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Burnout and Substance Use in Collegiate Athletic Trainers

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Context: The Smith Cognitive-Affective Model of Athletic Burnout suggests that athletic trainers (ATs) suffering from burnout may engage in substance use as a coping behavior. Increases in self-reported burnout symptoms are often associated with increases in heavy episodic drinking and tobacco use among various health care providers. However, this relationship has not been examined thoroughly.

Objective: To investigate the prevalence of substance use in ATs and identify relationships between symptoms of burnout and substance use among ATs.

Design: Cross-sectional study.

Setting: Web-based survey.

Patients or Other Participants: A total of 783 certified ATs working full time in the collegiate or university setting were sampled for this study. Graduate assistant and other part-time ATs were excluded. The survey was distributed via the National Athletic Trainers' Association membership directory e-mail broadcast service.

Main Outcome Measure(s): A 100-item online questionnaire consisting of items from previously used scales was used for this study. The survey included the Maslach Burnout Inventory and questions on substance use from the Monitoring

the Future study. Multiple regression analyses were performed to analyze the survey data. All independent (Maslach Burnout Inventory subscales) and dependent (use of alcohol, tobacco, and marijuana) variables were mapped to the Smith Cognitive-Affective Model of Athletic Burnout to determine which dimensions of burnout altered the odds of self-reported substance use.

Results: Almost half (46.3%) of participants admitted to at least 1 binge-drinking episode. However, the use of cigarettes, smokeless tobacco, marijuana, and energy drinks during the previous month was less pronounced in the sample. Emotional exhaustion ($B = .008$, $P = .023$) and personal accomplishment ($B = -.016$, $P = .02$) were significantly correlated with binge drinking. Emotional exhaustion ($\text{Exp}[B] = 1.017$, $P < .001$) was also significantly positively correlated with energy-drink consumption.

Conclusions: Some ATs engaged in heavy episodic drinking. Emotional exhaustion and a decreased sense of personal accomplishment were significantly correlated with this behavior.

Key Words: binge drinking, emotional exhaustion, depersonalization, energy drinks

Key Points

- Approximately 46% of a sample of 783 collegiate athletic trainers engaged in at least 1 binge-drinking session in the previous month.
- Emotional exhaustion and a decreased sense of personal accomplishment were significantly correlated with binge drinking.
- The use of other substances (eg, cigarettes, smokeless tobacco, marijuana, energy drinks) was less pronounced in the sample, but emotional exhaustion was significantly correlated with energy-drink use.

Burnout has been defined as a mental state of emotional and physical exhaustion or a stress reaction to a person's inability to cope with the demands of his or her profession.¹ As a psychological syndrome, burnout consists of 3 components: emotional exhaustion, a decreased sense of personal accomplishment, and depersonalization of the patients under one's care.² The bulk of research on burnout has been conducted on allied health professionals, with researchers finding that many suffer from high rates of burnout.^{3,4} In 1 study of physicians,⁵ 31% ($n = 2181$) reported a high level of emotional exhaustion; 25.3% ($n = 1802$), a high level of depersonalization; and 12.3% ($n = 873$), a low level of personal accomplishment. Thirty-six percent ($n = 77$) of

nurses reported a high level of emotional exhaustion; 12% ($n = 27$), a high level of depersonalization; and 10% ($n = 22$), a low level of personal accomplishment.⁶

The association between burnout and substance use in health care professionals has been examined. Previous authors suggested that physicians³ ($n = 7209$) and psychiatrists⁴ ($n = 936$) suffering from burnout were more likely to engage in binge drinking. In another study⁷ ($n = 80$), nurses suffering from burnout were more likely to smoke tobacco.

Athletic trainers (ATs) also suffer from burnout⁸ but at lower rates than other health care professionals. Researchers⁹ in 1 study ($n = 206$) found that 20% of ATs reported a high level of emotional exhaustion; 23.3%, a high level of

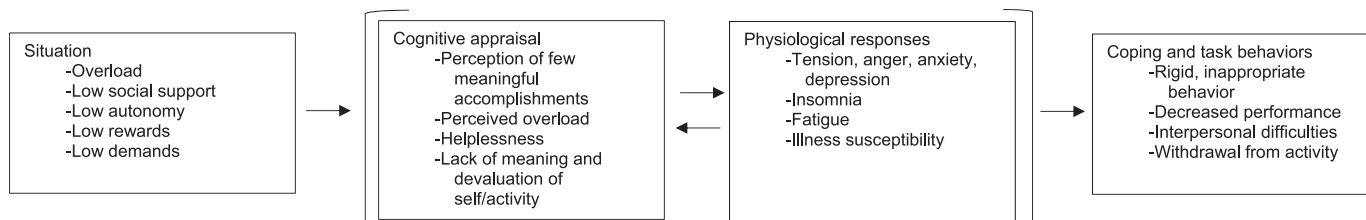


Figure 1. Smith Cognitive-Affective Model of Athletic Burnout.

depersonalization; and 15.5%, a low level of personal accomplishment. Comparisons with other health care professions suggested that ATs suffered from emotional exhaustion at a lower rate but decreased personal accomplishment at a higher rate. Some investigators^{8,10} have speculated the lower rates of emotional exhaustion reflect the ATs' off-season for recovery, especially in the collegiate setting. However, recent rule changes in the National Collegiate Athletic Association now allow many sports much more practice time in their traditional off-season.¹¹ Because these practices require the provision of medical care, it is possible that collegiate ATs are now working more than ever.

Although increased burnout has been associated with an increased risk of substance use in other health care professionals,^{3,7} the examination of substance use and its relationship with burnout in ATs has produced mixed results. In 1 study,¹⁰ 5% of ATs self-reported "excessive drinking" and that suffering from burnout increased an AT's risk of excessive drinking. However, the researchers failed to define the level at which drinking was considered "excessive," and a time frame for alcohol consumption was not provided, which prevents comparison with other substance use investigations. In another study,⁸ approximately 67% of ATs consumed alcohol and 2.2% smoked cigarettes. These values were lower than those of other health care professions: more than 14% of nurses¹² and 14% of physicians¹³ had smoked cigarettes in the past year. Giacobbi⁸ measured alcohol consumption based on the average number of drinks per week but did not report a time frame. Similarly, he described percentages of smokers but did not give a time frame. More importantly, Giacobbi⁸ did not examine the relationship between substance use and burnout. To our knowledge, neither binge drinking (consuming 5 or more drinks in a row for males or 4 in a row for females¹⁴) nor its relationship with burnout has been examined in ATs.

Although alcohol consumption and tobacco use in ATs have been previously examined, the use of other substances, such as marijuana and energy drinks, has not been observed. With approximately 4.8% of physicians¹³ and 3.6% of nurses¹² reporting use of marijuana in the past year, comparing these rates with those of collegiate ATs would be beneficial. Although the use of energy drinks by the general population has received attention in the literature recently, consumption by health care professionals has not been examined. Those suffering from emotional exhaustion may use energy drinks to cope with fatigue, as more than 60% of energy drink consumers do so to gain energy.¹⁵ The current prevalence of binge drinking and other substance use in collegiate ATs remains unclear, as does the possible relationship between burnout and these behaviors.

The Smith Cognitive-Affective Model of Athletic Burnout (Figure 1)¹⁶ has been proposed as a possible theoretical model to explain the process of burnout in athletes and ATs. This model has found support within the athletic training literature and has been recommended for identifying ATs suffering from burnout.⁹ The model suggests that burnout follows a process similar to that for other stress reactions: situational concerns such as work-family conflict (WFC),¹⁷ high workload,⁹ and a low level of social support¹⁸ affect both cognitive appraisal (eg, the sense of personal accomplishment) and physiological responses (eg, emotional exhaustion). The cognitive appraisal and physiological response then lead to coping behaviors, such as depersonalization of patients and substance use. Although this model has been used to investigate burnout in ATs, it has not been used to determine if substance use is a coping behavior associated with burnout in this population. Also unknown is whether the model is still applicable to collegiate ATs due to the aforementioned changes in working patterns (ie, more practice time permitted in the off-season, which requires more AT coverage).

The purpose of our study was to investigate the proportions of substance use (ie, cigarettes, marijuana, smokeless tobacco, and energy drinks) and substance abuse (binge drinking) in collegiate ATs as well as possible relationships between these behaviors and burnout. We hypothesized that there would be a significant positive relationship between burnout and substance use or abuse (or both) in our sample.

METHODS

Participants

All participants in this study (n = 783) were certified ATs working full time in the collegiate setting at various levels of competition (ie, National Collegiate Athletic Association Division I, II, or III; National Association of Intercollegiate Athletics; or National Junior College Athletic Association). All participants were also active members of the National Athletic Trainers' Association (NATA). Recruits who indicated they no longer worked in the collegiate setting or were not full-time employees (eg, graduate assistants and interns) were excluded. Any participants who identified themselves as full-time academicians were also excluded.

Procedures

A cross-sectional, Web-based survey design was used to collect data for this study. The survey instruments were uploaded to Qualtrics (Provo, UT), and a hyperlink to the survey was generated. After receiving approval from the institutional review board, we asked the NATA Member-

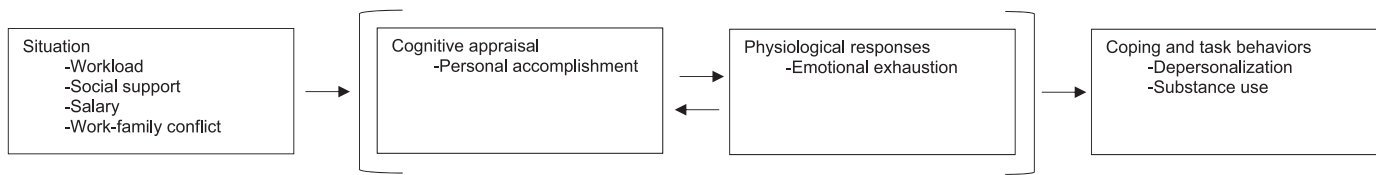


Figure 2. Variables mapped to the Smith Cognitive Affective Model of Athletic Burnout.

ship Department to send a recruitment e-mail to 7000 collegiate ATs. However, 6867 members met our criteria, so the e-mail was sent to all of them. The initial recruitment e-mail contained a description of the study and a hyperlink to the survey, which consisted of demographic and Likert-scale questions. The e-mail also explained that accessing and completing the survey was an act of consent. To protect confidentiality, participants were not asked to provide any identifying information. Reminders were sent 1 week and 2 weeks after the initial e-mail encouraging recipients to complete the survey if they had not yet done so.

Questionnaire

The questionnaire was composed of multiple previously used scales that measured each of the following variables of interest for our study.

Work-Family Conflict. Netemeyer et al¹⁹ developed a survey to measure WFC that has been used in previous athletic training research.²⁰ Five items assess different forms of WFC. Each item is answered on a 7-point Likert scale ranging from *strongly disagree* to *strongly agree*. A higher score indicates a higher degree of WFC.

When used in athletic training research, the WFC scale is administered twice with different definitions for “family.” One version defines family as having a partner or spouse with or without children, and the other defines it as close relatives, including parents, siblings, and grandparents, involved in one’s life.²⁰ We administered the WFC scale in a manner consistent with previous literature.²⁰ These 2 scales have internal consistency coefficients of $\alpha = .95$ and $\alpha = .94$, respectively.²⁰

Social Support. The Multidimensional Scale of Perceived Social Support²¹ was used to measure the social support of participants. Twelve items measure the perceived support one receives from significant others, family, and friends. Each item is answered on a 7-point Likert scale ranging from *very strongly disagree* to *very strongly agree*. Scores are totaled to create a social support score: a higher score indicates a higher degree of perceived social support. The scale has a Cronbach α of .79.²²

Workload. Participants were asked to estimate how many hours they worked per week on average. To mirror working time in typical college semesters, we inquired about hours spent working as an AT in the fall (August–December), spring (January–May), and summer (June–July).

Burnout. We included the Maslach Burnout Inventory (MBI)-Health Human Services edition²³ because it is the most widely used measure of burnout in health care professionals.^{9,24} Three subscales measure emotional exhaustion, depersonalization, and sense of personal accomplishment. It consists of 22 items, with 9 items pertaining to emotional exhaustion, 5 to depersonalization, and 8 to personal accomplishment. Each item is answered on a 7-

point Likert scale from *never* to *every day*. All items in a particular subscale are summed to create a subscale total. However, the 3 subscale scores cannot be totaled to create an overall “burnout score.”²³ Rather, each subscale measures a separate aspect of burnout. For the emotional exhaustion and depersonalization subscales, a higher score indicates a higher level of burnout. Because a sense of personal accomplishment is considered a positive attribute, a lower score indicates a higher level of burnout. The 3 subscales have reported internal consistency coefficients of .89 (emotional exhaustion), .77 (depersonalization), and .74 (personal accomplishment).²⁵

Substance Use. To assess the use or abuse of certain substances within the last 30 days, we asked questions from the Monitoring the Future Study.²⁶ Items assessed their use of cigarettes, marijuana, smokeless tobacco, and energy drinks. We also asked about binge drinking (ie, “How many times [if any] have you had 5 or more drinks in a row [4 or more for females] over the last 30 days?”). Each question had 7 possible answers (*never*, 1–2, 3–5, 6–9, 10–19, 20–39, or 40+) and was scored from 0 (*never*) to 6 (40+).

Statistical Analysis

All statistical analyses were performed using SPSS (version 24; IBM Corp, Armonk, NY). All data were downloaded from Qualtrics into an SPSS worksheet. The analyzed variables were WFC, perceived social support, salary, average hours of work per week, burnout subscale scores, and use of various substances within the last 30 days.

Descriptive statistics (eg, mean, SD, and range) were used to examine the distribution and central tendency of responses. The assumptions of normality and homoscedasticity were checked using normal P-P plots and scatterplots. All hypotheses were tested using multiple regression models.

The variables were all mapped to the Smith Cognitive-Affective Model of Athletic Burnout (Figure 2).¹⁶ All situational variables (ie, WFC; perceived social support; salary; and fall, spring, and summer workload) were independent variables in 2 multiple regressions: 1 with emotional exhaustion and the other with personal accomplishment as the outcome variable. All situational variables were continuous. Salary was coded in \$10 000 per year intervals from 1 = less than \$20 000 per year to 10 = greater than \$100 000 per year. Then, personal accomplishment was used as an independent variable, with emotional exhaustion as a dependent variable.

Finally, emotional exhaustion and personal accomplishment were used as independent variables in several multiple regressions, 1 to predict depersonalization and then 5 to predict each substance use outcome (ie, binge drinking, cigarettes, marijuana, smokeless tobacco, and energy drinks). All 3 burnout subscales were considered continu-

ous variables, and substance use was coded based on the number of times in the previous month (0 = never, 1 = 1–2, 2 = 3–5, 3 = 6–9, 4 = 10–19, 5 = 20–39, and 6 = 40+). Then, a multiple or simple regression (depending on the number of independent variables) was calculated to determine the extent to which variables altered the odds that a participant reported the symptoms or effects of burnout. Our treatment of ordinal data as continuous variables in multivariate regression is supported by previous literature.²⁷ While checking the assumption of normality, we found that several substance use variables (ie, cigarettes, marijuana, and energy drinks) followed a Poisson distribution. Therefore, we used Poisson regressions for models that included these substances as dependent variables. Because smokeless tobacco use followed neither of these distributions, we dichotomized this variable (0 = no use, 1 = use), and a binomial logistic regression was performed. For all multiple regression analyses, multicollinearity was checked using variance inflation factors.

RESULTS

Demographics

Of the 6867 e-mails that were sent to ATs, 1211 surveys were started and 857 were completed (29.2% dropout rate). Of those who completed the survey, 74 did not meet the inclusion criteria. This resulted in a sample size of 783 (11.4% response rate). Participants were 36.4 ± 11.1 years old (range = 22–79 years), with 12.6 ± 9.8 years (range = 0–45 years) of AT experience. They worked an average of 57 ± 11.6 (range = 30–100) hours per week during the fall semester (ie, August–December), 53.6 ± 11.2 (range = 30–100) hours per week during the spring semester (ie, January–May), and 23.3 ± 17.8 (range, 0–80) hours per week during June and July. The majority of participants identified as white, non-Hispanic (n = 713, 91.1%). Our sample was predominantly single (n = 409, 52.2%); most participants did not have children (n = 484, 61.8%), but those who did had an average of 2.05 ± 0.86 children (range = 1–6). Additional demographic information can be found in Table 1. By comparing our demographics with information collected by the NATA,²⁸ we found that our sample was representative of the overall collegiate AT population in terms of sex, ethnicity, and NATA district.

Means, standard deviations, and ranges of results for the MBI subscales, Multidimensional Scale of Perceived Social Support, and WFC scales are presented in Table 2. Approximately 38.9% (n = 297) of participants scored ≥ 27 on the emotional exhaustion subscale, which indicates a high level of burnout.⁹ Similarly, 33.6% (n = 259) of participants had a high level of burnout according to the depersonalization subscale with a score of ≥ 10 . Additionally, 17.7% (n = 135) had a high level of burnout based on a personal accomplishment score of ≤ 33 .

Binge drinking at least once in the last 30 days was reported by 46.3% (n = 363). A total of 22.9% (n = 179) of participants stated they used energy drinks in the last 30 days. Other substance abuse behaviors were not as pronounced, with 3.5% (n = 28) admitting to marijuana use in the 30 days before survey completion. Additionally, few participants (n = 40, 5.2%) described smokeless tobacco use and 1.4% (n = 11) admitted to smoking at

Table 1. Demographics of the Sample

Demographic	n (%)
Sex	
Male	326 (41.6)
Female	453 (57.9)
Ethnicity	
White	713 (91.1)
Black	23 (2.9)
Hispanic	29 (3.7)
Native American	5 (0.6)
Asian	13 (1.7)
Multiracial	15 (1.9)
Other	6 (0.8)
Marital status	
Single	409 (52.2)
Married	333 (45.5)
Divorced	37 (4.7)
Widowed	3 (0.4)
National Athletic Trainers' Association District	
1 (CT, ME, MA, NH, RI, VT)	62 (7.9)
2 (DE, NJ, NY, PA)	91 (11.6)
3 (DC, MD, NC, SC, VA, WV)	100 (12.8)
4 (IL, IN, MI, MN, OH, WI)	157 (20.1)
5 (IA, KS, MO, NE, ND, OK, SD)	96 (12.3)
6 (AR, TX)	51 (6.5)
7 (AZ, CO, NM, UT, WY)	36 (4.6)
8 (CA, HI, NV, Guam, American Samoa)	68 (8.7)
9 (AL, FL, GA, KY, LA, MS, TN, Puerto Rico, Virgin Islands)	87 (11.1)
10 (AK, ID, MT, OR, WA)	32 (4.1)
Level of competition	
NCAA Division I	296 (37.8)
NCAA Division II	143 (18.3)
NCAA Division III	189 (24.1)
National Association of Intercollegiate Athletics	70 (8.9)
National Junior College Athletic Association	63 (8.0)
Other	21 (2.7)
Salary, \$	
<20,000	38 (4.9)
20,000–29,999	25 (3.2)
30,000–39,999	147 (18.8)
40,000–49,999	236 (30.1)
50,000–59,999	167 (21.3)
60,000–69,999	65 (8.3)
70,000–79,999	51 (6.5)
80,000–89,999	23 (2.9)
90,000–99,999	13 (1.7)
>100,000	14 (1.8)

Abbreviation: NCAA, National Collegiate Athletic Association.

least 1 cigarette. A full report of substance use in our sample is shown in Tables 3 and 4.

Multiple Regression Analyses

After mapping all variables of interest (ie, WFC, perceived social support, salary, average hours of work per week, burnout subscales, and substance use) to the Smith Cognitive-Affective Model of Athletic Burnout¹⁶ (Figure 2), we conducted multiple regression analyses. Summaries for all analyses with significant results are provided in Tables 5 and 6. Situational factors correlated with emotional exhaustion were WFC with family being

Table 2. Participant Scores on Survey Scales

Questionnaire Component	Scale Range	Participant Score, Mean ± SD (Range)
Maslach Burnout Inventory		
Emotional exhaustion subscale	0–54	23.7 ± 11.9 (0–53)
Depersonalization subscale	0–30	7.7 ± 5.9 (0–27)
Personal accomplishment subscale	0–48	38.9 ± 6.3 (13–48)
Work-family conflict scale A	5–35	25.5 ± 7.1 (5–35)
Work-family conflict scale B	5–35	25.8 ± 7.2 (5–35)
Multidimensional Scale of Perceived Social Support	12–84	67.1 ± 13.2 (12–84)

spouse or children or both ($B = .475, P < .001; 95\% \text{ CI} = 0.33, 0.62$), WFC with family being other close relatives ($B = .416, P < .001; 95\% \text{ CI} = 0.27, 0.56$) social support ($B = -.172, P < .001; 95\% \text{ CI} = -0.23, -0.12$), salary ($B = -.630, P = .002; 95\% \text{ CI} = -1.03, -0.24$), and average hours worked in the spring semester ($B = .084, P = .029; 95\% \text{ CI} = 0.01, 0.16$). Similarly, WFC with family being spouse or children or both ($B = -.239, P < .001; 95\% \text{ confidence interval [CI]} = -0.33, -0.15$), social support ($B = .113, P < .001; 95\% \text{ CI} = 0.08, 0.15$), and salary ($B = .468, P < .001; 95\% \text{ CI} = 0.22, 0.72$) were all significantly associated with personal accomplishment. These 2 models explained 37.5% and 13.3% of the variance in emotional exhaustion and personal accomplishment, respectively, in our sample. A simple regression analysis also revealed that personal accomplishment was significantly negatively associated with emotional exhaustion ($B = -.796, P < .001; 95\% \text{ CI} = -0.92, -0.67; R^2 = .178$).

When using the cognitive appraisal and physiological response variables to predict coping and task behaviors, we found that emotional exhaustion ($B = .288, P < .001; 95\% \text{ CI} = 0.26, 0.32$) and personal accomplishment ($B = -.174, P < .001; 95\% \text{ CI} = -0.23, -0.12$) were both significantly associated with depersonalization ($R^2 = .460$). Emotional exhaustion ($B = .008, P = .023; 95\% \text{ CI} = 0.001, 0.015$) and personal accomplishment ($B = -.016, P = .02; 95\% \text{ CI} = -0.029, -0.003$) were significantly correlated with the number of binge-drinking episodes in the past 30 days ($R^2 = .022$). Emotional exhaustion was significantly positively correlated with energy drink use ($\text{Exp}[B] = 1.017, P < .001, 95\% \text{ CI} = 1.009, 1.026$). Neither emotional exhaustion nor personal accomplishment was significantly associated with cigarette, marijuana, or smokeless tobacco use.

DISCUSSION

The purpose of our study was 2-fold: to explore (1) substance use behaviors of ATs in the collegiate setting and (2) possible relationships between burnout and substance use. We found that approximately 46% of participants engaged in at least 1 reported episode of binge drinking in the last 30 days. This rate was much higher than the

previous findings of 5% in ATs¹⁰ and 16% in nurses.¹² It is also double the national average of adults aged 26 and older, with 22.5% of respondents from the general population engaging in at least 1 binge-drinking episode during the past month.²⁹ In a study of AT drinking behaviors, Campbell et al¹⁰ did not define excessive drinking, which may have allowed participants to determine for themselves if their alcohol consumption was excessive. We explicitly defined the behavior (≥ 5 drinks for males, ≥ 4 drinks for females) without labeling it as a negative behavior (eg, excessive drinking or binge drinking). This could have resulted in self-reporting that was more honest. To our knowledge, we are the first to examine binge drinking with an appropriate definition in an AT sample.

Additionally, 1.4% of our participants smoked at least 1 cigarette in the last 30 days, which is similar to an earlier finding⁸ and lower than results in other health care professions: more than 14% of nurses¹² and 14% of physicians¹³ smoked cigarettes in the previous year. Although both sets of researchers examined past-year use instead of past-month use, the prevalence rates are remarkably different. However, comparing our results with those of studies that are 20 years old presents concerns, as current trends of cigarette use in physicians and nurses may differ. More recent research on these professions was not available in the literature. Regardless, the proportion of cigarette smoking among these professionals was lower than the 20.8% of the US population who reported smoking a cigarette in the previous 30 days.²⁹

To our knowledge, we are the first to examine the use of marijuana, smokeless tobacco, and energy drinks among collegiate ATs. Approximately 3.5% of our sample reported marijuana use in the previous month. This result was similar to the findings in other health care professions, with 4.75% of physicians¹³ and 3.6% of nurses¹² describing the use of marijuana. Thus, the proportion of marijuana use in health care professionals was less than half of the 8.4% reported in the general population.²⁹ We identified that 5.2% of our sample used smokeless tobacco in the previous 30 days. Because smokeless tobacco use has not been assessed in other health care professionals, a comparison is

Table 3. Substance Use Demographics for the Previous Month

Use	Binge Drinking, n (%)	Marijuana, n (%)	Smokeless Tobacco, n (%)	Energy Drink, n (%)
Never	418 (53.4)	750 (95.8)	741 (94.6)	602 (76.9)
1–2 times	208 (26.6)	12 (1.5)	6 (0.8)	76 (9.7)
3–5 times	92 (11.7)	4 (0.5)	6 (0.8)	38 (4.9)
6–9 times	37 (4.7)	1 (0.1)	3 (0.4)	18 (2.3)
10–19 times	21 (2.7)	4 (0.5)	0 (0.0)	24 (3.1)
20–39 times	4 (0.5)	2 (0.3)	7 (0.9)	18 (2.3)
40+ times	1 (0.1)	5 (0.6)	18 (2.3)	5 (0.6)

Table 4. Cigarette Use Demographics for the Previous Month

Cigarette Use	n (%)
None	769 (98.2)
<1/d	6 (0.8)
1–5/d	4 (0.5)
About 0.5 pack/d	1 (0.1)

not possible. Yet this rate was approximately 1.5 times higher than the 3.3% rate in the general population.²⁹ Among our participants, 22.9% stated they consumed energy drinks in the previous month. Investigators rarely explore energy drink consumption in individuals other than adolescents or college students. As collegiate ATs spend many hours working and traveling with their teams, both physical and emotional exhaustion could cause them to resort to energy drinks to meet the demands of their days.

Approximately 38.9% of our sample reported a high level of emotional exhaustion; 33.6%, a high level of depersonalization; and 17.7%, a low level of personal accomplishment. High levels of emotional exhaustion were almost twice as common in our respondents compared with a 2009 study⁹ of collegiate ATs and high levels of depersonalization were 44% more common. Meanwhile, the low level of personal accomplishment was comparable with previous findings.⁹ Our findings are also similar to burnout statistics for physicians⁵ and nurses.⁶ This suggests that burnout symptoms in collegiate ATs are more prevalent today than previously. The constant decrease in the off-season time of recovery for collegiate ATs could be a contributor and should be examined further by future authors.

Table 5. Summary of Regression Analyses

Variable	B	β	t	Adjusted R ²
Emotional exhaustion				0.375
Work-family conflict A	0.475	0.284	6.418 ^a	
Work-family conflict B	0.416	0.253	5.639 ^a	
Salary	-0.630	-0.096	-3.130 ^b	
Social support	-0.172	-0.190	-6.330 ^a	
Workload fall	0.066	0.065	1.783	
Workload spring	0.084	0.079	2.194 ^c	
Workload summer	-0.016	-0.024	-0.735	
Emotional exhaustion				0.178
Personal accomplishment	-0.796	-0.424	-12.783 ^a	
Depersonalization				0.460
Emotional exhaustion	0.288	0.579	19.479 ^a	
Personal accomplishment	-0.174	-0.187	-6.286 ^a	
Personal accomplishment				0.133
Work-family conflict A	-0.239	-0.269	-5.183 ^a	
Work-family conflict B	0.022	0.026	0.488	
Social support	0.113	0.238	6.723 ^a	
Salary	0.468	0.133	3.670 ^a	
Workload fall	0.012	0.023	0.532	
Workload spring	0.015	0.026	0.619	
Workload summer	-0.012	-0.035	-0.905	
Binge drinking				0.022
Emotional exhaustion	0.008	0.091	2.282 ^b	
Personal accomplishment	-0.016	-0.093	-2.340 ^b	

^a $P < .001$.

^b $P < .05$.

^c $P < .01$.

Table 6. Summary of Substance Use Regression Analyses^a

Variable	B	SE	Exp(B)	Wald χ^2
Cigarette use				
Emotional exhaustion	0.002	0.022	1.002	0.010
Personal accomplishment	-0.054	0.035	0.948	2.375
Marijuana use				
Emotional exhaustion	-0.019	0.011	0.981	2.957
Personal accomplishment	-0.020	0.019	0.980	1.112
Smokeless tobacco use				
Emotional exhaustion	-0.037	0.020	0.9763	3.628
Personal accomplishment	-0.010	0.034	0.990	0.080
Energy drink use				
Emotional exhaustion	0.017	0.004	1.017	15.315 ^b
Personal accomplishment	-0.011	0.008	0.989	1.983

^a Cigarette, marijuana, and energy drink use were analyzed via Poisson regressions. Smokeless tobacco use was analyzed via binomial logistic regression.

^b $P < .001$.

The Smith Cognitive-Affective Model of Athlete Burnout has been applied to ATs in the past and recommended for future use.⁹ We found that this model was appropriate for our sample. Using a multiple regression model, we determined that the situational factors of WFC, social support, and salary were all significantly associated with cognitive appraisal (personal accomplishment) and physiological response (emotional exhaustion). The relationships among WFC, social support, and burnout agree with the results of earlier studies.^{17,18} However, our findings disagree with those of researchers²⁴ who identified no significant relationship between salary and symptoms of burnout. We recommend that salary remain a situational variable in the Smith model for future investigations due to these contradictory results.

The model showed that the average number of hours worked per week in the spring semester was significantly positively associated with emotional exhaustion but not personal accomplishment. A longitudinal study³⁰ of work-life balance in collegiate ATs showed that they suffered from increased conflict during their competitive season. It is possible that athletes in more sports are actively competing during the winter and spring months, which would lead to increased WFC. As increased WFC led to increased symptoms of burnout in our sample, this is a reasonable explanation for the association between hours worked in the spring semester and burnout. Examinations of ATs who work in specific college sports and how they experience burnout throughout the year should be conducted in the future.

After further evaluation of the model, we determined that emotional exhaustion and personal accomplishment were inversely correlated. These findings agree with those of previous researchers²⁵ who assessed relationships between the MBI subscales among helping professionals, such as physicians, psychologists, nurses, and social workers. We also learned that both emotional exhaustion and personal accomplishment were positively and negatively associated with depersonalization, respectively. This result is consistent with previous work²⁵ and further demonstrates that the Smith model is appropriate for the exploration of burnout in

collegiate ATs. We recommend that future authors continue to use this model.

In the final portion of the model, we examined how emotional exhaustion and personal accomplishment were associated with substance use. Emotional exhaustion was significantly positively correlated with binge drinking. Also, the sense of personal accomplishment was significantly negatively correlated with binge drinking. These results agree with those of other health care professionals.^{3,4} The use of binge drinking by collegiate ATs as a coping mechanism has not been addressed before by researchers. We acknowledge that other factors that significantly influence binge drinking in collegiate ATs must exist, as the explained variance in this model was small ($R^2 = .022$). Continuing efforts to characterize this relationship, as well as the potential effects of binge drinking on the overall performance of ATs, are warranted.

We did not find emotional exhaustion or personal accomplishment to be significantly correlated with cigarette use, although previous investigators⁷ indicated that nurses suffering from burnout were more likely to smoke cigarettes. This difference may be due to many college campuses now being tobacco-free zones, with cigarette use prohibited on campus. Even for ATs employed by colleges that allow tobacco use, the busy nature of their positions may not allow the time needed to smoke cigarettes. This inability to smoke cigarettes for a large portion of their day may also discourage use when away from work.

Another significant relationship was the positive association of emotional exhaustion with energy drink consumption. This is a unique finding that has not been previously observed. Because a desire for increased energy is a common motivation for the use of energy drinks,¹⁵ collegiate ATs may be using them as stimuli. To better understand this relationship, researchers should evaluate usage patterns for energy drinks as well as the motivations of collegiate ATs.

Limitations and Future Directions

We note several limitations of the study. The response rate for our survey was 11.4%, which increases the risk of selection bias. The overall length of the survey as well as the lack of incentive for completion may have diminished the response rate. However, despite the low response rate, our sample size was larger than that in a previous study⁹ involving the Smith model and was representative of collegiate ATs in terms of sex, ethnicity, and geographic location. We used a membership database for e-mail addresses that might not have been updated. Some of the 6867 may not have been valid e-mail addresses or perhaps the ATs were no longer employed in the collegiate setting, which could have resulted in some respondents either not receiving the invitation or ignoring it altogether because they did not meet the inclusion criteria. Although we focused on ATs who were currently in the profession, we were largely unable to reach those who had already left the profession due to burnout. Thus, burnout symptoms may have been underestimated. We asked questions about substance use and, therefore, social desirability may have influenced some responses. We attempted to control for social desirability by not collecting identifying information such as the names, e-mail addresses, or mailing addresses

of respondents. Due to the cross-sectional nature of our study, we were not able to infer causality from our analyses. Because our data were collected from only collegiate ATs, our findings may not be generalizable to ATs in other work settings. It is also important to recognize that many participants did not have a spouse or children, possibly affecting their perception of WFC. By dividing the sample into 3 groups (ie, no spouse or children, both spouse and children, and either spouse or children) and comparing the mean WFC score of each group with the overall average, we determined that none of the group means differed from the overall average by more than 5%. Furthermore, WFC was still significantly associated with emotional exhaustion and personal accomplishment, regardless of group.

In the future, researchers should continue to examine substance use in collegiate ATs and possible contributing factors to substance abuse behaviors, such as binge drinking. They should also examine variables that may influence the various components of the Smith Cognitive Affective Model of Athletic Burnout to alleviate symptoms of burnout and its potential causes and outcomes. We also encourage further assessment of the use of energy drinks by ATs.

Lastly, specific methods of identifying and assisting ATs who are suffering from burnout should be developed. Our results and the previous literature have contributed to our knowledge of causes and outcomes, but very little attention has focused on how to help suffering individuals. As the effects of burnout on the provision of health care continue to grow in importance, we should establish better ways of caring for both ourselves and our patients.

CONCLUSIONS

Binge-drinking behaviors and the use of smokeless tobacco were more common in our sample of collegiate ATs than in studies of other health care professionals¹² and the general population.²⁹ Although marijuana use in our sample was similar to that of other health care professionals,^{12,13} it was less common than in the general population.²⁹ The proportion of cigarette use in our sample was less than in other health care professionals^{12,13} and the general population.²⁹ By using the Smith Cognitive Affective Model of Athletic Burnout, we found that emotional exhaustion and diminished personal accomplishment were both significantly associated with increases in binge-drinking behaviors. We also demonstrated that emotional exhaustion was significantly positively associated with use of energy drinks. Our goal in this research was to illuminate substance use patterns of collegiate ATs and point to potential causes to try to improve the overall well-being of members of the profession.

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