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Athletic Trainers' Job Tasks and Status During the COVID-19 Pandemic: A Preliminary Analysis

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Context: In December 2019, severe acute respiratory syndrome coronavirus 2, also known as the novel coronavirus disease 2019 (COVID-19), became a global public health crisis. Government officials in the United States subsequently responded by issuing lockdown orders that closed schools, terminated sports, and resulted in many people transitioning to working from home, immediately affecting the ability of athletic trainers (ATs) to practice clinically.

Objective: To describe the job status, job duties, telemedicine use, and resiliency of ATs during the COVID-19 pandemic.

Design: Cross-sectional study.

Setting: Mixed-methods survey.

Patients or Other Participants: A total of 611 ATs (age = 32 ± 13 years).

Main Outcome Measure(s): The survey consisted of 6 demographic questions, a job status assessment (3 questions, 1 open-ended prompt), a telemedicine use assessment (5 questions, 2 open-ended prompts), and the 6-item Brief Resilience Scale. Qualitative analyses were completed using Text iQ technology and descriptive statistics, and cross-tabulations were conducted using follow-up χ^2 comparisons of resiliency with job setting and telemedicine use.

Results: Most ATs continued to work in some capacity throughout the COVID-19 pandemic and expressed optimism about the likelihood that their job status and setting would return. However, participants shared financial and mental health concerns because of reduced pay, stress, and uncertainty about the future. We also identified versatility within the profession, as ATs were serving in new roles related to COVID-19 or adopting telemedicine (n = 251, 41.1%). Athletic trainers were implementing all domains of clinical practice using telemedicine, yet most did not consult legal counsel on or have formal training in the delivery method before implementation. Finally, most ATs exhibited normal resilience that was not affected by job setting ($\chi^2 = 26.901$, $P = .68$) or the use of virtual health care ($\chi^2 = 2.597$, $P = .27$).

Conclusions: The COVID-19 pandemic has affected ATs' jobs, and in many cases, the ATs have demonstrated adaptability and value in assuming various roles in the larger health care system.

Key Words: COVID-19, telemedicine, employment

Key Points

- Athletic trainers have demonstrated adaptability and resilience by changing their job duties and tasks to meet current needs during the public health crisis.
- More than 40% of athletic trainers were engaging in some form of telemedicine delivery during the early stages of the coronavirus disease 2019 pandemic.
- Athletic trainers expressed uncertainty, fears, and mental health concerns related to their job status, financial situation, and change in duties because of the coronavirus disease 2019 pandemic.

In late December 2019, the outbreak of the severe acute respiratory syndrome coronavirus 2 virus, also known as the coronavirus disease 2019 (COVID-19),[1] started in the Wuhan Province of China. The COVID-19 virus spread to the United States, with the first case confirmed in Washington State on January 21, 2020.[2] Since January 2020, more than 1.3 million cases in the United States[3] and 4.2 million cases worldwide (as of May 14, 2020) have been confirmed.[4] Unfortunately, more than 292 046 deaths worldwide (as of May 14, 2020) have occurred,[4] and at the time of this writing, the case-fatality rate of 6.1% or 26.75 deaths per 100 000 population was rising and was 10 times higher than that of US influenza deaths between February 1 and May 9, 2020.[5,6]

As a result, government officials made decisions to slow the progression of the deadly and novel respiratory illness. The daily life of the world was disrupted as government-issued stay-at-home orders closed many businesses, canceled sporting events,[7] and transitioned educational institutions to online instruction.[8–10] These changes resulted in more than 23 million Americans filing for unemployment insurance and many others being placed on furlough, working reduced hours or for reduced pay, or assuming new roles within their organizations.[11] Health care professionals were also affected by the COVID-19 pandemic. According to the US Bureau of Labor Statistics,[11] employment declined for dentists, physicians, and other health care practitioners by 1.4 million during April 2020.

Table 1. Participant Demographic Information

Characteristic	Mean ± SD (Range)
Age, y	32 ± 13 (21–63)
Experience as a credentialed athletic trainer, y	9 ± 12 (0–49)
	Frequency (%)
Gender	
Female	390 (63.8)
Male	218 (35.7)
Prefer not to say	1 (0.2)
Nonbinary or third gender	1 (0.2)
Did not report	1 (0.2)
Current job setting[a]	
Amateur, recreational, or youth sports	9 (1.5)
Clinic	48 (7.9)
College or university	177 (29.0)
Health, fitness, sports, performance enhancement clinic, or club	2 (0.3)
Higher education, research, or both	25 (4.1)
Hospital	53 (8.7)
Independent contractor	5 (0.8)
Military, law enforcement, and government	10 (1.6)
Occupational health and industrial	11 (1.8)
Other	7 (1.1)
Professional sports	8 (1.3)
Secondary school	254 (41.6)
Unemployed (before COVID-19)	1 (0.2)
Did not report	1 (0.2)

Abbreviation: COVID-19, novel coronavirus disease 2019.

[a] Participants were asked to report their last job setting if their employment status had changed due to COVID-19.

Athletic trainers (ATs) are health care professionals who are nationally certified and recognized by the American Medical Association. They provide care to diverse patient populations, including work (industrial, military, occupational), life (recreational sports, clinics, hospitals), and sport (secondary schools, colleges, universities) athletes throughout the United States and globally. The COVID-19 pandemic has had a ripple effect on the profession, characterized by layoffs and redistribution of the work force to the front lines of COVID-19 management at hospital emergency departments. Others have been able to continue their jobs using virtual health care via telemedicine to interact with patients throughout the country. *Telemedicine* is the broad use of technology (eg, live video, short and multimedia messages, telephone calls) by health care providers to deliver an array of services, including evaluations, follow-up appointments, and interventions.[12]

Regardless, the pandemic has exposed the entire athletic training profession to a stressful environment that may affect resiliency in terms of the ability to be optimistic and adapt in the face of challenging times.[13] Currently, no data exist regarding the professional response of ATs to a pandemic, and very limited research has been conducted specific to their telemedicine use.[14,15] We wanted to examine both their professional response and telemedicine use to help ATs respond to the immediacy of COVID-19 and prepare for the future. Therefore, the purpose of our study was to collect data describing the current state of ATs regarding their job status, job duties, telemedicine use (if applicable), and resiliency during the COVID-19 pandemic.

METHODS

Design

We used a cross-sectional research design to collect responses from ATs approximately 1 month[16] after the cancellation of schools and closing of businesses across the United States because of the COVID-19 pandemic. A Web-based platform (Qualtrics LLC, Provo, UT) was used to deliver the survey. The goal of the initial rapid recruitment and deployment was a direct result of COVID-19 and the urgency of capturing the status of the profession. All participants provided informed consent, and the study was deemed exempt by the University of South Carolina Institutional Review Board.

Participants

We recruited potential participants using social media, with 9 posts on Facebook (Menlo Park, CA) and 20 tweets on Twitter (San Francisco, CA) from the accounts of the primary investigator (Z.K.W.) and other athletic training professionals. This strategy has been employed successfully in previous health care research.[17,18] In total, 654 individuals consented to participate. From this sample, 15 responses were removed, as the participants were not credentialed ATs, 16 responses were removed because the ATs did not complete any part of the study, and another 12 responses were removed because individuals completed less than 40% of the instrument. After data cleaning, we had a sample of 611 responses from ATs for the data analysis. Demographic data of the participants are provided in Table 1.

Instrument

We curated a multipart survey with 4 main sections to describe the ATs' job status, job duties, telemedicine use, and resiliency during the COVID-19 pandemic. The survey began with a demographic section that contained 6 questions on the backgrounds of individuals and their jobs. The second section of the survey focused on the COVID-19 response with respect to job status; 3 questions and 1 open-ended prompt asked participants to describe how the pandemic had affected them, if at all, professionally and personally. The third section was completed only by participants who stated in the second section that they were providing virtual patient care. If they had been using virtual patient care, participants were taken to 5 questions and 2 open-ended prompts about the technology platforms they were using that asked them to describe the main (or most important) reason they decided to use virtual patient care during the pandemic. Finally, the fourth section consisted of the 6-item Brief Resilience Scale that is measured using a 5-point Likert scale, with responses ranging from *strongly disagree* to *strongly agree*. This tool has strong psychometric properties for reliability and validity.[19]

Given the expedited nature of the data collection, we performed 1 pilot test of the survey with 1 certified AT who had 2 years of clinical experience. The volunteer was provided instructions for navigating the survey and making

comments in a separate document (based on the question number) about the content of the questions, clarity in the delivery of the survey, and comprehensiveness of the answer options. The pilot test resulted in minor changes to question wording, ordering, and options to best reflect job status experiences. The survey was vetted by both authors, who have experience with survey research on athletic training employment and telemedicine use that applied qualitative, quantitative, and mixed-method designs. We analyzed the final survey for flow of questions using display logic in the survey and appropriateness of the items to the research question and to ensure that the open-ended prompts were not leading the participants to responses based on how they were written.

Procedures

The primary investigator posted social media messages containing a uniform resource locator (URL) for the study between April 14 and 27, 2020. This period was 1 month after lockdown and stay-at-home orders were issued by state officials in the United States. After clicking the URL, participants were presented with the informed consent form, followed by a question asking if they were credentialed ATs. The study was designed with display logic, so that participants who stated they were providing virtual patient care were the only respondents who received the third section of the survey.

Data Analysis

The responses were collected using Qualtrics. At the completion of the 2-week data-collection window, all data were downloaded and transferred to SPSS (version 26; IBM Corp, Armonk, NY) for quantitative analyses that included descriptive statistics and cross-tabulation comparisons. For the Brief Resilience Scale, we scored the answers and recoded the respondents into resilience categories (low, normal, high).[19] We then performed χ^2 comparisons for resiliency with job setting and telemedicine use.

The replies to the 3 open-ended prompts were analyzed using Text iQ technology (Qualtrics, LLC).[20] We analyzed 462 responses from the 611 participants for the first qualitative item and 205 responses for the 2 follow-up telemedicine prompts on the main or most important reason they chose to use virtual patient care and the technology platforms used. Answers to 2 prompts were coded using inductive processing, whereas the answer to the third prompt (technology platform used) was categorized without interpretation of the comment. The open-ended prompt for the technology platform did not follow the same model as the other 2 prompts; however, all responses were categorized and placed into like groups, with a quantitative representation (number of provided responses in the category) calculated to describe the platforms being used for virtual patient care. For the other 2 open-ended prompts ("Based off [sic] your responses to your current job status and setting, please describe how the COVID-19 pandemic has affected you personally and/or professionally" and "What was the main or most important reason you decided to use telemedicine during COVID-19?"), we followed a more traditional pattern using Text iQ, by which the provided qualitative data were coded by the primary investigator (Z.K.W.) using natural language processing with a search-and-select feature. The primary investigator used the text-analysis tool to assign topics to the qualitative responses via lemmatization to break down words in order to capture similar roots. The program provides topic recommendations but allows for the creation of new topics based on the comments of the participants. We created topics for each of the 2 questions that were specific to the personal responses of the ATs. Given the nature of the anonymous survey, we could not use member checks or peer debriefing to assess credibility. However, the open-ended response was not audio recorded and transcribed, meaning that the engagement of the participant with the survey text box ensured that the response was authentic to the person's lived experience. This process of analyzing open-ended responses using inductive coding also establishes confirmability by removing the bias of the research team. The second investigator (K.E.G.) then performed an inquiry audit to establish dependability of the findings through a review and examination of all open-ended responses with their coded topics.

Finally, the Text iQ technology provided a sentiment score (SS) that ranged from −10 (negative) to 10 (positive) based on the emotion of the provided response, which created an SS per response and mean SS overall for the topic. This process resulted in a figurative description of the qualitative coding using circles of different sizes (based on the number of responses) and colors (green = *positive*, white = *neutral*, yellow = *mixed*, red = *negative*). The overall SS per response is provided, and the overall topical SS is supplied as a cumulative score based on the responses for that topic.

RESULTS

Job Status and Duties

Most respondents (n = 563, 92.1%) were currently residing in the same state where they were employed or practiced athletic training. During the COVID-19 pandemic, the job duties of individuals varied; however, most continued to work, with only 20.0% (n = 122/611) noting they were unable to work at all. We performed a cross-tabulation analysis between job status and job setting ($\chi^2 = 49.250$, $P \leq .001$) and identified that, of the 20% who were unable to work, 56.6% (n = 69, 27.2% of job setting) were in secondary schools, 18.0% (n = 22, 12.4% of job setting) were in colleges or universities, and 11.5% (n = 14, 29% of job setting) were in clinics. On further examining their job status, we learned that most respondents (n = 276, 45.2%) worked remotely with no change in status, including pay or hours expected. The findings for job status, duties, and perceived likelihood that their job would return to a typical presentation after the COVID-19 pandemic are shown in Table 2.

Although the survey provided data for determining the job status category into which each person would best fit, we believed it was vital to ask participants how the COVID-19 pandemic had affected them personally and professionally. We received 462 responses that were coded using artificial intelligence, with assistance from the primary investigator, into 12 topics. All topics with their respective SSs and comment frequency by emotion from the participants are provided in Figure 1 and Table 3. Overall, the respondents had experienced a change in their

Table 2. Job Status and Duties

Characteristic	Frequency (%)
Job status	
Did not report	3 (0.5)
Reduced pay but maintaining typical workload	9 (1.5)
Laid off	22 (3.6)
Not working but still employed	43 (7.0)
Reduced work time (eg, changed to part time, PRN, or per diem)	60 (9.8)
Unpaid furlough (leave of absence for a period)	75 (12.3)
Working remotely from job site with no change in status including pay or hours expected	123 (20.1)
Working remotely with no change in status including pay or hours expected	276 (45.2)
Job duties (mark all that apply)	
Continuing to teach and/or conduct research in person	3 (0.5)
Continuing to provide direct health care with new patient panel (in person with physical contact)	36 (5.9)
Continuing to provide direct health care with typical patient panel (in person with physical contact)	62 (10.1)
Continuing to teach and/or conduct research remotely	97 (15.9)
Performing health care administrative tasks only (policy updates, organization, risk management, stakeholder education sessions)	267 (43.7)
Performing non–health care-related tasks (cleaning, facility management, etc)	116 (19.0)
Providing front-line screening and other support related to COVID-19 directly	172 (28.2)
Providing virtual patient care (telemedicine, telehealth, text messages, phone calls, etc)	251 (41.1)
Likelihood that his or her job would return to typical presentation after COVID-19	
Extremely likely	342 (56.0)
Somewhat likely	175 (28.6)
Unsure	60 (9.8)
Somewhat unlikely	16 (2.6)
Extremely unlikely	15 (2.5)
Did not report	3 (0.5)

Abbreviations: COVID-19, novel coronavirus disease 2019; PRN, as needed.

job setting or work duties. The next most common topic was mental health concerns, with expressions of anxiety, sadness, depression, and a lack of interest because of COVID-19. They also acknowledged considerable apprehension and uncertainty regarding the future of their jobs and athletic training if sports did not resume. One of the more frequent topics was a growth mindset by which the participants cited thoughts of optimism, positivity, and good things coming from the changes in their lives. Several participants were out of work, furloughed, using paid time off, or receiving reduced pay, which resulted in financial concerns. Both positive and negative comments relative to personal time for themselves, with family, or at home were addressed. Some ATs enjoyed the additional opportunity to spend time with their children or do projects around the house, while others had difficulty working from home or simply being alone, leading to isolation and boredom.

The respondents described how they had been "reworked" into the community for jobs they typically had not done before, such as temperature assessments, "proning" patients (ie, rolling individuals onto their stomachs), and telemedicine care. However, some individuals believed that their skills as health care providers were being underused during the public health crisis. A smaller percentage of ATs commented on pandemic safety concerns (eg, exposure, loss of loved ones) and perceptions of frustration, anger, and defeat, which often led to negative thoughts. Other than having more time to themselves, some ATs noted positive and negative effects on their health behaviors related to sleep, alcohol intake, diet, and exercise. Finally, a very small portion of ATs commented that they were not personally affected by the pandemic. The Supplemental Table (see Supplemental Table, available online at http://dx.doi.org/10.4085/1062-6050-0275-20.S1) provides responses from the ATs regarding these topics with respect to their job status and job settings.

Telemedicine

A total of 251 (41.1%) participants were providing *virtual patient care*, which was defined in the survey as "telemedicine, telehealth, text messages, telephone calls, etc." We performed a cross-tabulation analysis of telemedicine use by residency status based on the demographics section. We identified 227 respondents who provided virtual patient care and resided in the same state in which they were credentialed ($\chi^2 = 2.767$, $P = .25$), whereas 24 ATs provided virtual health care in a state different from where they were credentialed. In addition, our cross-tabulation analysis between job setting and use of telemedicine revealed a difference ($\chi^2 = 113.734$, $P \leq .01$). According to the percentage of telemedicine users by total respondents by job category, the most frequent settings for use of virtual patient care were college or university (71.2%, 126/177); amateur, recreational, or youth sports (66.7%, 6/9); and professional sports (62.5%, 5/8). The largest portion of respondents in this study were from the secondary school setting (n = 254); however, only 73 (28.7%) of these individuals reported using virtual patient care.

Based on the responses to their current job status and duties, the ATs who used virtual patient care mostly depicted a combination of synchronous (ie, live video; n = 143/229, 62.4%), asynchronous (ie, creating and forwarding reports, images, and care plans; n = 146/229, 63.8%), and indirect means (ie, text messages, telephone calls,

Figure 1. Text iQ topics (Qualtrics, LLC, Provo, UT) qualitative analysis and mean sentiment scores for personal and professional responses to severe acute respiratory syndrome coronavirus 2. The size of the circle indicates the number of responses for each category, with the larger circle depicting more responses and the smaller circle depicting fewer responses coded to that category. Abbreviations: Du, duties; uncertaint, uncertainty.

social media messages, emails; n = 205/229, 89.5%). Of those who were using synchronous telemedicine, the majority were setting up their telemedicine encounters via individual appointments (n = 128, 89.5%).

Most respondents to the coded open-ended question were using Zoom (Zoom Video Communications, Inc, San Jose, CA; n = 92) or FaceTime (Apple Inc, Cupertino, CA; n = 70) as the platform for providing virtual patient care. A full list of the technology applications that respondents cited is provided in Figure 2. Although participants mentioned 34 different platforms, >80% (n = 262/327) of all responses could be narrowed down to the 7 most common platforms (Zoom, FaceTime, email, Google applications [Google, LLC, Mountain View, CA], Doxy.me [Doxy.me, LLC, Rochester, NY], text message, and Healthy Roster [Healthy Roster, Inc, Columbus, OH]). Moreover, of the 225 respondents, more than half (n = 118; 52.4%) made the final decision about which technology program to use for virtual patient care, with fewer than a quarter indicating that they consulted a supervisor (n = 56; 24.9%), other personnel (n = 21, 9.3%), a health care executive (n = 14; 6.2%), or legal counsel (n = 3, 1.3%). At the time of data collection, the number of patient encounters reported ranged from 0 to 1000 (mean = 30 patient encounters, median = 1, mode = 10). Regardless of the platform or type of virtual patient care (eg, live video, text message), the ATs were practicing several domains of athletic training (Figure 3), with 77.8% (n =175/225) of respondents supplying therapeutic interventions and rehabilitation check-ins for patients and 69.3% (n = 156/225) offering injury and illness prevention and wellness promotion. Despite the

Table 3. Personal and Professional Response to COVID-19 (N = 462 Responses)

Topic	Comments on This Topic	Mean Sentiment Score	Comments, No. (%)[a]			
			Positive	Neutral	Mixed	Negative
Change in job settings or duties	252	−0.3	135 (54)	8 (3)	8 (3)	101 (40)
Mental health concerns	71	−2.9	26 (37)	0 (0)	2 (3)	43 (61)
Uncertainty about the future	72	−2.4	25 (35)	1 (1)	3 (4)	43 (60)
Growth mindset	74	2.8	56 (76)	0 (0)	3 (4)	15 (20)
Out of work	63	−2.2	16 (25)	3 (5)	3 (5)	41 (65)
Financial woes	66	−3.0	17 (26)	1 (2)	1 (2)	47 (71)
Personal time (self, family, home)	47	0.4	31 (66)	1 (2)	0 (0)	15 (32)
Underutilized	30	−0.8	15 (50)	1 (3)	1 (3)	13 (43)
Pandemic safety concerns	36	−0.7	17 (47)	2 (6)	1 (3)	16 (44)
Frustrated, angry, defeated, or all of these	34	−1.6	15 (44)	0 (0)	1 (3)	18 (53)
Health behavior changes	16	−4.1	3 (19)	0 (0)	1 (6)	12 (75)
No personal effect	22	1.4	13 (59)	1 (5)	1 (5)	7 (32)

Abbreviation: COVID-19, novel coronavirus disease 2019.

[a] Percentages were rounded, so the total for each row may not equal 100%.

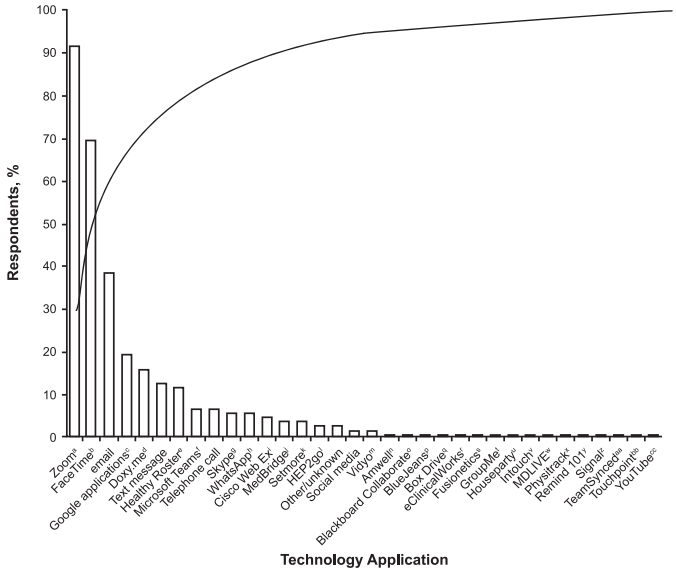

Figure 2. Pareto chart showing technology applications being used for virtual patient care. The cumulative total of technology applications is represented by the line graph depicting the overall percentage of platforms used linked to the individual data of the descending bar graphs. [a] Zoom; Zoom Video Communications, Inc, San Jose, CA. [b] FaceTime; Apple Inc, Cupertino, CA. [c] Google; Google, LLC, Mountain View, CA. [d] Doxy.me; Doxy.me, Rochester, NY. [e] Healthy Roster; Healthy Roster, Inc, Columbus, OH. [f] Microsoft Teams; Microsoft Corp, Redmond, WA. [g] Skype; Microsoft Corp. [h] WhatsApp; Facebook, Inc, Menlo Park, CA. [i] Cisco Web Ex; Cisco Systems, San Jose, CA. [j] MedBridge; MedBridge Inc, Seattle, WA. [k] Setmore; Setmore Appointment, Portland, OR. [l] HEP2go; HEP2go, Inc, Queen Creek, AZ. [m] Vidyo; Vidyo, Inc, Toronto, ON, Canada. [n] Amwell; Amwell, Boston, MA. [o] Blackboard Collaborate; Blackboard Inc, Washington, DC. [p] BlueJeans by Verizon; BlueJeans by Verizon, Verizon Communications, Mountain View, CA. [q] Box Drive; Box, Redwood City, CA. [r] eClinicalWorks; eClinicalWorks, Westborough, MA. [s] Fusionetics; Fusionetics, Milton, GA. [t] GroupMe; GroupMe Inc, New York, NY. [u] Houseparty; San Francisco, CA; Epic Games, Inc, Cary, NC. [v] Intouch; InTouch Technologies, Inc, Santa Barbara, CA. [w] MDLIVE; MDLIVE, Miramar, FL. [x] Physitrack; Physitrack Limited, London, UK. [y] Remind 101; Remind, San Francisco, CA. [z] Signal; Signal, Chicago, IL. [aa] TeamSynced; TEAMWORKS, Durham, NC. [bb] Touchpoint; TouchPointCare, Odessa, FL. [cc] YouTube; YouTube, San Bruno, CA.

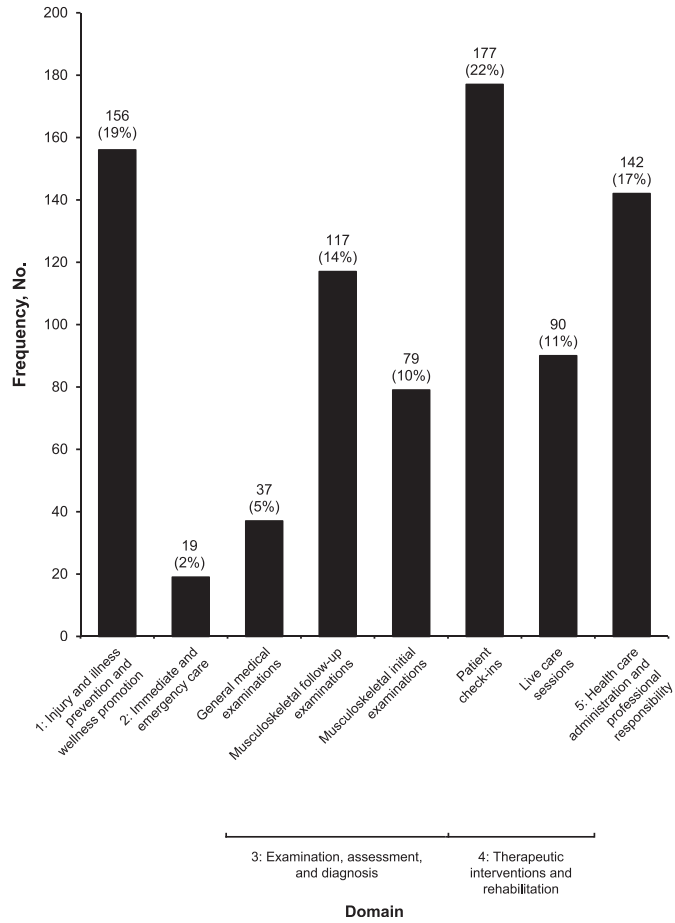

Figure 3. Domains of clinical practice delivered via telemedicine. The frequency and percentage values represent the number of participants who practiced virtual patient care in each domain of athletic training.

widespread use of virtual patient care, most ATs (219 ATs, 229 responses) learned about telemedicine delivery either informally through self-education (n = 97/219, 44.3%) or by using online modules or webinars (n = 26/219, 11.9%); slightly more than one-quarter had not learned about it at all (n = 61/219, 27.9%). Only 7 (3.2%) of 219 participants learned about it in their professional athletic training program, and 38 (17.4%) learned about it during their postprofessional athletic training program.

The participants also shared their main reason for choosing to use virtual patient care, which was analyzed as 7 topics (Figure 4): continuity of care (n = 79, SS = 2.1, 81% positive), patient connection (n = 58, SS = 1.5, 64% positive), social distancing (n = 44, SS = 0.2, 57% positive), access to care (n = 24, SS = 1.2, 58% positive), instructed by work or employment (n = 11, SS = –0.4, 36% positive), job security (n = 11, SS = 1.4, 73% positive), and necessity (n = 11, SS = 0.1, 55% positive). The respondents observed that telemedicine allowed them to continue both providing care for established patients and accessing their patient panel despite the distance limitation. Further, the participants wanted to "flatten the curve" and reduce the spread of the disease during the public health crisis by following social-distancing orders. A smaller number of individuals believed that administering virtual patient care promoted secure employment during uncertain times, whereas others said they were only offering it because they were required to do so by their employers. Supporting quotations relative to the deciding factors on adopting virtual patient care with respect to SS and demographic data are given in Table 4.

Resiliency

The ATs who completed the final portion of the survey (n = 557) were identified as having normal resilience. The sum score from the Brief Resilience Scale was 22.2 ± 3.8 (range = 7–30) with a computed score of 3.697 ± 0.625 (range = 1.17–5). The computed score mode was 2, which meant that most respondents were in the normal resilience category (n = 409/555, 73.7%), with smaller percentages in the high (n = 88/555, 15.9%) and low (n = 58/555, 10.5%) categories (Table 5). We demonstrated no differences in resilience by athletic training job setting ($\chi^2 = 26.901$, $P = .68$) and showed that resiliency was not an indicator of virtual health care use by ATs during the COVID-19 pandemic ($\chi^2 = 2.597$, $P = .27$).

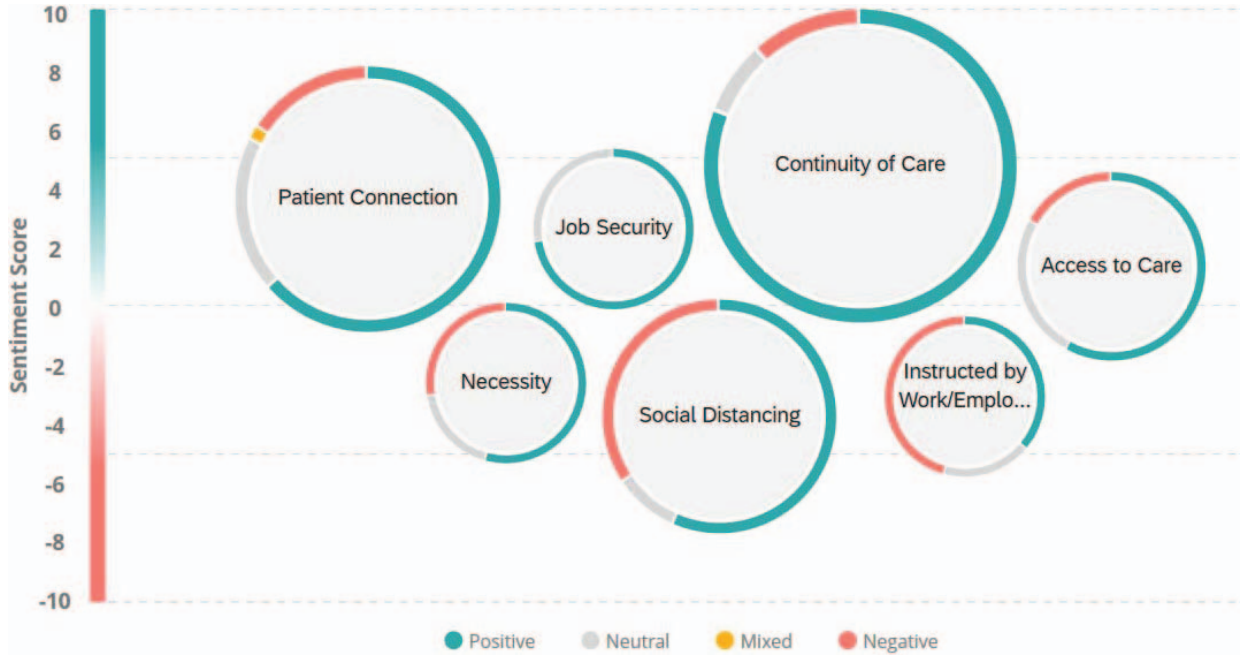

Figure 4. Text iQ topics (Qualtrics, LLC, Provo, UT) qualitative analysis and mean sentiment score for the main reason to use telemedicine. The size of the circle indicates the number of responses for each category, with the larger circle depicting more responses and the smaller circle depicting fewer responses coded to that category. Abbreviation: emplo, employment.

DISCUSSION

Job Status and Duties

The purpose of our study was to describe the current state of ATs related to their job status, job duties, telemedicine use (if applicable), and resiliency during the COVID-19 pandemic. Like many other professions, athletic training has been affected by the COVID-19 pandemic. Approximately 85% of ATs were still employed in some capacity, while approximately 15% of ATs were on an unpaid furlough or had been laid off at the time of data collection. The percentages of ATs who were on furlough or had been laid off were consistent with the national unemployment rate (14.7%) during the data-collection period (April 2020).[11] This suggests that trends in athletic training employment were not independent of larger employment shifts during the current pandemic. External data support the fact that the crisis has had a medium to large effect on the arts, entertainment, recreation, and other services economic sector, yet the projected effects on the human health and social work activities and the education sectors are expected to be the lowest globally.[21] Nonetheless, athletic training as a health profession depends on physically active patients seeking services related to work, life, and sport. Given that the pandemic has affected the arts, entertainment, and recreation sector so profoundly, we must continue to monitor the employment situation of our profession.

Many ATs were still able to provide patient care, both modified and unmodified. Approximately 10% of respondents continued to provide direct health care to their typical patient panel, including physical contact. Many of these participants (n = 29/62, 46.8%) worked in the clinic or hospital setting. Additionally, no individuals in the health, fitness, sports, performance enhancement clinic, club, higher education, research, or occupational health and industrial settings were unable to work at the time of the study, which may indicate that these settings offer greater job security when the economic sectors are threatened.

The need for face-to-face interaction and direct presence in physical medicine has been challenging during the pandemic. The ability to adapt and overcome challenges in order to add value to the larger health care system was also seen in the data. Athletic trainers filled atypical roles, including frontline screening directly related to COVID-19 (28.2%, n = 172/611) and performing health care administration (43.7%, n = 267/611), and nonhealth care-related (19.0%, n = 116/611) tasks. These increased roles of ATs during the COVID-19 pandemic have been reported in the news media.[22,23] Our findings are supported by research[24] reflecting that occupations involving minimal computer use have been the most affected by the pandemic, leaving employees job displaced or with substantial alterations to their previous delivery models. These data could be a driving factor for our profession to continue exploring the role of health care technology and health informatics to solidify our role in medicine.[24]

Telemedicine

The integration of technology in clinical practice has been rising, with 41.8% of ATs stating they were telemedicine users in a study conducted before the COVID-19 pandemic.[15] We found that the same percentage of ATs (41.1%) were providing virtual patient care, regardless of mechanism or platform, during the pandemic. Although the percentages of users were approximately the same, several ATs were newly adopting telemedicine into their clinical practices because of the importance of

Table 4. Participants' Open-Ended Responses to Reasons for Telemedicine Use

Topics in Order of Frequency	Supporting Quotations
1. Continuity of care	"To maintain continuity of care and provide service for patients while avoiding face-to-face interaction to try and flatten the curve." (SS = −1; 46-year-old male in the clinic setting)
	"Patients are so appreciative that we are still able to at least hold a conversation with them. While we cannot do full evaluations, many patients just need reassurance or an update on their care plan to be satisfied during the current pandemic." (SS = 8; 24-year-old female in the clinic setting)
	"I could not just abandon my athletes because there was not a traditional setting for us to meet in to do rehab[ilitation]. It is in my job to provide care to my athletes throughout the entire healing process, not just when it is convenient for us to meet." (SS = 1; 23-year-old female in the college or university setting)
2. Patient connection	"I think it's critical to maintain a relationship with my patients, so telemedicine is the most effective way to do so, especially when patients live out of state and cannot be seen in person." (SS = 3; 26-year-old female in the college or university setting)
	"I wanted to stay connected with the patients I was currently seeing to assure there was no decline in their treatment plans. I also wanted to reassure the student-athletes that I am still available if need be." (SS = 6; 26-year-old female in the secondary school setting)
	"To maintain a personal connection and commitment to our patients. Keeping things as personable as possible under the circumstances we're in was vital, as all of us are sheltering." (SS = 8; 27-year-old female in the college or university setting)
3. Social distancing	"Decrease number of patients coming into our clinic and decreasing possible exposure while still providing patient care." (SS = 2; 27-year-old female in the clinic setting)
	"To be as safe as possible and complying with state orders." (SS = −1; 27-year-old male in the college or university setting)
	"To reduce the risk to both myself and my employees while still providing valuable health care." (SS = 1; 30-year-old female in the occupational health and industrial setting)
4. Access to care	"Our patients are now scattered across the planet. It is the only way to take care of them." (SS = −1; 53-year-old male in the college or university setting)
	"Most easy access for patient rather than finding available physical therapy clinic. Wanted to learn how to implement telemedicine as my skill set." (SS = 4; 27-year-old female in the college or university setting)
	"Lack of access to face-to-face methods, school shutdown." (SS = −6; 28-year-old male in the secondary school setting)
5. Instructed by work or employment	"Mandated by my supervisor." (SS = 0; 22-year-old male in the college or university setting)
	"My boss honestly does not want us to lose high school contracts. He is expecting us to push this software system, which is currently annoying my parents because they do not see any need for it. My school is also annoyed because they do not like the liability of me treating patients over telemedicine." (SS = −8; 25-year-old female in the secondary school setting)
	"Was told to. Less contact with people is safer as far as spreading of the disease." (SS = −1; 23-year-old female in the military, law enforcement, and government setting)
6. Job security	"I have a responsibility to continue doing my job to get paid." (SS = 0; 45-year-old female in the secondary school setting)
	"I needed a source of income rather than being furloughed by my company. This program was the next best option." (SS = 5; 25-year-old female in the secondary school setting)
	"Justify our paycheck during the school shutdown and to maintain communication with my athletes." (SS = 0; 29-year-old female in the secondary school setting)
7. Necessity	"It is the right thing to do." (SS = 1; 41-year-old male in the college or university setting)
	"The necessity to stay in touch when we are apart." (SS = 1; 34-year-old female in the college or university setting)
	"Necessity. If I did not, then many of my patients would regress. Also have a high risk for [careless] injury population, as they are teenagers with large amounts of free time, so I have gotten a few additional 'visits' from that." (SS = −7; 31-year-old female in the secondary school setting)

Abbreviation: SS, sentiment score.

Table 5. Brief Resilience Scale[19] Responses (N = 557)

	Score, No. (%)[b]					
Prompt[a]	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Did Not Report
Bounce back	14 (2.5)	13 (2.3)	83 (14.9)	306 (54.9)	138 (24.8)	3 (0.5)
Difficulty with stress	63 (11.3)	301 (54.0)	115 (20.6)	73 (13.1)	3 (0.5)	2 (0.4)
Short time to recover from stress	9 (1.6)	77 (13.8)	153 (27.5)	258 (46.3)	58 (10.4)	2 (0.4)
Hard to snap back	82 (14.7)	298 (53.5)	106 (19.0)	64 (11.5)	5 (0.9)	2 (0.4)
Little difficulty with hard times	3 (0.5)	59 (10.6)	142 (25.5)	299 (53.7)	51 (9.2)	3 (0.5)
Long time to recover from setbacks	88 (15.8)	320 (57.5)	98 (17.6)	46 (8.3)	3 (0.5)	2 (0.4)

[a] The original statements were presented to the participants in full; they are paraphrased here for brevity.
[b] Percentages were rounded, so the total for each row may not equal 100%.

limiting physical contact during the pandemic, consistent with other health care professions.[25,26] Authors[25] investigating telemedicine use during the COVID-19 pandemic determined that the technology-based delivery system was integrated most effectively when the clinical foundation and providers enabled viewing of patients, meaning that as long as ATs are available and can navigate the system from their homes, we should be examining this option. Our qualitative findings support this rationale by which the ATs were hoping to achieve a patient-centered environment focused on continuity and access to care via virtual patient interactions.[27]

From a legal perspective, new adopters of telemedicine must understand that the platforms they have used during the pandemic may not be supported after the public health crisis by the Office of Civil Rights at the US Department of Health and Human Services, which oversees the enforcement of the Health Insurance Portability and Accountability Act (HIPAA); the Health Information Technology for Economic and Clinical Health (HITECH) Act; and the HIPAA Privacy, Security, and Breach Notification Rules (HIPAA rules).[28] During the COVID-19 pandemic, these acts and rules were loosened to allow providers to practice virtual patient care using platforms, such as FaceTime, Google Hangouts (Google, LLC), Zoom, and Skype (Microsoft Corp, Redmond, WA). However, these platforms may not be used without risk for noncompliance after the pandemic.[28] In our study, most ATs supplying virtual patient care were using Zoom, FaceTime, email, and Google applications, such as Hangouts, and others were using compliant platforms, such as Doxy.me.[28] Skype and Zoom both have HIPAA-compliant and noncompliant platforms available that are differentiated via a business associate agreement to ensure the encryption and protection of the live video communication.[28] We suggest that ATs wanting to start or continue using virtual patient care explore HIPAA- and HITECH-compliant communication platforms, including text messaging applications and email providers, as 90.0% of respondents in this survey were using these indirect methods of virtual patient care. Moreover, the legal perspective of providing virtual patient care should be addressed in consultation with the legal counsel of the AT's employer and after reviewing the governmental regulations of the AT's state regarding its practice act. Only 1.3% of our respondents consulted legal counsel about the final platform that would be implemented, thereby posing risks to their employers and themselves. Given that telemedicine is often not listed in athletic training practice acts, we suggest exploring the Center for Connected Health Policy Web site (www. https://www.cchpca.org), which describes current state laws and reimbursement policies with respect to eligible providers, consent, parity laws, and provider location (out-of-state and originating sites).[29] A small percentage (9.6%) of ATs were conducting virtual patient care from a state other than the one in which they were credentialed to practice, meaning they were not following most state policies regarding provider location.

Finally, our data support earlier findings[15] of a low level of telemedicine background knowledge among users and nonusers of telemedicine. In our study, 72.2% of respondents either taught themselves how to deliver telemedicine or had never learned about it before implementation. Whereas the skills and abilities of an AT remain the same during a telemedicine interaction, the health care delivery system requires alterations to a typical patient encounter in terms of the setup, conducting a thorough examination, and patient privacy. We advise ATs to pursue continuing education and professional development opportunities on virtual patient care before use; if that is not possible, then pursuing training after implementation will still enable them to improve their delivery of care.

Resiliency

These ATs also demonstrated normal resilience, suggesting that they could "bounce back" or recover from the stressors and setbacks of the COVID-19 pandemic. Additionally, during the data-collection period, 84.6% of respondents believed it was extremely or somewhat likely that their job situation would return to normal after the COVID-19 pandemic. Although this is a positive indicator of ATs' beliefs about the future, how these responses may change as the COVID-19 pandemic continues for weeks, months, and possibly years is unknown. Monitoring ATs' resiliency and optimism about returning to their typical work as the COVID-19 pandemic persists could indicate the psychological stress ATs are facing. Such ongoing monitoring will be critical for ensuring healthy work-life integration, including the mental health of these providers and role congruence with their job descriptions, personal values, and the tasks they may be asked to perform during societal reintegration.

Our quantitative analysis showed normal resilience and some optimism about the future, but the qualitative analysis of how the COVID-19 pandemic has affected ATs' job status demonstrated a more nuanced challenge. The 12 themes that emerged from the analysis can be grouped into 3 larger categories: financial, emotional, and structural changes from both the personal and professional perspectives. These changes and challenges are affecting not only ATs but also many Americans in general.[30] Future authors should explore the coping strategies used by ATs to navigate employment-altering situations, such as the COVID-19 pandemic.

Limitations and Future Research

Our project had limitations. The quick development of and response to the COVID-19 pandemic required a rapid data-collection process to capture the responses of ATs in the initial stages. Given the nature of the situation, we recruited participants via social media for a shorter-than-usual data-collection period, which may have influenced their responses. Additionally, asking ATs to participate in a research study during a high-stress time could have discouraged potential volunteers from engaging in or completing the survey. Future researchers should continue monitoring the effects of the COVID-19 pandemic on the job status, work practices, and telemedicine use of ATs throughout the pandemic and as activities, such as sports and school, resume.

CONCLUSIONS

Many ATs have been affected in some way by the COVID-19 pandemic. A portion of ATs have been laid off

or placed on an unpaid furlough; however, most ATs in our study continued to practice in a modified form. Athletic trainers have demonstrated the ability to adapt and, in many cases, add value to the health care system during these unprecedented times in our profession's history.

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