first item: "Approximately how many medical errors are you concerned that you have made in the last 30 days?" This item was open ended, and participants were encouraged to enter a whole number.

Demographics. Several demographic variables were collected to describe the sample and were used for statistical analyses. These were age; sex; race or ethnicity; marital status; number of children; NATA district; years of AT experience; average workload for fall, spring, and summer; and salary.

Statistical Analysis

A complete case analysis was conducted. Descriptive statistics were used to characterize the study sample, including counts and percentages for categorical variables and means and SDs or medians and interquartile ranges (IQRs) for continuous variables. Age and sex were identified a priori as important covariates in adjusted models, based on previous literature.[17] Likelihood ratio-based forward stepwise selection was applied to identify any other variables to include as covariates. Variables with a P value of less than .10 were deemed important and kept in the final models. Race or ethnicity, number of children,

Table 1. Demographics of the Sample (N = 403)

Characteristic	Value
Age, mean ± SD	35.7 ± 11.2
Sex, n (%)	
Female	265 (65.8)
Male	138 (34.2)
Ethnicity, n (%)	
Non-Hispanic White	347 (86.1)
Non-Hispanic Black	13 (3.2)
Hispanic	17 (4.2)
Asian or Pacific Islander	9 (2.2)
Other race or multiracial	17 (4.2)
Marital status, n (%)	
Married	205 (50.9)
Single	186 (46.2)
Divorced	10 (2.5)
Widowed	1 (0.25)
Missing	1 (0.25)
National Athletic Trainers' Association District, n (%)	
1 (CT, ME, MA, NH, RI, VT)	31 (7.7)
2 (DE, NJ, NY, PA)	53 (13.2)
3 (DC, MD, NC, SC, VA, WV)	39 (9.7)
4 (IL, IN, MI, MN, OH, WI)	76 (18.9)
5 (IA, KS, MO, NE, ND, OK, SD)	19 (4.7)
6 (AR, TX)	60 (14.9)
7 (AZ, CO, NM, UT, WY)	21 (5.2)
8 (CA, HI, NV, Guam, American Samoa)	27 (6.7)
9 (AL, FL, GA, KY, LA, MS, TN, Puerto Rico, Virgin Islands)	41 (10.2)
10 (AK, ID, MT, OR, WA)	35 (8.7)
Missing	1 (0.25)
Years of AT experience, mean ± SD	12.4 ± 10.2
Missing, No. (%)	3 (0.74)
Workload, median (IQR)	
Fall	45 (15)
Spring	40 (14)
Summer	15 (30)
Number of children, n (%)	
0	260 (64.5)
≥1, median (IQR)	2 (1)
Salary, n (%), $	
<40 000	101 (25.1)
40 000–49 999	98 (24.3)
50 000–59 999	90 (22.3)
≥60 000	114 (28.3)
Medical errors? n (%)	
No	329 (81.6)
Yes	74 (18.4)
No. medical errors among those who made them, median (IQR)	2 (1)

Abbreviation: IQR, interquartile range.

marital status, and years of experience were tested; number of children was further included in adjusted models.

Unadjusted and adjusted logistic regression models were conducted to examine the association between personal accomplishment, emotional exhaustion, and medical errors. In addition, among those who reported a medical error, unadjusted and adjusted Poisson regression models were generated to examine the association between personal accomplishment, emotional exhaustion, and number of medical errors made in the past 30 days. The *P* values for statistical significance were set at .05. All analyses were conducted in Stata/SE (version 15.1; StataCorp).

RESULTS

Demographics

Ninety-one surveys were received through the social media campaign and 480 (12% response rate) were received through the NATA Research Survey Service, resulting in 571 surveys. Because we were unable to calculate a response rate from the social media campaign, an overall response rate was also incalculable. Of the 571 survey responses, 565 individuals consented to participate. Twenty responses were removed because the participant acknowledged not currently practicing in the high school setting. Another 98 participants started the survey but did not complete it, and an additional 44 participants had other missing data. Therefore, a total of 168 participants were removed from the dataset, resulting in an analytic dataset of 403 participants. The average age of our sample was 35.7 ± 11.2 years, and the sample was mostly female (n = 265, 65.8%), White (n = 347. 86.1%), married (n = 205, 50.9%), and childless (n = 260, 64.5%). All NATA districts were represented in the sample, with District 4 (n = 76, 18.9%) and District 5 (n = 19, 4.7%) having the greatest and least representation, respectively. Participants in our sample had acquired 12.4 ± 10.2 years of experience as an AT. They worked a median of 45 (IQR = 15) hours per week in the fall and 40 (IQR = 14) hours per week in the spring. Approximately 47% (n = 188) of the sample earned between $40 000 and $60 000 annually, with 25.1% (n = 101) earning less and 28.3% (n = 114) earning more. Additional demographic information pertaining to our sample can be found in Table 1.

Data pertaining to medical errors in our sample are also available in Table 1. Approximately 18.4% reported a self-perceived medical error in the last 30 days. Among those who reported a medical error, the number of errors committed ranged from 1 to 7.

A summary of scores on each of the MBI subscales is presented in Table 2. Subscale scores were grouped as low, medium, or high burnout based on previous AT burnout research.[21] Emotional exhaustion scores ≥27, depersonalization scores ≥10, and personal accomplishment scores ≤33 were labeled as high burnout. The scores of nearly 29% (n = 116) of our sample were categorized as high emotional exhaustion, 23.1% (n = 93) each as high depersonalization and low personal accomplishment.

Table 2. Participant Scores on Survey Scales (N = 403)

Maslach Burnout Inventory Subscale	Subscale Score Range	Participants' Scores, Mean ± SD (Range)	Participants Categorized as High, n (%)
Emotional exhaustion	0–54	20.75 ± 11.44 (1–51)	116 (28.78)
Depersonalization	0–30	6.41 ± 5.51 (0–27)	93 (23.08)
Personal accomplishment	0–48	38.11 ± 6.26 (0–48)	93 (23.08)

Table 3. Logistic Regression Model Examining the Association Between Personal Accomplishment, Emotional Exhaustion, and Having Made a Medical Error in the Past 30 Days (N = 403)

	Unadjusted Model			Adjusted Model[a]		
Questionnaire Component	Odds Ratio	95% CI	*P* Value	Odds Ratio	95% CI	*P* Value
Personal accomplishment	1.06	1.02, 1.10	.003	1.06	1.02, 1.10	.005
Emotional exhaustion	1.03	1.004, 1.05	.02	1.02	1.001, 1.05	.037

[a] Adjusted for age, sex, and number of children. Pseudo $R^2 = 0.07$.

Regression Analyses

A logistic regression model was performed to examine the association between emotional exhaustion, personal accomplishment, and commission of medical errors. In this model, medical error was a dichotomous variable (*yes* or *no*). This model suggested that emotional exhaustion (odds ratio [OR] = 1.02; 95% CI = 1.00, 1.05; $P = .037$) and decreased personal accomplishment (OR = 1.06; 95% CI = 1.02, 1.10; $P = .003$) were both directly associated with commission of medical errors (Table 3). Each 1-point increase in emotional exhaustion increased the odds of a self-reported medical error by 2%. Similarly, each 1-point decrease in personal accomplishment increased the odds of a self-reported medical error by 2%.

We then created a Poisson regression model to examine the relationship between emotional exhaustion, personal accomplishment, and number of medical errors committed in the subgroup of participants who admitted to at least 1 medical error in the last 30 days (n = 74). Although emotional exhaustion (B = 0.02; 95% CI = 0.01, 0.03; $P = .002$) had a significant direct association with the number of errors committed, personal accomplishment (B = .005; 95% CI = –0.02, 0.03; $P = .66$) was not significantly associated (Table 4).

DISCUSSION

The purpose of our study was to examine the commission of medical errors in secondary school ATs and then determine if a relationship existed between medical errors and burnout. Approximately 18.4% of our sample admitted to committing at least 1 medical error in the last 30 days. This percentage was higher than that in a recent study[4] of physicians, in which investigators found that 10.5% of their sample reported committing an error in the previous 3 months. However, this percentage was lower than in research[7] on nurses, among whom 30% described committing an error in the previous month. Commission of medical errors in our sample also occurred at a lower rate than seen in several longitudinal cohorts of resident physicians: 34%[5] and 39%[6] of the samples committed at least 1 medical error during the course of the study. Note that those cohorts were followed for a much longer period and the statistics accounted for any participant who reported at least 1 medical error throughout the study, whereas we asked participants to only recall any errors committed in the last 30 days. In one of the physician studies,[5] the authors noted 14.7% of participants described at least 1 medical error at each 3-month follow-up. These different time frames may explain the variance in the commission of errors. Moreover, participants in those samples were limited to resident physicians who were early in their careers; our sample was not limited based on years of experience. We did not find a correlation between the commission of errors and years of experience.

A direct relationship was present between emotional exhaustion and the likelihood of having committed a medical error in the last 30 days. The model also revealed a direct relationship between decreased personal accomplishment and the likelihood of having committed a medical error. Although previous researchers[12,23] observed correlations between burnout and variables that affect the well-being of ATs, this is one of the first published studies to directly address the correlation between burnout and quality of work in ATs. These results are in agreement with earlier literature on physicians[4] and interns and residents,[18] which also demonstrated a relationship between depersonalization and the commission of medical errors. However, the Smith Cognitive-Affective Model of Athletic Burnout[16] would suggest that depersonalization and the commission of medical errors are both behavioral manifestations brought forth by cognitive appraisal (perceived personal accomplishment) and physiological response (emotional exhaustion). Therefore, we determined that an analysis of the relationship between these 2 variables in our sample was unnecessary.

A direct relationship was evident between emotional exhaustion and the number of medical errors committed by ATs who had committed at least 1 error in the last 30 days. In other words, as emotional exhaustion increased, the number of medical errors committed by an individual tended to increase as well. These findings agree with those in the existing literature.[24,25] Still, perhaps more interesting was that although personal accomplishment was significantly associated with the odds of committing a medical error in our sample, it was not significantly associated with the number of errors committed. Our results support the logic that a more exhausted individual is prone to more mistakes. Thus, decreasing emotional exhaustion in our

Table 4. Poisson Regression Model Examining the Association Between Personal Accomplishment, Emotional Exhaustion, and No. of Medical Errors in the Past 30 Days Among Those Who Made a Medical Error (N = 74)

	Unadjusted			Adjusted[a]		
Questionnaire Component	Coefficient	95% CI	*P* Value	Coefficient	95% CI	*P* Value
Personal Accomplishment	0.004	−0.02, 0.03	.71	0.005	−0.02, 0.03	.66
Emotional Exhaustion	0.02	0.01, 0.03	.002	0.02	0.01, 0.03	.002

[a] Model adjusted for age, sex, and number of children. Pseudo $R^2 = 0.05$.

health care workforce is a potentially valuable method of decreasing the number of medical errors committed.

Our findings endorse the notion that burnout negatively affects not only ATs but also the patients those professionals interact with on a daily basis. In a recent study of physicians,[4] the investigators stated that interventions that reduce burnout and improve clinician wellbeing must be introduced to improve patient outcomes through the reduction of medical errors. We believe this approach should be adopted by ATs as well.

Limitations and Future Directions

This study had some limitations. Social desirability of responses may have caused certain participants to answer dishonestly about burnout and the commission of medical errors. We attempted to control for this concern by protecting the anonymity of participants. It is possible that the most "burned-out" individuals—that is, the most emotionally exhausted and those with the lowest sense of personal accomplishment—felt that they were too tired or too busy to complete our survey, which could have resulted in a sampling bias. Also, our collection of data from only ATs working in the secondary school setting prohibits the generalization of these findings to ATs employed in other settings. Furthermore, the cross-sectional nature of this study does not allow us to determine causality.

Researchers[5,6] who assessed resident physicians followed the cohorts for a significant period to see how many participants committed at least 1 error. A similar longitudinal cohort study of newly certified ATs may provide useful information about the readiness of ATs to enter the profession after certification. A longitudinal study in which the authors examine burnout in the same sample may reveal more about the relationship between burnout and the commission of medical errors.

Future investigators should explore the types of medical errors commonly committed by ATs. This evaluation should include other common work settings for athletic situations (eg, collegiate, professional sports, clinic). These results could then lead to an assessment of the relationships between burnout and various types of errors. Categorization of errors based on severity, costliness (eg, financial, additional time to return to play), and other factors could further expand our knowledge of the nature of medical errors committed by ATs versus those of other health care professionals.

Finally, specific interventions intended to reduce the effects of burnout in ATs must become a focal point of research in the profession. This research should incorporate randomized controlled trials for establishing causation rather than association.

CONCLUSIONS

We found a direct association between burnout, commission of medical errors, and the number of errors committed in secondary school ATs. These results imply a correlation between burnout and the quality of health care delivered by ATs. In addition, these findings suggest that burnout affects not only ATs but also the patients they interact with on a daily basis. Because burnout may affect the wellbeing of both the clinician and patient, more efforts are needed to diminish burnout in ATs, both in the secondary school setting and elsewhere.

REFERENCES

1. Makary MA, Daniel M. Medical error—the third leading cause of death in the US. *BMJ*. 2016;353:i2139. doi:10.1136/bmj.i2139
2. James JT. A new, evidence-based estimate of patient harms associated with hospital care. *J Patient Saf*. 2013;9(3):122–128. doi:10.1097/PTS.0b013e3182948a69
3. Van Den Bos J, Rustagi K, Gray T, Halford M, Ziemkiewicz E, Shreve J. The $17.1 billion problem: the annual cost of measurable medical errors. *Health Aff (Millwood)*. 2011;30(4):596–603. doi:10.1377/hlthaff.2011.0084
4. Tawfik DS, Profit J, Morgenthaler TI, et al. Physician burnout, well-being, and work unit safety grades in relationship to reported medical errors. *Mayo Clin Proc*. 2018;93(11):1571–1580. doi:10.1016/j.mayocp.2018.05.014
5. West CP, Huschka MM, Novotny PJ, et al. Association of perceived medical errors with resident distress and empathy. *JAMA*. 2006;296(9):1071–1078. doi:10.1001/jama.296.9.1071
6. West CP, Tan AD, Habermann TM, Sloan JA, Shanafelt TD. Association of resident fatigue and distress with perceived medical errors. *JAMA*. 2009;302(12):1294–1300. doi:10.1001/jama.2009.1389
7. Rogers AE, Hwang W, Scott LD, Aiken LH, Dinges DF. The working hours of hospital staff nurses and patient safety. *Health Aff (Millwood)*. 2004;23(4):202–212. doi:10.1377/hlthaff.23.4.202
8. Bari A, Khan RA, Rathore AW. Medical errors: causes, consequences, emotional response and resulting behavioral change. *Pak J Med Sci*. 2016;32(3):523–528. doi:10.12669/pjms.323.9701
9. Dyrbye LN, Shanafelt TD, Balch CM, Satele D, Sloan J, Freischlag J. Relationship between work-home conflicts and burnout among American surgeons: a comparison by sex. *Arch Surg*. 2011;146(2):211–217. doi:10.1001/archsurg.2010.310
10. Dyrbye LN, Thomas MR, Huntington JL, et al. Personal life events and medical student burnout: a multicenter study. *Acad Med*. 2006;81(4):374–384. doi:10.1097/00001888-200604000-00010
11. Edwards D, Burnard P, Hannigan B, et al. Clinical supervision and burnout: the influence of clinical supervision for community mental health nurses. *J Clin Nurs*. 2006;15(8):1007–1015. doi:10.1111/j.1365-2702.2006.01370.x
12. Oglesby LW, Gallucci AR, Wynveen CJ, Ylitalo KR, Benson NF. Burnout and substance use in collegiate athletic trainers. *J Athl Train*. 2020;55(7):744–751. doi:10.4085/1062-6050-178-19
13. Maslach C. *Burnout: The Cost of Caring*. Prentice-Hall; 1982.
14. Wang Y, Chang Y, Fu J, Wang L. Work-family conflict and burnout among Chinese female nurses: the mediating effect of psychological capital. *BMC Public Health*. 2012;12:915. doi:10.1186/1471-2458-12-915
15. Demir A, Ulusoy M, Ulusoy MF. Investigation of factors influencing burnout levels in the professional and private lives of nurses. *Int J Nurs Stud*. 2003;40(8):807–827. doi:10.1016/s0020-7489(03)00077-4
16. Smith R. Toward a cognitive-affective model of athletic burnout. *J Sport Exerc Psychol*. 1986;8(1):36–50. doi:10.1123/jsp.8.1.36
17. Oglesby LW, Gallucci AR, Wynveen C, Ylitalo K, Benson N. The relationship between spiritual well-being and burnout in collegiate athletic trainers. *J Athl Train*. 2021;56(5):518–528. doi:10.4085/1062-6050-0105-20
18. Kang EK, Lihm HS, Kong EH. Association of intern and resident burnout with self-reported medical errors. *Korean J Fam Med*. 2013;34(1):36–42. doi:10.4082/kjfm.2013.34.1.36
19. National Athletic Trainers Association. April 2020 NATA certified membership by job setting. Updated 2020. Accessed 7 July 2020.

https://members.nata.org/members1/documents/membstats/2020-04.htm.
20. Maslach C, Jackson S. *Maslach Burnout Inventory: Human Services Edition*. Consulting Psychologists Press; 1986.
21. Kania ML, Meyer BB, Ebersole KT. Personal and environmental characteristics predicting burnout among certified athletic trainers at National Collegiate Athletic Association institutions. *J Athl Train* 2009;44(1):58–66. doi:10.4085/1062-6050-44.1.58
22. Maslach C, Jackson SE. The measurement of experienced burnout. *J Organ Behav*. 1981;2(2):99–113. doi:10.1002/job.4030020205
23. Campbell D. The prevalence of burnout among athletic trainers. *Athl Train*. 1985;20:110–113.
24. Hayashino Y, Utsugi-Ozaki M, Feldman MD, Fukuhara S. Hope modified the association between distress and incidence of self-perceived medical errors among practicing physicians: prospective cohort study. *PLoS On*e. 2012;7(4):e35585. doi:10.1371/journal.pone.0035585.
25. Prins JT, van der Heijden FM, Hoekstra-Weebers JE, et al. Burnout, engagement and resident physicians' self-reported errors. *Psychol Health Med*. 2009;14(6):654–666. doi:10.1080/13548500903311554

Address correspondence to Leslie W. Oglesby, PhD, ATC, The University of Southern Mississippi, 118 College Drive #5122, Hattiesburg, MS 39406. Address email to Leslie.Oglesby@usm.edu.