

Adverse Childhood Experiences and Burnout in Athletic Trainers: An Exploratory Study

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Context: Burnout, a state of physical or emotional exhaustion, is a concern within athletic training, as between 17% and 40% of athletic trainers (ATs) report high levels of burnout. Adverse childhood experiences (ACEs) are linked with higher levels of burnout in other health professions.

Objective: To compare burnout with ACEs in ATs.

Design: Cross-sectional study.

Setting: Web-based survey.

Patients or Other Participants: One thousand ATs were selected at random to participate in the study. Of these, 78 ATs started the survey, and 75 ATs completed it.

Main Outcome Measure(s): Burnout, as measured by the Copenhagen Burnout Inventory (CBI) overall and subscale scores, was compared across groups based on the number of adverse experiences as measured by the ACEs survey. Multiple analysis of variance tests were used to determine the association between ACEs score and overall, personal, work-related, and patient-related burnout.

Results: At least 1 adverse experience was reported by 37 (49.33%) participants. Those with ≥ 4 ACEs had higher odds of describing overall, personal, and work-related burnout than those with 0 to 3 ACEs. Moderate burnout (CBI score ≥ 50.00)

was noted in 27 (36.00%, overall), 44 (58.67%, personal), 34 (45.3%, work related), and 15 (20.00%, patient related) ATs. Participants with 4 ACEs had higher overall burnout (67.11 ± 19.89 ; $F_{6,68} = 2.59$, $P = .03$) than those with 0 (40.53 ± 17.12 , $P = .04$), 1 (38.42 ± 20.99 , $P = .04$), or 7 (19.08 ± 12.09 , $P = .03$) ACEs. The same pattern existed with personal burnout, as participants with 4 ACEs (76.67 ± 17.33) had higher scores ($F_{6,68} = 3.40$, $P = .00$) than those with 0 (46.60 ± 17.49 , $P = .02$), 1 (42.78 ± 21.48 , $P = .01$), or 7 (27.08 ± 20.62 , $P = .03$) ACEs. No other differences were observed.

Conclusions: Between 20.00% and 58.67% of ATs surveyed reported some form of burnout. Higher levels of overall and personal burnout were found in those with 4 ACEs. Although we expected to see lower levels of burnout in those with fewer ACEs, it was surprising that those with 7 ACEs had some of the lowest CBI scores. Athletic trainers with childhood trauma may find it beneficial to engage in self-regulation exercises to reduce or limit triggers and burnout. Additionally, employers should explore developing trauma-informed workplaces to better support employees.

Key Words: resiliency, trauma, well-being

Key Points

- Between 20% and 60% of athletic trainers surveyed experienced moderate to severe burnout.
- Athletic trainers with 4 adverse childhood experiences reported higher levels of overall and personal burnout than those with 0, 1, or 7 such experiences.

Burnout is a mental state characterized by emotional or physical exhaustion or a stress reaction to the inability to cope with the demands of one's profession.¹ Burnout affects individuals on personal, work-related, and patient-related levels and ranges from mild to moderate to severe.² In health care providers, burnout can lead to serious health consequences for both the patient and provider and can negatively affect the workplace. Physicians and athletic trainers (ATs) experiencing burnout are more likely to commit a medical error, which could result in patient harm.^{3–5} Even if providers with burnout do not commit errors, they tend to have less empathy for their patients,⁶ which could harm the patient-provider relationship. Providers with burnout are more likely to experience insomnia than those without burnout.⁷ Additionally, individuals with burnout have a higher triglyceride-glucose index, which indicates insulin resistance.⁸ Burnout also affects mental health, as it is

associated with increased anxiety,⁷ suicidal ideation,⁹ and binge drinking episodes¹⁰ as well as greater intent to leave the profession.¹¹ In the workplace, burnout results in higher costs due to greater employee turnover.¹²

Burnout is present in a wide variety of health care professionals, including ATs,^{3,10,11,13,14} neurologists,¹⁵ physicians,¹⁶ nurses,^{16,17} and mental health providers.¹⁸ Both environmental and personal factors may lead to burnout.¹³ Environmental factors, also known as occupation-related factors, include time-intensive work hours and high work-setting demands and patient loads.¹³ Personal factors include limited leisure time and increased stress levels.¹³ Emerging research^{18–20} suggests that another consideration for burnout is a personal factor, specifically, the provider's history of adverse childhood experiences (ACEs).

First described by Felitti et al,²¹ ACEs are childhood exposures to traumatic events, including emotional, physical, and

sexual abuse; household dysfunction; and community violence and poverty. Approximately 58% of US adults have experienced ≥ 1 ACE, with emotional abuse being the most common type.²² Regardless of the type of exposure, ACEs are linked with a wide range of physical, mental, and behavioral health risks across the lifespan.²⁰ Those who reported ≥ 1 ACEs exhibited moderate to high insulin resistance.²³ Sleep is also influenced by ACEs. Individuals with insomnia who described moderate to severe traumatic experiences had increased awakenings and movement arousal compared with those who related no or few ACEs.²⁴ In addition, ACEs are associated with lower levels of mental health and wellness. Individuals with ≥ 4 ACEs displayed higher odds of suicidal ideation,²⁵ and those with ≥ 3 ACEs expressed increased anxiety and depression risks.²⁶ Furthermore, ACEs are linked with increased risks in behavioral health: ≥ 4 ACEs were associated with increased risks of alcohol and illicit drug misuse.^{21,25}

The effect of ACEs goes beyond one's health. In the workplace, employees with higher ACE scores reported lower levels of workplace well-being, including less perceived value and decreased social relationships with coworkers.²⁷ Exposure to ACEs may increase levels of burnout.^{18,19} Physicians with ≥ 4 ACEs had 2.67 to 2.75 greater chances of burnout than those with ≤ 3 ACEs.¹⁹ Mental health providers with a history of ACEs experienced higher levels of burnout than those without a history. This was most evident in those who reported feeling unloved and living with a family member who had mental illness.¹⁸ However, the elevated risk of burnout was not limited to professionals, as nursing students with a higher number of ACEs were more likely to describe burnout.²⁰

Although the ACEs survey has been used to study the effect of ACEs on burnout in other health care professions, it has not been used to examine burnout in ATs. Therefore, the primary purpose of our study was to assess the prevalence of burnout and ACEs in ATs. We hypothesized that the burnout prevalence would be similar to that in prior research involving ATs, and we estimated that the ACEs prevalence would match that of the general population. Our secondary aim was to evaluate the influence of ACEs on burnout in ATs. We hypothesized that ATs with ≥ 4 ACEs would describe higher levels of burnout than those with ≤ 3 ACEs.

METHODS

Study Design

A cross-sectional study was conducted to compare reported burnout in ATs with ACEs.

Participants

To be included in this study, potential participants had to be Board of Certification–certified ATs, members of the National Athletic Trainers' Association (NATA), and employed in a clinic-based setting (eg, college, clinic, secondary school). Potential participants were excluded if they could not read English.

We recruited volunteers at random through the NATA's Research Survey Service. A total of 1000 ATs were emailed

and invited to complete a survey on Qualtrics. The survey was open for 28 days, and weekly reminders were sent to the ATs. Volunteers provided consent by starting the survey, and the university institutional review board approved the study.

Survey

The survey consisted of 3 sections: demographic information, the ACE Questionnaire, and the Copenhagen Burnout Inventory (CBI). The 34 items took about 10 minutes to complete. At the close of the survey, participants were provided with a list of support resources (eg, ATs Care, Crisis Text Line).

We used the demographic information to ensure that participants met the inclusionary criteria and to obtain information about them. Questions addressed work setting, age range, job title, and gender. The questions were designed to match the reporting of data in the NATA's Salary Survey so that we could compare the respondents with the larger population. However, it is important to note that, at the time, the NATA used *male* and *female* as designations for gender, which is the nomenclature we followed in our study. Respondents were also asked to provide an estimate of hours worked per week across the fall, winter, spring, and summer seasons.

The ACE Questionnaire was used to determine the participants' prior experiences with adverse events. The questionnaire is a 10-item survey with *yes* or *no* questions about the participant's experiences during the first 18 years of life. Items address 3 categories of ACEs: abuse ($n = 3$), neglect ($n = 2$), and household dysfunction ($n = 5$).¹³ The questionnaire has good test reliability²¹ and good internal consistency ($\alpha = .71-.88$).^{18,28,29} Our study had an acceptable Cronbach α reliability coefficient ($\alpha = .75$). The *yes* responses were summed for each person and used to group participants.

The CBI is a publicly available survey designed to measure burnout and is appropriate for use in health professionals.³⁰ It consists of 19 items in 3 subscales: personal, work related, and patient related. The personal subscale contains 6 questions and is designed to assess physical and psychological fatigue, regardless of the person's occupation.² The work-related subscale consists of 7 questions and is designed to assess perceptions of physical and psychological fatigue related to work. (One of the work-related subscale questions is reverse scored.) Finally, the patient-related subscale (6 questions) measures perceptions of physical and psychological fatigue related to working with patients. All items are answered using a 5-point Likert scale (either *always* [scored as 1], *never/almost never* [scored as 5] or *to a very high degree* [scored as 1], *to a very low degree* [scored as 5]). A response of 1 is awarded 100 points; 2, 75 points; 3, 50 points; 4, 25 points; and 5, 0 points. Point values are used to calculate average scores for each subscale and an overall burnout score. Scores range from 0 to 100, with values below 50 indicating *no to low burnout*; between 50 and 75, *moderate burnout*; between 75 and 99, *severe burnout*; and 100, *total burnout*. The CBI has high internal validity in all 3 subscales ($\alpha = .85-.87$).² Our study had high Cronbach α reliability coefficients on all 3 subscales (personal burnout $\alpha = .90$, work-related burnout $\alpha = .91$, patient-related burnout $\alpha = .92$). Overall and subscale scores were computed for each participant.

Table 1. Participants' Demographics (N = 76)^a

Characteristic	Frequency (Percentage)
Gender	
Female	52 (68.4)
Male	24 (31.6)
Nonbinary/third gender	0 (0.0)
Prefer not to say	0 (0.0)
Age range, y	
21–35	47 (61.8)
36–45	12 (15.8)
46–55	13 (17.1)
56–65	0 (0.0)
>65	3 (3.9)
Employment setting	
College/university	44 (57.9)
High school	27 (35.5)
Hospital	2 (2.6)
Clinic	1 (1.3)
Middle school	1 (1.3)
Other	1 (1.3)
Position title	
Athletic trainer	32 (42.1)
Director of athletic training services	1 (1.3)
Head athletic trainer	14 (18.4)
Associate athletic trainer	3 (3.9)
Assistant athletic trainer	17 (22.4)
Intern	2 (2.6)
Graduate assistant	4 (5.3)
Other	3 (3.9)

^a Of the 76 participants who provided demographic information, 75 completed the survey.

Analysis

We analyzed the data with descriptive and inferential statistics using SPSS (version 28.0.0.0; IBM Corp). Pearson and point biserial correlations were conducted to assess if gender or hours worked were significantly associated with CBI scores. Odds ratios were calculated to determine if exposure to ≥ 4 ACEs was linked with higher chances of overall, personal, work-related, and patient-related burnout. To evaluate the effect of ACEs on burnout, we computed analysis of variance (ANOVA) tests to compare overall and CBI subscale scores by total ACEs reported. If any of the ANOVA values were significant, a Bonferroni post hoc test was applied to identify which groups differed from each other. The a priori α level was set at $P \leq .05$.

RESULTS

Participant Characteristics

A total of 78 participants began the survey (response rate = 7.8%), 76 provided demographic information, and 75 completed the survey, for a completion rate of 96.15%. Patient characteristics, including gender, age group, employment setting, and position title, are presented in Table 1. The average weekly hours worked was 42.80 ± 9.66 (fall = 52.07 ± 11.87 , winter = 43.25 ± 10.60 , spring = 46.13 ± 12.36 , and summer = 27.34 ± 14.32).

Odds Ratios

Those ATs with ≥ 4 ACEs had greater odds of reporting overall, personal, and work-related burnout than those with

Table 2. Adverse Childhood Experiences and Burnout Odds Ratios (N = 75)^a

Scale	Odds Ratio (95% CI)
Overall burnout	1.15 (0.32, 4.19)
Personal burnout	2.20 (0.53, 9.07)
Work-related burnout	1.78 (0.49, 6.46)
Patient-related burnout	0.38 (0.04, 3.22)

^a Values > 1 indicate greater odds of reporting burnout by those with ≥ 4 ACEs.

0 to 3 ACEs and lower odds of reporting patient-related burnout (Table 2).

Adverse Childhood Experiences and Burnout

Gender and hours worked were not significantly correlated with burnout. Moderate to high burnout (CBI score ≥ 50.00) was identified in 27 (36.00%, overall), 44 (58.67%, personal), 34 (45.3%, work-related), and 15 (20.00%, patient-related) participants (Table 3).

In this sample, 37 (49.33%) participants disclosed ≥ 1 ACEs. Of those participants, 15 had only 1 ACE, whereas 22 reported > 1 . The highest ACE score was 7 (Table 3). The most common *yes* responses involved separation or divorce of parents ($n = 18$, 24.00%); a family member being depressed or mentally ill or attempting suicide ($n = 16$, 21.33%); and living with someone who was a problem drinker or used street drugs ($n = 13$, 17.33%).

Burnout values are shown by ACE scores with observed power and effect sizes in Table 4. The ANOVA values for overall ($F_{6,68} = 2.59$, $P = .03$) and personal ($F_{6,68} = 3.40$, $P < .001$) burnout were significant. The Bonferroni post hoc test revealed that participants who reported 4 ACEs had greater overall burnout (67.11 ± 19.89) than those who described 0 (40.53 ± 17.12 , $P = .04$), 1 (38.42 ± 20.99 , $P = .04$), or 7 (19.08 ± 12.09 , $P = .03$) ACEs. We observed a similar pattern with respect to personal burnout. Participants with 4 ACEs (76.67 ± 17.33) had higher scores than those with 0 (46.60 ± 17.49 , $P = .02$), 1 (42.78 ± 21.48 , $P = .01$), or 7 (27.08 ± 20.62 , $P = .03$) ACEs. We did note a trend toward significance in scores on both the work-related ($F_{6,68} = 1.98$, $P = .08$) and patient-related ($F_{6,68} = 2.08$, $P = .07$) subscales, which were underpowered but had large effect sizes.

Table 3. Burnout Scores and Distribution (N = 75)

Burnout Scale	Mean \pm SD	Range	Frequency (%)
Overall	41.90 \pm 18.43	No or low (<50)	48 (64.0)
		Moderate (50–74)	24 (32.0)
		High (≥ 75)	3 (4.0)
Personal	49.22 \pm 19.67	No or low (<50)	31 (41.3)
		Moderate (50–74)	37 (49.3)
		High (≥ 75)	7 (9.3)
Work related	44.14 \pm 20.66	No or low (<50)	41 (54.7)
		Moderate (50–74)	30 (40.0)
		High (≥ 75)	4 (5.3)
Patient related	31.94 \pm 20.64	No or low (<50)	60 (80.0)
		Moderate (50–74)	11 (14.7)
		High (≥ 75)	4 (5.3)

Table 4. Copenhagen Burnout Inventory Results by ACEs

ACEs, No.	n (%)	Copenhagen Burnout Inventory Score			
		Overall ^a	Personal ^a	Work Related	Patient Related
0	38 (50.67)	40.53 (17.12) ^a	46.60 (17.49) ^a	42.84 (19.74)	31.69 (20.72)
1	15 (20.00)	38.42 (20.99) ^a	42.78 (21.68) ^a	39.76 (24.10)	32.50 (20.42)
2	7 (9.33)	46.99 (12.47)	60.11 (15.56)	45.92 (10.99)	35.12 (16.81)
3	4 (5.33)	40.13 (13.00)	50.00 (11.28)	42.86 (13.04)	27.08 (21.92)
4	5 (6.67)	67.11 (19.89) ^a	76.67 (17.33) ^a	70.00 (25.33)	54.17 (18.63)
5	4 (5.33)	40.79 (9.73)	55.21 (14.97)	49.11 (12.84)	16.67 (10.21)
7	2 (2.67)	19.08 (12.09) ^a	27.08 (20.62) ^a	23.21 (7.58)	6.25 (8.84)
Overall	75 (100.00)	41.90 (18.43)	49.22 (19.67)	44.14 (20.66)	31.94 (20.64)

Abbreviations: ACE, adverse childhood experience; ANOVA, analysis of variance.

^a Significant at $P \leq .05$. ANOVA_{Overall}: $F_{6,68} = 2.59$, $P = .03^a$, observed power = 0.82, partial $\eta^2 = .19$; 0 vs 4 ACEs: $P = .04^a$; 1 vs 4 ACEs: $P = .04^a$; 4 vs 7 ACEs: $P = .03$. ANOVA_{Personal}: $F_{6,68} = 3.40$, $P = .00^a$, observed power = 0.92, partial $\eta^2 = .23$; 0 vs 4 ACEs: $P = .02^a$; 1 vs 4 ACEs: $P = .01^a$; 4 vs 7 ACEs: $P = .03$. ANOVA_{Work}: $F_{6,68} = 1.98$, $P = .08$, observed power = 0.67, partial $\eta^2 = .15$. ANOVA_{Patient}: $F_{6,68} = 2.08$, $P = .07$, observed power = 0.71, partial $\eta^2 = .16$.

DISCUSSION

To our knowledge, this is the first study to examine the relationship between ACEs and burnout in ATs. We found that ATs who reported 4 ACEs were more likely to indicate overall, personal, and work-related burnout and had greater overall and personal burnout than those who reported 0, 1, or 7 ACEs. Our hypothesis was therefore partially supported: ACEs may predispose some ATs to burnout.

The prevalence of ACEs in our sample was slightly lower than in prior research,^{18,22} and the most common type of ACE experienced was related to household dysfunction. This result of increased burnout based on ACEs was supported by similar outcomes in other health care providers^{18,19} and students.²⁰ However, new in our investigation was that those with the highest ACE score of 7 ($n = 2$) experienced significantly lower burnout scores than those with 4 ACEs. It is important to acknowledge that self-care may mitigate burnout in individuals with a history of ACEs. Specifically, mental health providers with a history of ACEs who reported using self-care activities had lower levels of burnout than those who did not use self-care techniques. Interestingly, this held true for those without a history of ACEs as well, reflecting that self-care practices may reduce the risk of burnout.¹⁸ Although we did not ask participants about self-care, this may explain less burnout in the group with the highest number of ACEs.

Moderate to high burnout was observed in 20% to 60% of participants in this sample. Personal burnout had the highest prevalence and patient-related burnout had the lowest prevalence. Recent studies demonstrated moderate burnout in 17% to 40% of collegiate ATs¹⁰ and in 26% of secondary school ATs.¹⁴ These values varied from what we detected: 34% of collegiate ATs had overall burnout (personal burnout = 57%, work-related burnout = 45%, and patient-related burnout = 18%), and 30% of secondary school ATs had overall burnout (personal burnout = 56%, work-related burnout = 37%, and patient-related burnout = 30%). Different scales are used to assess burnout, which can make it difficult to compare findings across studies. In studies involving the Maslach Burnout Inventory, ATs experienced burnout related to emotional exhaustion, depersonalization, and low personal accomplishment.^{3,10} Although the Maslach Burnout Inventory provides insight into specific elements of burnout, it does not supply an

overall burnout score. We chose the CBI because it has a broader scope and individually defines a person's burnout level regarding personal, work-related, and patient-related lives while also generating an overall burnout score.²

Exposure to ACEs and burnout may lead to similar long-term health concerns. Fortunately, evidence indicates that interventions and changes in environmental support can mitigate these risks. *Resilience*, the ability to overcome stress and adversity,³¹ is associated with a decreased risk of poor health outcomes in individuals with ACEs.³² Providing relational skills training for medical providers may help promote resilience.³³ *Grit*, the perseverance and passion to pursue a long-term goal, counteracts the negative effects of ACEs³⁴ and burnout,³⁵ and mindfulness can help improve grit.³⁴ Among collegiate ATs, existential well-being¹¹ and leisure time¹³ are preventive factors against burnout. Sleeping for at least 6 hours a night was also theorized to protect against burnout in health care providers who worked > 40 hours per week.³⁶

Workplaces can help mitigate burnout by addressing employee well-being. This includes adjusting workload demands (eg, streamlining workflows, reducing patient ratios, offloading tasks that others can do), providing more support for employees, including employees in decision-making, and fostering teamwork.³⁷ Employers must also be aware that ACEs affect employee performance, as employees with a history of ACEs had an increased likelihood of job problems and absenteeism.^{27,38} Although we do not encourage employers to ask employees about ACEs, employers should work toward creating trauma-informed organizations to help mitigate the effect of trauma.²⁷ An organization must move through the phases of awareness, sensitivity, and responsiveness to become trauma informed³⁹ while incorporating the principles of safety; trustworthiness and transparency; peer support; collaboration and mutuality; empowerment, voice, and choice; and cultural, historical, and gender inclusion.⁴⁰

Limitations and Future Research

Our study had certain limitations. From the ATs who received the survey, the overall response rate was low (7.8%), which led to low power in parts of the data analysis. Our response rate was noticeably lower than that of other researchers^{10,11,13,14} who examined burnout in ATs.

The ACE Questionnaire is personal in nature, which may have caused some ATs to feel uncomfortable in answering the questions. Any ATs experiencing burnout may have been less likely to participate due to the nature of burnout, as they may have been overwhelmed by their current situation and lacked the capacity to respond to a survey.¹³ It is also important to consider the effect of the COVID-19 pandemic on burnout, as some health care workers had increased concerns regarding burnout.^{41–43} Interestingly, a higher level of pandemic-related burnout was not observed in secondary school ATs.¹⁴ In addition, because this was an exploratory study, our focus was only on burnout and ACEs. We did not address self-care interventions, as we were concerned that too many questions would deter participation.

Future investigators should continue to explore the relationship between ACEs and burnout in ATs, including ways to assess comorbidities and mitigating factors. Although the patient-related burnout subscale scores of the CBI were lower than those of the other burnout measures, the effect of working with patients should be evaluated, as compassion fatigue and secondary traumatic stress may be more likely in providers with a history of ACEs.¹⁸ Also, more intervention-based research addressing how to improve resilience and grit to reduce burnout is needed. This would allow workplaces to create more supportive, trauma-informed environments for employees.

CONCLUSIONS

More burnout was reported by ATs with 4 ACEs than those with 0, 1, or 7 ACEs. Stress and trauma during childhood may predispose individuals to burnout. Athletic trainers should be made aware of this relationship to help identify their risk of developing burnout and explore self-care options to mitigate burnout. Employers can incorporate trauma-informed practices to help create a more supportive workplace. Further research is needed to characterize the relationship and determine if directed interventions may be beneficial to reduce burnout in ATs.

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