ATHLETIC TRAINING EDUCATION JOURNAL

www.natajournals.org
ISSN: 1947-380X
DOI: 10.4085/1062-6050-019.23

ORIGINAL RESEARCH

Exploring the Use of a Social Determinants of Health Focused History Script to Facilitate Patient Conversations

Kaitlynn R. Moll, MS, ATC*; Lindsey E. Eberman, PhD, ATC†; Kelsey J. Picha, PhD, ATC‡; Jessica R. Edler Nye, PhD, LAT, ATC§; Nancy A. Uriegas, MS, SCAT, ATC*; Zachary K. Winkelmann, PhD, ATC, CHSE*
*Department of Exercise Science, University of South Carolina, Columbia; †Department of Applied Medicine and Rehabilitation, Indiana State University, Terre Haute; ‡Department of Interdisciplinary Health Science, A. T. Still University, Mesa, AZ; §Kinesiology and Health Promotion, Grand View University, Des Moines, IA

Context: Screening for social determinants of health (SDOH) factors is fundamental to addressing barriers to health outcomes and identifying resources needed to provide patient-centered care. However, SDOH can be a difficult area of patient care to navigate without a screening tool.

Objective: To explore athletic training students' abilities to screen for SDOH factors via standardized patient (SP) encounters and to describe the experience of screening for SDOH factors.

Design: Prospective, mixed-methods cohort study.

Setting: Simulation laboratory.

Patients or Other Participants: Fifty-four postbaccalaureate professional athletic training students (women = 43, men = 11; age = 23 ± 1 years).

Intervention: The same SP encounter was completed with 2 cohorts of athletic training students, with 1 intervention cohort (n = 29) screening for the SDOH without an aide and the control cohort (n = 25) screening with the mandatory use of a validated SDOH focused history script.

Main Outcome Measures: The SP encounters were evaluated using a tool containing an SDOH evaluation by domain and Athletic Training Milestone competencies. Following the SP encounter, each learner completed a postlearning survey. Data were analyzed using descriptive statistics, Mann-Whitney U tests, and thematic qualitative analysis.

Results: We identified a significant difference ($P \leq .001$) for the overall screening for the SDOH, with the intervention cohort that was required to use the focused history script scoring significantly higher than the control cohort. The intervention cohort scored significantly higher ($P \leq .001$) on the Athletic Training Milestones than the control cohort, but the intervention cohort self-rated their performance as lower during the reflection.

Conclusion: The use of the focused history script during the SP encounter highlighted the need for a screening tool to be present during the evaluation to facilitate a conversation about the SDOH. When health care students were not required to use the focused history script to screen for the SDOH, most failed to elicit information about the SDOH factors or performed poorly during the screening.

Key Words: healthy equity, standardized patient, patient-centered care, secondary school

Address correspondence to Zachary K. Winkelmann, PhD, SCAT, ATC, Department of Exercise Science, University of South Carolina, 1300 Wheat Street, Columbia, SC 29208. winkelz@mailbox.sc.edu.

Full Citation:
Moll KR, Eberman LE, Picha KJ, Edler Nye JR, Uriegas NA, Winkelmann ZK,. Exploring the use of a social determinants of health focused history script to facilitate patient conversations. *Athl Train Educ J.* 2023;18(4):196–212.

Exploring the Use of a Social Determinants of Health Focused History Script to Facilitate Patient Conversations

Kaitlynn R. Moll, MS, ATC; Lindsey E. Eberman, PhD, ATC; Kelsey J. Picha, PhD, ATC; Jessica R. Edler Nye, PhD, LAT, ATC; Nancy A. Uriegas, MS, SCAT, ATC; Zachary K. Winkelmann, PhD, ATC, CHSE

KEY POINTS

- The use of a focused history script increased screening for SDOH factors but decreased the students' self-confidence in the process.
- When students were not required to use the focused history script to screen for the SDOH, most athletic training students failed to elicit information about the SDOH factors or performed poorly during the screening.
- We identified a confidence gap for SDOH screening abilities, with athletic training students having high self-confidence in their ability to screen compared to their actual performance.

INTRODUCTION

The social determinants of health (SDOH) are external factors that affect an individual's well-being and the general population's health in both positive and negative ways.[1] Negative risk factors arise from systemic challenges related to policy and a focus on behavioral modification rather than social justice.[2,3] Public health data suggest that significant indicators of health outcomes can be linked to social and economic factors.[4–6] Socioeconomic class and race affect health outcomes in the United States, with historically marginalized communities experiencing higher disease prevalences.[5] There are also barriers to political reform when it comes to public health due to a lag in the presentation of health effects and the window of time that it takes to assess the impact of a policy.[2,7] Even though there is a focus on improving health outcomes related to SDOH, health inequities are increasing, and many policies are not being put into effect.[7] Research supports that obstacles to policy implementation are related to practicality, the lack of an immediate impact, and disagreement on how to move forward.[7] There needs to be a greater emphasis on what athletic trainers (ATs) should be doing to address SDOH factors and barriers.

One mechanism to address SDOH in communities is screening. Screening provides a well-structured strategy for identifying and arranging for the care of those with specific societal needs.[8] Screening involves a personalized, tailored approach to patient care that supersedes previous attempts to address inequity through policy-making.[8] However, health care professionals struggle to observe, identify, and have conversations with patients about the SDOH.[9,10] Athletic trainers must be able to observe SDOH factors when interacting with patients from different backgrounds. Athletic trainers have the unique opportunity to be an advocate for diverse patient panels, including adolescents.[11] Screening for SDOH factors in minors often occurs through direct observation, through patient intake, or as part of the history section of an evaluation. In the secondary school–based health care system, there is typically a school nurse, a social worker, and a mental health provider available during the school day, but after the school day is done, the AT becomes the sole health care provider for adolescent patients.[6,12] The ideal process of providing care to adolescent patients in the secondary school setting should encourage consultation with the family, parents, and/or guardians through a process called family-centered care.[13] However, previous research has identified that the perceived need and the current practices of family-centered care in secondary school athletic training are significantly different, with ATs citing resources, staffing concerns, and parent communication issues as limitations.[13] The lack of family-centered care often leads to the AT providing care to the adolescent patient without a parent/guardian being present. Previous research on negative SDOH reporting from high school students compared to their caregivers noted that students often cited stress, depression, isolation, and finances as negative SDOH factors.[14] The researchers also identified a lack of concordance when screening SDOH factors among students and their caregivers, noting that parents/guardians often underreported the social and mental health needs of the students.[14]

As a primary provider of health care, the AT should be screening for SDOH factors as they have potential long-term, negative health effects.[9,11] Researchers have identified that secondary school ATs are often unsure of how to integrate their knowledge of SDOH into their clinical conversations.[9,11] Interestingly, ATs performed well on a knowledge assessment regarding SDOH factors but reported rarely assessing several public health topics such as health-related quality of life, environmental factors, and SDOH in their patients and not recognizing these elements during a patient interview.[10,11] Therefore, a knowledge gap exists between what ATs know and what they perform in clinical practice, such as identifying social risk and assessing quality-of-life factors.[10]

To provide the health care system with ATs proficient in identifying social risk factors, guides, patient-reported measures, or scripts may be helpful to facilitate these clinical conversations.[15] Athletic trainers are eager to improve their skills and abilities when it comes to patient-centered care, and when provided with infographics for continuing education, they demonstrated their ability to develop their familiarity with SDOH.[11] In addition to their increased knowledge of SDOH, ATs have identified and expressed the need for a focused history script to facilitate more comprehensive history-taking.[9] To achieve this need, a group of researchers used a Delphi panel approach to content validate a 25-item SDOH focused history script for ATs providing care to adolescent patients.[16] The implementation of a focused history script on the SDOH at the educational level is a practical way of increasing the skills and abilities of health professionals in facilitating difficult conversations with secondary school patients.

Acknowledging the gap between what clinicians think they know about SDOH and how they are practicing inclusive, patient-centered health care is the first step in addressing social factors that matter more to patient health and well-being.[11] Therefore, the purpose of this study was to explore athletic training students' skills and abilities to screen for SDOH factors using a focused history script during a

Table 1. Demographics

Demographic Variables	No. (%)	
	Control Cohort (n = 29)	Intervention Cohort (n = 25)
Gender		
Woman	25 (86%)	18 (72%)
Man	4 (14%)	7 (28%)
Prefer not to answer	0 (0%)	0 (0%)
Race		
Black or African American	9 (31%)	5 (20%)
White	16 (55%)	16 (64%)
Multiracial	4 (14%)	4 (16%)
Prefer not to answer	0 (0%)	0 (0%)

standardized patient (SP) encounter. In addition, a secondary aim was to describe the lived experiences of athletic training students after using the focused history script to screen for SDOH factors. This study supports the NATA Research and Education Foundation athletic training research agenda of working toward patient-centered care and improved health outcomes, specifically through health professions education.[17]

METHODS

Study Design

This prospective cohort study included 2 cohorts of master's students from the same professional athletic training program at a large, public university. Following the conclusion of the Fall 2022 semester, the Institutional Review Board at the University of South Carolina deemed the study exempt for a retrospective analysis.

Participants

A total of 54 athletic training students (age = 23 ± 1 years; range = 21 to 26 years) enrolled in the postbaccalaureate athletic training program participated. The learners were allocated into the intervention cohort (second-year athletic training students = 25) and the control cohort (first-year athletic training students = 29). The race and gender of the learners by cohort are presented in Table 1. To mitigate differences in the cohorts, the University of South Carolina standardized the integration of content for the CAATE (Commission on Accreditation of Athletic Training Education) standards relative to the core competencies and diversity, equity, and inclusion (DEI) in the curriculum for both cohorts.[18]

Intervention

During the unit on the SDOH, the same instructor for the control and intervention cohorts implemented an activity to explore screening practices. The intervention for this study was the focused history script.[16] This tool is a checklist or set of guided prompts that are used by a health care professional when evaluating a patient.[16] The focused history script created and validated using a Delphi panel aims to encourage the clinician to ask sensitive questions tactfully and provides the patient with a safe place to discuss difficult topics.[16] The series of questions was focused on the SDOH and validated for use with adolescents during school-based health care services. The focused history script consisted of 24 questions that fell within the 5 SDOH domains.

The intervention for this study allocated the learners into 2 cohorts: the intervention and the control cohorts. The intervention cohort was tasked with using the focused history script as a requirement during an SP encounter, while the control cohort was provided the focused history script but was optional for use. Before the SP encounter, the learners from both cohorts were provided with the focused history script electronically and in print with directions on use, including a tutorial video from the creators of the script. After the tutorial video, the learners were tasked with screening a classmate using the focused history script during class as a role-play scenario. Approximately 4 weeks after the lesson on DEI, SDOH, and inclusive patient care in both courses, the learners engaged in an individual SP encounter to assess their abilities to screen for the SDOH during a patient evaluation. The use of SP encounters in health care education provides a safe and effective way of producing more confident health care providers through opportunities for skill practice, refinement, and evaluation.[19,20]

Standardized Patient Case Development and Training

One mechanism to encourage personal and professional development for health care providers is the use of SP encounters.[21,22] In a systematic review, 22 out of 23 studies showed progress in medical students' history intake and patient interviews after using an educational intervention focused on history-taking and soft skills.[15] Among the different education interventions, using an SP encounter was one of the most important for teaching history intake skills.[19] Research has determined that SP encounters are effective in providing real-life scenarios to train health care providers.[21–24]

To create the SP encounters, the research team and course instructors followed health care simulation standards of best practice, including design, evaluation, facilitation, and debriefing practices.[25,26] The primary investigator created a case that featured a patient who presented to the athletic training facility to be evaluated for a musculoskeletal condition (ie, medial tibial stress syndrome). The patient case was designed to include the chief concern, mental health profile, physical examination findings, and several SDOH factors regarding the patient's environment, social context, and neighborhood. To design the case, we consulted with 3 ATs in the secondary school setting to provide us with deidentified patient care documentation on

real patient cases. The primary investigator and senior investigator, who is a Certified Health Simulation Educator, continued to build the case using the best available evidence on lower-extremity orthopaedic assessment and realistic SDOH factors. It is important to note that the case was developed to have negative SDOH factors built in for the athletic training students to practice their screening assessments; however, we were conscientious to not overload the case with the amount of negative SDOH factors that made the case atypical or unauthentic. The case was then sent to 3 members of the research team who were not affiliated with the institution where the study was being completed. After their feedback, the SP case was sent to 3 additional experts, including a physical therapist with orthopaedic board specialty expertise, a social worker with SDOH expertise, and an AT with DEI expertise. The case is provided as Appendix 1.

Next, the research team hired and trained 3 college students who identified as female/woman to portray a condition consistently. The individuals were compensated for their participation as an actor. They met with the senior author, who has extensive experience with training actors for SP encounters. The training consisted of a review of the case, a demonstration of orthopaedic examinations that may be performed, and a review of the focused history script. The case training occurred 2 weeks before the SP encounters, with follow-up training on the day of the encounters to ensure the consistency of their presentation among the 3 actors. The SP actors provided written feedback to each learner; however, those data are not presented as part of this study.

Instruments

SDOH Evaluation. To measure the learners' abilities to screen for the SDOH, the research team created an evaluation tool based on the SDOH. The tool consisted of 6 questions, including 1 yes/no screening tool use question and 5 items assessing the learner's ability to elicit or record information for each SDOH domain, including health care access and quality, education access and quality, social and community context, economic stability, and neighborhood and built environment. For the 5 SDOH items, the evaluators scored their overall performance during the SP encounter on a 5-point Likert scale (1 = *performed very well*, 2 = *performed but had a weakness*, 3 = *performed but did so incorrectly*, 4 = *did not perform*).

Athletic Training Milestones. To measure the learners' overall performance, we utilized the Athletic Training Milestones.[27] The Athletic Training Milestones are a series of competency-based assessments focused on key areas of clinical practice. The Athletic Training Milestones are a validated measure of the knowledge, skills, and behaviors for athletic training clinical practice.[28] For this study, we extracted 11 subcompetencies from 4 general competencies, including patient care and procedural skills (PC-1, PC-2, PC-3, PC-4, PC-5, and PC-6), medical knowledge (MK-1 and MK-2), interpersonal and communication skills (ICS-1), and systems-based practice (SBP-2 and SBP-3). The learners were evaluated across the competency spectrum from critically deficient through level 3 (ready for unsupervised practice), which resulted in an 8-point Likert scale for each level and scores between levels. We did not score any learner higher than "between level 3 and level 4" as these were professional athletic training students and levels 4 and 5 are considered milestones for advanced practice and expert clinicians.

Postlearning Survey. The postlearning survey was an online 15-item tool comprised of 3 sections, including self-performance evaluation, confidence, and one open-ended reflection prompt. The learner was tasked with self-rating their performance on 9 items, which included aspects such as conducting a thorough orthopaedic examination, providing patient-centered care, and employing evidence-based practice. The self-rating was on a 5-point Likert scale (1 = *poor*, 2 = *below average*, 3 = *average*, 4 = *above average*, 5 = *excellent*). Next, the survey contained 5 slider scales with 1 item for each SDOH domain assessed during the SP encounter. The slider scales asked the learner to rate their confidence from 0 to 100 in performing the SDOH screening per domain. For learners who did not screen for the SDOH domain, a "not applicable" option was provided. Finally, each learner was provided an open-ended text box for them to reflect on their SP encounter. A prompt was provided to guide them in their reflection, which stated:

> *Please describe your experience screening for the social determinants of health. This should include the process of asking questions, finding out the patient's answer/lived experience, and what you did next with that information.*

Procedures

Following the DEI and SDOH curriculum, the 2 cohorts of learners engaged in a live, in-person SP encounter that was digitally recorded using a simulation video capture system. All learners in this study had previous SP encounter experience in the athletic training program and had an opportunity to practice their skills screening for the SDOH, with feedback, during the class. The objective of the scenario was to practice taking a focused, patient-centered history, including the SDOH; assess a patient's musculoskeletal pathology; and discuss their next steps with the patient. Before beginning their assessment of the patient, the learners were briefed on the presenting situation.[22] The learners were provided 20 minutes to complete the individual encounter. The simulation rooms were set up and supplied with materials common to an athletic training facility. Three evaluators who are also members of the research team (K.R.M., N.A.U., Z.K.W.) underwent training on the instruments and then evaluated the learners assigned to their simulation room using the rubrics. The rubrics were hosted in an online survey platform (Qualtrics) for ease of learner evaluation. Following all SP encounters, the learners were required to participate in a large group debrief following the advocacy inquiry model.[29] Finally, each learner was required to complete the postlearning survey after the debriefing session, which served as a personal reflection.

Data Analysis

After all SP encounters were completed, the data were downloaded and extracted from the SDOH evaluation tool and Athletic Training Milestones from the evaluator's online rubrics. In addition, the data from the postlearning survey were downloaded. All quantitative data were then transferred to SPSS (version 28; IBM Inc, Armonk, NY) for analysis. With the data gathered from the SDOH evaluation tool, we performed frequency counts for the numbers of learners who used the focused history script followed by the means and

standard deviations for each SDOH domain overall and by group. For the Athletic Training Milestones, we calculated individual competency scores per milestone as well as the total average score for all 11 subcompetencies for each cohort. We conducted separate Mann-Whitney U tests on the 2 data collection instruments, comparing overall average scores between the 2 cohorts. Finally, we analyzed the postlearning survey data using measures of central tendency for the self-performance ratings and confidence items. We also performed multiple Pearson correlations comparing participant self-confidence and evaluator ratings of SDOH screening by domain to identify if there was a confidence gap. The α level was set at a P value of .05 a priori.

We performed a qualitative analysis for the open-ended response reflection in the postlearning survey. The qualitative analysis followed a phenomenological approach and specifically enlisted the grounded theory.[30] The grounded-theory approach uses thematic analysis, which includes familiarizing oneself with the qualitative data.[30] Themes are then identified and generated from short phrases or codes. Two members of the research team (K.R.M., Z.K.W.) read a selection of 5 postlearning survey responses from each of the 2 cohorts of professional athletic training students and came together to create a codebook of themes. After a codebook was created, checks for accuracy through a cross-analysis and a final consensus preceded the final coded transcripts and codebook. We returned to code all remaining responses. When reviewing the coding, the 2 coders (K.R.M., Z.K.W.) were in full agreement on 53% of the cases, in partial agreement (at least 1 code was the same between the 2 coders) on 47% of the cases, and in full disagreement (all different codes provided by the 2 coders) on 0% of the cases. A third coder (N.A.U.) evaluated the responses in partial agreement (n = 24 responses) to decide the code or codes that they felt best fit the response to break the tie. After all partial-agreement responses were clarified, the research team extracted quotes per cohort per theme to reflect their responses.

RESULTS

SDOH Evaluation

Varied use of the focused history script between the 2 cohorts was identified. The control cohort, which was provided with the focused history script as an optional tool, had only 3 individuals (n = 3/29, 10.3%) use the script. The intervention cohort, which was required to use the focused history script as part of their SP encounter, had 100% implementation (n = 25/25).

When assessing the learners' ability to elicit or record information for each SDOH domain, we identified an overall average of 2.59 ± 1.00 out of 4 on the Likert scale, suggesting that most learners performed the overall SDOH evaluation with weakness or incorrectly. We identified a significant difference (U = 64.000, z = −5.204, $P \leq .001$) in the overall screening for the SDOH, with the intervention cohort required to use the focused history script scoring significantly better (1.82 ± 1.00) than the control cohort that was not required to use the focused history script (3.27 ± 0.64).

Specifically, over 75% of learners from the control cohort did not screen for 3 of the 5 SDOH domains, including health care access and quality (n = 22, 75.9%), education access and quality (n = 23, 79.3%), and economic stability (n = 22, 75.9%). However, 80% or more of the intervention cohort performed the SDOH evaluation very well or with weakness for most of the SDOH domains, including health care access and quality (n = 25, 100%), education access and quality (n = 20, 80%), social and community context (n = 22, 88%), economic stability (n = 21, 84%), and neighborhood and built environment (n = 20, 80%). Table 2 provides a breakdown of the evaluation scoring per cohort per domain.

Athletic Training Milestones

Overall, the learners from both cohorts averaged an Athletic Training Milestone score of 5.0 ± 1.3 out of 8, which is equivalent to a level 2 performance. We identified a significant difference (U = 103.500, z = −4.496, $P \leq .001$) for the Athletic Training Milestone average score, with the intervention cohort scoring significantly higher (mean = 5.92 ± 1.11) than the control cohort (mean = 4.21 ± 0.89). The overall modes on the Athletic Training Milestones for the control cohort were "level 1" for 2 of the 11 milestones, "between levels 1 and 2" for 7 of the 11 milestones, and "level 2" for 2 of the 11 milestones. The intervention cohort had modes of "between levels 2 and 3" for 4 of the 11 milestones and "level 3" for 7 of the 11 milestones. Table 3 provides the frequency count per cohort per milestone.

Postlearning Surveys

Quantitative. Table 4 provides an overview of the learners' confidence scores on the overall SP encounter as well as confidence in screening for the SDOH domains. Both cohorts rated their overall professionalism as high (control cohort = 4.21 ± 0.77, intervention cohort = 4.04 ± 0.73). In addition, the learners from both cohorts rated their performance in using health information technology as the lowest (control cohort = 2.66 ± 0.81, intervention cohort = 2.64 ± 0.81) on the self-evaluation.

Overall, 20 of the 29 members of the control cohort self-reported screening for all 5 SDOH domains (education = 26/29, health care access = 27/29, social = 27/29, economic = 24/29, neighborhood = 23/29), while only 13 of the 25 members of the intervention cohort self-reported screening for all 5 SDOH domains (education = 16/25, health care access = 15/25, social = 22/25, economic = 13/25, neighborhood = 16/25). On the SDOH self-confidence assessment, the control cohort's confidence scores ranged from 65.83 to 72.22 out of 100, with the domain with the highest confidence score being health care access and quality. Interestingly, the intervention cohort rated their confidence as lower, with average scores ranging from 40.63 to 57.33, with the health care access and quality domain being reported as the most confident area addressed.

When exploring the relationship between self-confidence and actual performance for SDOH screening, we identified a confidence gap based on a poor relationship for the domains of health care access and quality (r = .241, $P = .125$), education access and quality (r = .255, $P = .103$), social and community context (r = .171, $P = .241$), and economic stability (r = .283, $P = .089$). The data suggest that there is an incongruence between one's self-confidence in their screening and their actual ability to screen for these SDOH domains. However, we identified a relationship for the domain of neighborhood and built environment (r = .444, $P = .005$), with the average confidence scoring being 57.4 ± 28.0 out of 100 and the

Table 2. SDOH Evaluation by Group

SDOH	Frequency, No., %	
	Control Cohort	Intervention Cohort
Health care access and quality		
Performed very well	3, 10.3%	17, 6.8%
Performed with weakness	4, 13.8%	8, 32.0%
Performed incorrectly	0, 0%	0, 0%
Did not perform	22, 75.9%	0, 0%
Education access and quality		
Performed very well	0, 0%	11, 44.0%
Performed with weakness	3, 10.3%	9, 36.0%
Performed incorrectly	3, 10.3%	0, 0%
Did not perform	23, 79.3%	5, 20.0%
Social and community context		
Performed very well	3, 10.3%	9, 36.0%
Performed with weakness	15, 51.7%	13, 52.0%
Performed incorrectly	2, 6.9%	0, 0%
Did not perform	9, 31.0%	3, 12.0%
Economic stability		
Performed very well	1, 3.4%	8, 32.0%
Performed with weakness	5, 17.2%	13, 52.0%
Performed incorrectly	1, 3.4%	2, 8.0%
Did not perform	22, 75.9%	2, 8.0%
Neighborhood and built environment		
Performed very well	3, 10.3%	10, 40.0%
Performed with weakness	7, 24.1%	10, 40.0%
Performed incorrectly	2, 6.9%	0, 0%
Did not perform	17, 58.6%	5, 20.0%

Abbreviation: SDOH, social determinants of health.

average performance score being 2.6 ± 1.3 out of 4, suggesting that lower confidence aligned with poorer performance.

Qualitative. Data analysis revealed 4 themes for the control cohort and 5 themes for the intervention cohort related to screening for the SDOH during the SP encounter. The themes for the control cohort responses included *superficial screening*, *selective screening*, *unfamiliar screening*, and *no screening*. For *superficial screening*, the learners shared statements about their SDOH screening being broad, vague, and shallow, with only a surface-level or brief screening being completed. For *selective screening*, the learners shared that they screened only for specific SDOH factors or domains such as having a primary care provider, having health insurance, or mode of transportation. For *unfamiliar screening*, the learners stated that they felt awkward or unsure of how to screen for the SDOH and did not want to impose on the patient's privacy by asking SDOH questions. Finally, the *no screening* theme had responses from the learners where they simply stated that they did not screen for SDOH during their evaluation. Table 5 provides extracted quotes from the postlearning survey from athletic training students in the control cohort.

The themes for the intervention cohort responses included *unnatural screening*, *needing additional practice*, *recall of specific SDOH*, *resources provided*, and *script facilitated*. For *unnatural screening*, the learners stated that they felt that using the focused history script made it forced or robotic. For *needing additional practice*, the intervention cohort stated that they needed more time and practice figuring out how to incorporate the screening. For *recall of specific SDOH*, financial and social support systems were noted by the learners as the most common things that they remembered screening about specific to the SDOH domains. For *resources provided*, the learners stated they were most often offering or considering counseling and patient information/education during the SP encounter. Finally, specific to the intervention cohort, they shared responses noting that the *script facilitated* the screening for the SDOH by making it an easier, guided experience. Table 6 provides extracted quotes from the postlearning survey for the intervention cohort.

DISCUSSION

Health care providers need to deliberately screen for SDOH factors as they practice patient-centered care with the goal of mitigating poor health outcomes.[1] Our study aimed to close the gap between what ATs believe that they are performing and what is being practiced through developing future clinicians' skills in facilitating SDOH conversations with secondary school patients.[10] Using a validated focused history script and incorporating it into a carefully developed SP case provided both cohorts a safe environment to acquire the skills necessary to create a comprehensive plan of care based on the SDOH factors identified.[8,16] The results from this study demonstrate the learners' abilities to screen for SDOH using a focused history script, and describing their experiences helped to demonstrate effectiveness.

SP Encounter Performance

When the focused history script was not present during the SP encounter, there was decreased performance in screening

Table 3. Athletic Training Milestone Performance

Milestones	Frequency, No., %	
	Control Cohort	Intervention Cohort
Patient care and procedural skills (PC-1), patient-centered care: responds to each patient's unique characteristics, needs, and goals	Critically deficient = 1, 3.4% Between CD and 1 = 2, 10.3% Level 1 = 4, 13.8% **Between 1 and 2 = 11, 37.9%** Level 2 = 7, 24.1% Between 2 and 3 = 1, 3.4% Level 3 = 2, 6.9% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 1, 4.0% Between 1 and 2 = 2, 8.0% Level 2 = 5, 20.0% **Between 2 and 3 = 11, 44.0%** Level 3 = 5, 20.0% Between 3 and 4 = 1, 4.0%
Patient care and procedural skills (PC-2), patient-centered care: demonstrates humanism and cultural competency	Critically deficient = 0, 0% Between CD and 1 = 5, 17.2% Level 1 = 5, 17.2% Between 1 and 2 = 7, 24.1% **Level 2 = 10, 34.5%** Between 2 and 3 = 2, 6.9% Level 3 = 3, 10.3% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 0, 0% Between 1 and 2 = 2, 8.0% Level 2 = 7, 28.0% Between 2 and 3 = 4, 16.0% **Level 3 = 11, 44.0%** Between 3 and 4 = 1, 4.0%
Patient care and procedural skills (PC-3), diagnosis and management: gathers and synthesizes essential and accurate information to define each patient's clinical problem(s)	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 5, 17.2% **Between 1 and 2 = 10, 34.5%** Level 2 = 9, 31.0% Between 2 and 3 = 4, 13.8% Level 3 = 1, 3.4% Between 3 and 4 = 0, 0%	Critically Deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 1, 4.0% Between 1 and 2 = 3, 12.0% Level 2 = 3, 12.0% Between 2 and 3 = 5, 20.0% **Level 3 = 12, 48.0%** Between 3 and 4 = 1, 4.0%
Patient care and procedural skills (PC-4), diagnosis and management: physical examination (systems-based examination adapted for health condition and contextual factors)	Critically deficient = 1, 3.4% Between CD and 1 = 1, 3.4% Level 1 = 2, 6.9% Between 1 and 2 = 6, 20.7% **Level 2 = 16, 55.2%** Between 2 and 3 = 2, 6.9% Level 3 = 1, 3.4% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 2, 8.0% Between 1 and 2 = 2,8.0% Level 2 = 4, 16.0% Between 2 and 3 = 5, 20.0% **Level 3 = 8, 32.0%** Between 3 and 4 = 4, 16.0%
Patient care and procedural skills (PC-5), diagnosis and management: diagnostic evaluation	Critically deficient = 0, 0% Between CD and 1 = 1, 3.4% Level 1 = 4, 13.8% **Between 1 and 2 = 13, 44.8%** Level 2 = 8, 27.6% Between 2 and 3 = 2, 6.9% Level 3 = 1, 3.4% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 1, 4.0% Level 1 = 2, 8.0% Between 1 and 2 = 1, 4.0% Level 2 = 3, 12.0% Between 2 and 3 = 4, 16.0% **Level 3 = 11, 44.0%** Between 3 and 4 = 3, 12.0%
Patient care and procedural skills (PC-6), diagnosis and management: develops and implements comprehensive management plan for each patient	Critically deficient = 0, 0% Between CD and 1 = 1, 3.4% Level 1 = 5, 17.2% **Between 1 and 2 = 15, 51.7%** Level 2 = 5, 17.2% Between 2 and 3 = 0, 0% Level 3 = 3, 10.3% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 2, 8.0% Between 1 and 2 = 1, 4.0% Level 2 = 2, 8.0% Between 2 and 3 = 7, 28.0% **Level 3 = 12, 48.0%** Between 3 and 4 = 1, 4.0%
Medical knowledge (MK-1): demonstrates medical knowledge of sufficient breadth and depth to practice athletic training	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 7, 24.1% **Between 1 and 2 = 13, 44.8%** Level 2 = 6, 20.7% Between 2 and 3 = 1, 3.4% Level 3 = 2, 6.9% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 0, 0% Between 1 and 2 = 4, 16.0% Level 2 = 2, 8.0% Between 2 and 3 = 7, 28.0% **Level 3 = 11, 44.0%** Between 3 and 4 = 1, 4.0%

Table 3. Continued

Milestones	Frequency, No., %	
	Control Cohort	Intervention Cohort
Medical knowledge (MK-2): knowledge of diagnostic testing and procedures	Critically deficient = 0, 0% Between CD and 1 = 1, 3.4% Level 1 = 5, 17.2% **Between 1 and 2 = 16, 55.2%** Level 2 = 4, 13.8% Between 2 and 3 = 3, 10.3% Level 3 = 0, 0% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 3, 12.0% Between 1 and 2 = 2, 8.0% Level 2 = 2, 8.0% **Between 2 and 3 = 9, 36.0%** Level 3 = 8, 32.0% Between 3 and 4 = 1, 4.0%
Interpersonal and communication skills (ICS-1): communicates effectively with patients and caregivers	Critically deficient = 0, 0% Between CD and 1 = 2, 6.9% Level 1 = 6, 20.7% **Between 1 and 2 = 11, 37.9%** Level 2 = 4, 13.8% Between 2 and 3 = 3, 10.3% Level 3 = 3, 10.3% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 1, 4.0% Between 1 and 2 = 3, 12.0% Level 2 = 3, 12.0% Between 2 and 3 = 5, 12.0% **Level 3 = 13, 52.0%** Between 3 and 4 = 0, 0%
Systems-based practice (SBP-2), patient safety: emphasizes patient safety	Critically deficient = 0, 0% Between CD and 1 = 0, 0% **Level 1 = 10, 34.5%** Between 1 and 2 = 9, 31.0% Level 2 = 6, 20.7% Between 2 and 3 = 3, 10.3% Level 3 = 1, 3.4% Between 3 and 4 = 0, 0%	Critically deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 2, 8.0% Between 1 and 2 = 6, 24.0% Level 2 = 4, 16.0% **Between 2 and 3 = 10, 40.0%** Level 3 = 3, 12.0% Between 3 and 4 = 0, 0%
Systems-based practice (SBP-3), cost-effectiveness: identifies forces that impact the cost of health care and advocates for and practices cost-effective care	Critically Deficient = 0, 0% Between CD and 1 = 7, 24.1% **Level 1 = 13, 44.8%** Between 1 and 2 = 4, 13.8% Level 2 = 4, 13.8% Between 2 and 3 = 1, 3.4% Level 3 = 0, 0% Between 3 and 4 = 0, 0%	Critically Deficient = 0, 0% Between CD and 1 = 0, 0% Level 1 = 0, 0% Between 1 and 2 = 4, 16.0% Level 2 = 3, 12.0% **Between 2 and 3 = 17, 68.0%** Level 3 = 1, 4.0% Between 3 and 4 = 0, 0%

Abbreviation: CD, critically deficient.

Bold indicates most common.

for the SDOH. Learners from the control cohort rarely used the focused history script, and their lack of guided conversation surrounding SDOH was reflected in their evaluation as a large percentage of them did not screen for multiple domains of the SDOH and held lower scores for competency. We found that when the learners from the intervention cohort were required to bring in a copy of the focused history script for the SDOH, learners were more likely to utilize the tool. Having the screening tool present allowed them to have a tangible guide for their conversation, and a large percentage of the learners were able to elicit information from the SP for most of the SDOH domains. Not only was the intervention cohort able to prompt a conversation more easily to gain information about the SDOH, but the cohort also scored higher in competency throughout the evaluation. This could be due to learners from the intervention cohort having more experience in a clinical setting as well as generally having more familiarity with athletic training education. The results from our study confirm a previously documented concern that ATs and other health care providers are unsure of how to implement evaluating determinants of wellness into their athletic training practice and need a screening tool to help them facilitate conversations.[10] Our results also show that using the focused history script is essential to increase the depth of information that ATs are able to gain from their patients during clinical practice and properly address all of the SDOH domains.

Incorporating the use of the focused history script into an SP encounter allowed the learners to be scored on their varied use of the screening tool and their ability to screen for SDOH when conducting a musculoskeletal examination of a secondary school patient while in a risk-free environment.[8] The literature suggests that SP encounters are successful at increasing the comfort levels of learners as they approach conversations with patients regarding SDOH and that increasing their comfort could correlate with clinicians engaging in more SDOH conversations during real patient encounters.[31] In the same way, allowing our learners to practice facilitating an SDOH conversation with a patient using the focused history script gave them the opportunity to increase their exposure to those specific patient encounters and hopefully increase their comfort in the long run.

Postlearning Reflections

Confidence Levels. The confidence of our learners was not aligned with their actual ability to screen for SDOH factors. While there was a false sense of success for participants

Table 4. Postlearning Survey

Survey Question	Mean ± SD	
	Control Cohort	Intervention Cohort
How was your performance at		
Taking a complete history of the patient	3.41 ± 0.50	3.36 ± 0.70
Conducting a thorough orthopaedic examination	3.00 ± 0.71	3.24 ± 0.66
Letting them tell their story, listening carefully, asking thoughtful questions, not interrupting them while they are talking	3.66 ± 0.77	3.40 ± 0.87
Providing patient-centered care	3.76 ± 0.79	3.40 ± 0.71
Providing quality patient education relative to their chief concern	3.52 ± 0.69	3.36 ± 0.95
Employing evidence-based practice	2.83 ± 0.71	2.96 ± 0.73
Using technology and health care informatics	2.66 ± 0.81	2.64 ± 0.81
Describing an interprofessional approach to the plan of care	3.10 ± 0.62	2.76 ± 1.13
Overall professionalism	4.21 ± 0.77	4.04 ± 0.73
During your SP encounter, how confident were you in the following skills		
Addressing education access and quality	67.69 ± 24.05	56.88 ± 26.26
Addressing health care access and quality	72.22 ± 24.05	57.33 ± 30.35
Addressing social and community context	69.26 ± 27.86	54.09 ± 26.31
Addressing economic stability	65.83 ± 26.69	43.08 ± 28.69
Addressing neighborhood and built environment	69.13 ± 24.10	40.63 ± 24.89

Abbreviation: SP, standardized patient.

in both cohorts, the control cohort demonstrated a high perception of success and low SDOH evaluation scores. Even though the control cohort received lower scores when it came to SDOH screening, a high percentage rated themselves as having a high level of confidence in screening all 5 SDOH domains. This finding is consistent with previous literature in that the evaluators screened the performance of an SP encounter differently than the learners.[32] Educators tend to score learners lower than they do themselves, which illustrates the need for different forms of feedback to encourage change in clinical practice.[32] The literature has also explored the relationship between perceived and actual knowledge where providing ATs with an actual knowledge assessment and performance feedback can facilitate learners to recognize their need to develop new knowledge.[33] There is a need for feedback not just from the SP actor but also specifically from the evaluator.[33] While feedback from the evaluator might not change the learner's perception of their knowledge, it is necessary to encourage the learner to seek out new knowledge.[33] Based on established educational techniques, our SP encounter debrief provided an opportunity for learners and the clinical instructor to dialog on the learners' use of the focused history script and provided insight into how the use of the screening tool could influence future patient encounters.[34,35]

Qualitative Themes. Both cohorts reported that using the focused history script or attempting to consciously screen for SDOH factors was unfamiliar territory, unnatural, and seemingly out of place during a musculoskeletal examination. Participants felt uncomfortable with asking sensitive questions when they were interacting with a new patient. Athletic trainers are often the only health care providers that secondary school patients see and therefore are some of the best-suited providers in the secondary school patients' lives who will be asking these questions.[6,12,36]

Similar to the learners in this study, other health care professionals screening for SDOH while interacting with an SP for the first time have stated that establishing trust complements asking sensitive questions.[8] Approaching sensitive topics seemed inappropriate to our learners, and there was a question as to whether there was a connection between the musculoskeletal examination and screening for SDOH. Nurse practitioner trainees realized that asking direct questions, even though they were uncomfortable with the delicate nature of the topic, was the best way to elicit information while screening for SDOH.[8] The health care provider's desire to be genuine and continue to focus on the reason for the patient's visit was something that needed to be balanced with screening for SDOH factors.[8] Similar to the participants, the goal was to screen for the SDOH factors and not appear as though they were going through a checklist, which is how many of the learners in our study felt while using the focused history script. We know that a comprehensive plan of care includes addressing needs beyond physical health.[10] Without a guide for additional screening questions, providers may forget essential components for evaluating SDOH. We saw the inability of learners to recall important questions, demonstrating the need for the focused history script to guide them into deeper conversations.

A key finding from the control cohort was that the learners reported that either they asked only the questions that they could recall from the focused history script, mostly brief and superficial questions, or they entirely forgot to screen for SDOH factors. When they did screen for SDOH, they felt most confident asking questions that focused on health care access and quality. Questions from this domain focused on asking the patient if they had a primary care provider and health insurance, two questions that are seemingly easy to ask and require little trust and patient-provider familiarity. The outcomes of the study suggest that ATs (or students) need additional practice implementing the focused history script, including using a physical script with a patient to reduce challenges with memorization and practice using validated wording to promote open-ended responses. It is imperative that before the focused history script is implemented, the health care provider is prepared to pair the responses from the patient with resources and, potentially, the

Table 5. Selected Quotes From the Control Cohort Self-Reflections

Theme	Supporting Quotes
Selective screening	• *The only social determinant of health I asked about is transportation.* • *I was confident asking about social support. I used this information to assess if she would be at risk of negative thoughts/attitudes about getting through the injury. I asked if she had been seen before by a health care provider but did not dive into health care access.* • *I just asked about how her home life was and she said she felt safe. I could have asked more question about the environment and access to health care.* • *I did not ask many of the questions that I could have to determine the social determinants of the health of this patient. I asked about the injury—seeing the [mechanism of injury] and pain levels. Then I went on to ask about their family, their support system, and how it was affecting their life. However, I did not ask about economic stability, their housing situation, or the factors in their life that are being impacted by their injury. I did not find out enough information I could have to create a well-rounded picture of this patient. I determined a diagnosis and forgot all the questions I could have asked that would have helped me screen for the social determinants of health. I did not gather that much information to create a well-rounded treatment to be able to help her.*
Unfamiliar screening	• *Once I got in there, I forgot a lot of the questions I wanted to ask the patient. Next time, I am going to write some key points on my paper that I want to ask.* • *I feel I could have done a better job of completing the social determinants of health and screening for certain areas. I could have used the form provided to us for social determinants of health.* • *I didn't know how to ask the patients more social determinants of health questions without it sounding like I'm interviewing them.* • *Screening for social determinants of health was uncomfortable for me. I did not know how to approach it with a high school-age student and what would be appropriate to ask them.* • *I went in with all my questions I planned to ask that are about social determinants of health, but I did end up forgetting about them. I am definitely not used to asking those questions in an eval so they were pushed to the back of my mind. When I did remember to ask some I just felt like the patient is thinking, "Why are [they asking this] . . . my shin hurts." So I struggle with trying to put them into a conversational aspect so it does not seem random or like an interview.*
Superficial screening	• *I honestly did not go into depth for the social determinants of health; I only really asked about her support system at home. I asked about her relationship with her father and her relationships with her friend group.* • *I did not really go in-depth on them. I asked a couple of very shallow questions like if she had siblings and about mom or dad. I did not really dive deep into the social determinants of health.* • *I tried not to make it too surface level but I still could've asked more.* • *I asked limited broad questions so there is much room for improvement.*
No screening	• *Unfortunately, I failed at screening for the social determinants of health. This is one thing I need to continue to work on.* • *I did not ask any specific questions in regard to the patient's social determinants of health. I couldn't figure out the perfect way to segue into those questions without it being awkward. I'll work on doing a better job of that for next time!* • *I forgot to do [social determinants of health question]. As I was leaving my encounter, I remembered that I had forgotten to ask my patient about these.*

activation of recognition and referral pathways.[16] Each patient has unique needs, and equitable resources will look different for everyone. After the learners recalled SDOH factors from their conversations with the patient, the appropriate response was to connect the patient with the necessary resources. For ATs in the secondary school setting, finding the right resources means exploring the community in which they serve to see what is already organically available to the patient.

Implementations and Recommendations. One challenge the AT students experienced was navigating the timing and incorporation of the focused history script into their examination. There were differences in when some learners implemented the focused history script, either at the beginning of the evaluation, somewhere in the middle, or toward the end. Clinicians need to practice implementing a focused script to identify the best timing for implementation that allows the provider and patient to build trust. The health care

Table 6. Selected Quotes From the Intervention Cohort Self-Reflections

Theme	Supporting Quotes
Resources provided	• *Because I was able to get that information from her, it allowed me to offer her resources to help with the grief that she is going through.* • *I felt comfortable using the social determinants of health questionnaire with my patient. It helped guide my conversation with her to get to know her better and led me to find out about her mom passing away. This helped guide my treatment plan to refer her to a counselor, which she was on board with.* • *I do think that [the script] helped when it came to determining the care of action. I do think it was a little difficult to talk the mental health because I was trying to get the orthopaedic injury while trying to focus on the patient as a whole. Once I noticed some red flags with some mental health symptoms, it helped me create a plan of action.*
Unnatural screening	• *It felt kind of unnatural at first just randomly asking them these questions, especially when you do not know the patient. I feel that these are things that you find out over time.* • *I found it difficult to be organic while asking those questions.* • *I feel I was a little robotic and asked just questions directly off of the sheet. I almost feel more comfortable to ask my own questions instead of using the sheet and think it would be more personal for the patient.*
Script facilitated	• *I think that my experience really showed me the value of using something like the script.* • *I really relied on the focused history script to guide me through the questions I needed to ask about social determinants of health. I think I could have done an okay job without it, but it was much easier to focus on the patient's responses instead of thinking of the next question to ask.* • *I used the script to ask questions, but I made sure to ensure the patient that the answers were confidential and if she did not feel comfortable answering, she did not have to. Navigating through the script, when we came across answers that were "negative" or would have a direct impact on her experience with her current injury, I would ask deeper questions about that topic to help understand more about her and her experience.*
Recall of specific SDOH	• *I asked about where they lived and if they felt safe going out to run in grassy areas nearby to take the stress off their legs. I also asked about insurance and if they wanted to loop their dad into what was going on, which changed my decision on whom to go for as a resource first: the counselor instead of a therapist or psychiatrist because they did not want to talk to their dad yet.* • *Had I not asked some of those questions, I probably would not have found out that her mom had recently passed away and that she felt that she was isolated from friends and family.* • *I feel like [I asked] certain questions related to health care access and quality, but finding the flow was difficult when it came to asking about education and safety.*
Needing additional practice	• *Once I started asking the questions, though, I started to feel a lot of anxiety within myself, which shows that I need more time practicing just asking others those questions so that I am calm and not giving off any nervous energy either.* • *Taking the social determinants of health felt a bit challenging. The process of choosing the right questions to probe for answers that I would find useful felt slightly scattered. The patient did not seem to have many detrimental determinants that debilitated her well-being; therefore, I stuck around asking questions I felt were reasonable to provide care for her condition (medial tibial stress syndrome). I enjoyed getting a feel for approaching focused history, although I feel like there is more improvement to make.* • *I think I did a decent job of trying to incorporate the social determinants of health questions into the conversations as naturally as possible, though it definitely was more awkward still than I had hoped. This should come with practice.*

Abbreviation: SDOH, social determinants of health.

provider should prepare ahead of time for the flow of the evaluation, allowing for adjustments and open-ended responses that require follow-up with resources.[11] Learners who used the focused history script felt that navigating the evaluation using the tool allowed for better control and time management.

In other areas of AT clinical practice, this focused script could be implemented in a physician's practice setting where it complements a primary care provider's general wellness examination. For ATs, using the focused history script in a private room for discussion versus an open-air athletic training facility conversation setting could create a better opportunity for patient confidentiality and privacy. Likened to how a SCAT-5 evaluation can be used as a baseline before traumatic brain injury and then postinjury, the focused history script could be implemented at the time of preparticipation examinations and then used later on when evaluations occur.

Limitations and Future Research

One limitation is the learner population. The learners were all from one athletic training program. The control cohort in the study was first-year athletic training students, and the intervention cohort was second-year athletic training students. The confidence and comfort in evaluation strategies for second-year athletic training students may have impacted the results; however, all students were exposed to the same curriculum and access to the SDOH script and implementation video and received in-class practice. The process highlights that while we may teach about topics in class, athletic training students, even when uncomfortable and lacking experience, may not self-select a script or assessment aide like the focused history script. Future research should consider mixing the levels of learners in the control and intervention cohorts to see if the level of comfort in the evaluation process impacted the findings.

The data from one homogeneous sample at one institution may not be true of other athletic training programs due to differences in teaching and learning opportunities. Based on the data from the intervention cohort, we suggest that future research be conducted with additional populations, including professional athletic training students at the same level at other institutions, postprofessional ATs, and practicing clinicians.

Furthermore, we suggest performing a longitudinal study that monitors cohorts throughout their program, requires the use of the focused history script at the beginning of their coursework, teaches and reviews the use of inpatient encounters, and repeats an SP encounter later in the program, not requiring the use of the focused history script. This would allow researchers to see if the learners would voluntarily use the focused history script after having been previously required in the initial SP encounter. It is also essential that we continue to move learning from simulation to real-time patient encounters during clinical education. We suggest that athletic training educators incorporate the focused history script into preceptor training or clinical education orientation for the modeling of SDOH screening by other ATs during clinical practice.

CONCLUSIONS

Our study identified that the implementation of a focused history script was useful in facilitating screening for SDOH factors. In addition, the use of an SP encounter to practice SDOH screenings can serve as a valuable educational tool to practice these skills before real patient encounters. When students were not required to use the focused history script to screen for the SDOH, most athletic training students failed to elicit information about the SDOH factors or performed poorly during the screening. Improving screening for SDOH factors in athletic training requires identifying the inevitable discomfort of asking sensitive questions to patients who have not yet had the chance to build trust with a health care provider. However, we identified that the intervention cohort, which scored higher on the Athletic Training Milestones than the control cohort, still self-rated their performance as lower on the reflection. This suggests that educators need to incorporate additional practice and SP encounters focused on the SDOH throughout the program and clinical education to improve performance and self-confidence.

ACKNOWLEDGMENTS

This study was fully funded by the National Athletic Trainers' Association Research & Education Foundation (Grant #2122MGP01).

REFERENCES

1. Picha KJ, Welch Bacon CE, Normore C, Snyder Valier AR. Social determinants of health: considerations for athletic health care. *J Athl Train*. 2022;57(6):521–531.
2. Braveman P, Gottlieb L. The social determinants of health: it's time to consider the causes of the causes. *Public Health Rep*. 2014;129(suppl 2):19–31.
3. Newman L, Baum F, Javanparast S, O'Rourke K, Carlon L. Addressing social determinants of health inequities through settings: a rapid review. *Health Promot Int*. 2015;30:ii126–ii143.
4. Hood CM, Gennuso KP, Swain GR, Catlin BB. County health rankings: relationships between determinant factors and health outcomes. *Am J Prev Med*. 2016;50(2):129–135.
5. Braveman PA, Cubbin C, Egerter S, Williams DR, Pamuk E. Socioeconomic disparities in health in the United States: what the patterns tell us. *Am J Public Health*. 2010;100(S1):S186–S196.
6. Harris NA, Odai ML. The role of Title 1 secondary school athletic trainers in the primary and patient-centered care of low socioeconomic adolescents. *Int J Environ Res Public Health*. 2023;20(7):5411.
7. Embrett M, Randall G. Social determinants of health and health equity policy research: exploring the use, misuse, and nonuse of policy analysis theory. *Soc Sci Med*. 2014;108C:147–155.
8. Sisler SM, Schapiro NA, Stephan L, Mejia J, Wallace AS. Consider the root of the problem: increasing trainee skills at assessing and addressing social determinants of health. *Transl Behav Med*. 2019;9(3):523–532.
9. Drescher MJ, Winkelmann ZK, Downs KC, Charles-Liscombe BC, Eberman LE. Incorporating the social determinants of health in healthcare delivery among secondary school athletic trainers. *J Athl Train*. 2021;56(6s):S-209.
10. Winkelmann ZK, Games KE, Rivera MJ, Neil ER, Eberman LE. Athletic trainers' knowledge and practice application of public health topics. *Athl Train Educ J*. 2020;15(4):308–320.
11. Winkelmann ZK, Downs KC, Charles-Liscombe R, Eberman LE. Continuing professional development using infographics

improves the familiarity of the social determinants of health. *Athl Train Educ J*. 2022;17(4):283–292.

12. Todaro BA, Nikander JL, Powden CJ, Eberman LE. Understanding the role of secondary school nurses and their collaboration with athletic trainers. *J Interprof Educ Pract*. 2018;10:30–36.
13. Winkelmann ZK, Uriegas NA, Mensch JM, Montgomery CE, Torres-McGehee TM. Practices and perceptions of family-centered care: a cross-sectional survey of secondary school athletic trainers. *Int J Environ Res Public Health*. 2023;20(6):4942.
14. Sokol RL, Clift J, Martínez JJ, Goodwin B, Rusnak C, Garza L. Concordance in adolescent and caregiver report of social determinants of health. *Am J Prev Med*. 2022;63(5):708–716.
15. Keifenheim KE, Teufel M, Ip J, et al. Teaching history taking to medical students: a systematic review. *BMC Med Educ*. 2015;15:159.
16. Giorgi E, Drescher M, Winkelmann Z, Eberman L. Validation of a script to facilitate social determinant of health conversations with adolescent patients. *Int J Environ Res Public Health*. 2022;19(22):14810.
17. Eberman LE, Walker SE, Floyd RT, et al. The prioritized research agenda for the athletic training profession: a report from the Strategic Alliance Research Agenda Task Force. *J Athl Train*. 2019;54(3):237–244.
18. Statement on developing new accreditation standards regarding diversity, equity, inclusion, and social justice. Commission on Accreditation of Athletic Training Education. Accessed March 26, 2023. https://caate.net/DEI#Statement
19. Armstrong KJ, Jarriel AJ. Standardized patient encounters improved athletic training students' confidence in clinical evaluations. *Athl Train Educ J*. 2015;10(2):113–121.
20. Armstrong KJ, Jarriel AJ. Standardized patients provide a reliable assessment of athletic training students' clinical skills. *Athl Train Educ J*. 2016;11(2):88–94.
21. Armstrong KJ, Jarriel AJ, Hardin BM. The longitudinal impact of standardized patient encounters during professional education on athletic training professional practice. *Athl Train Educ J*. 2021;16(3):169–177.
22. Sims-Koenig KN, Walker SE, Winkelmann ZK, Bush JM, Eberman LE. Translation of standardized patient encounter performance and reflection to clinical practice. *Athl Train Educ J*. 2019;14(2):117–127.
23. Walker SE, Weidner TG, Thrasher AB. Small-group standardized patient encounter improves athletic training students' psychosocial intervention and referral skills. *Athl Train Educ J*. 2016;11(1):38–44.
24. Walker SE, Weidner TG. The use of standardized patients in athletic training education. *Athl Train Educ J*. 2010;5(2):87–89.
25. Decker S, Alinier G, Crawford SB, Gordon RM, Jenkins D, Wilson C. Healthcare simulation standards of best practice: the debriefing process. *Clin Simul*. 2021;58:27–32.
26. Lewis KL, Bohnert CA, Gammon WL, et al. The Association of Standardized Patient Educators (ASPE) standards of best practice (SOBP). *Adv Simul (Lond)*. 2017;2(1):10.
27. Sauers EL, Laursen RM, Pecha FQ, Walusz H. Athletic training milestones. Athletic Training Milestones Project. Accessed March 26, 2023. https://www.atmilestones.com/
28. Welch Bacon CE, Anderson BE, Cavallario JM, Van Lunen BL, Eberman LE. Content validation of the athletic training milestones: a report from the AATE research network. *J Athl Train*. 2023;58(5):483–487.
29. Rudolph JW, Simon R, Rivard P, Dufresne RL, Raemer DB. Debriefing with good judgment: combining rigorous feedback with genuine inquiry. *Anesthesiol Clin*. 2007;25(2):361–376.
30. Chapman AL, Hadfield M, Chapman CJ. Qualitative research in healthcare: an introduction to grounded theory using thematic analysis. *J R Coll Physicians Edinb*. 2015;45(3):201–205.
31. Morrison JM, Marsicek SM, Hopkins AM, Dudas RA, Collins KR. Using simulation to increase resident comfort discussing social determinants of health. *BMC Med Educ*. 2021;21(1):601.
32. Rivera MJ, Winkelmann ZK, Eberman LE. Athletic Training Educators' Conference, February 15–17, 2019, Grapevine, TX. *Athl Train Educ J*. 2018;13(4):377–391.
33. Eberman LE, Tripp BL. Effect of performance feedback on perceived knowledge and likelihood to pursue continuing education. *Athl Train Educ J*. 2011;6(2):69–75.
34. Burton CA, Winkelmann ZK, Eberman LE. Advancement of athletic training clinical education through preceptor-led instructional strategies. *Athl Train Educ J*. 2019;14(3):223–232.
35. Jaye P, Thomas L, Reedy G. 'The Diamond': a structure for simulation debrief. *Clin Teach*. 2015;12(3):171–175.
36. Barter EW, Rivera MJ, Post EG, Games KE, Eberman LE. Differences in access to athletic trainers in public secondary schools based on socioeconomic status. *J Athl Train*. 2023;58(2):91–96.

Appendix. Standardized Patient Case

Case Name:	Jordan
Gender, pronouns, age and race	Woman (she/her/hers), 18 years old
Chief Concern:	Bilateral shin pain
Key Objectives	To examine and diagnose a patient with a musculoskeletal (MSK) condition, while screening for social determinants of health (SDOH) that influence patient health outcomes.
Appearance:	• Patient walks in with no limp but carries herself timidly. • She has older, worn-out running shoes. • She has clean clothes on, but her hair is unkempt. • She looks exhausted and sleep deprived. • She has never had any issues with shin pain, only a grade 1 lateral ankle sprain in middle school while playing club soccer. Her pain started two weeks ago, and since she has not seen any improvement, she decided to schedule an appointment with athletic training services at her school.
Mental Health Profile:	• Patient showing signs of grief and anxiety (leg shaking, tearful with seemingly simple annoyances). • Patient has not experienced any issues with depression or anxiety before her mother's death, but since that incident, she has felt that most of time, she feels a heaviness that she cannot shake off. • The school offered the use of a grief counselor initially when her mother passed away, but she did not "have time" for it. Her father "pushed through it" so she thought she could push through, as well, due to the stigma from her father. • Her school did not follow up with her after six months of the death occurring. • She bounces her right leg up and down while describing her condition, and when asked about her mental health, she seems on the verge of tears. No one in her social circle asks her personal questions like these. • Someone advocating for her health since her father is busy with work and is still grieving the loss of his wife would make her feel cared for.
Opening Statement and Chief Concern	*"My shins ache whenever I start running. I thought it would go away, but it has not. Can you help?"*
Past Medical History:	• Her shins have not hurt before when running. • She has only sprained her right ankle in middle school while playing club soccer.
Social Determinants of Health:	Education Access and Quality • Both of her parents obtained college degrees. Her goal is to go to college after high school. She is more likely to go to college if she gets a scholarship to run at the next level. Her father has the means to pay for her education but would like her to put in effort in response. The need to keep up her grades to retain her scholarship would be her motivation. She is mostly an A/B student, but the past year her grades went down temporarily due to her mother's passing. • Language does not influence her interactions at school or with those she needs support from. Healthcare Access and Quality • She has health insurance and fairly good access to her PCP. She can discuss her health with her PCP without issues and with no language barrier. She goes annually for check-ups, but she did not go to this past year's appointment because it was around the time of her mother's death. She got a physical from a free physical day at her school during the end of the spring semester. She typically walks into the local urgent care if she is sick because she finds it easier than scheduling an appointment with her PCP. • She is not familiar with medical terminology and can overwhelm her if not explained in plain language. • She is familiar with the athletic training services at her high school and knows how to schedule an appointment for an evaluation with

Appendix. Continued

the athletic trainer. She knows she can access her athletic trainer during practices and at home/away meets at no cost compared to scheduling an appointment or walking into an urgent care or PCP. It is also close in proximity (within the high school), during hours she does not have school, and it does not require her father to be there.
- Her principal gave her a pamphlet for a grief counselor on site at the school when he heard about her mother's passing. She went to counseling for 3 months.
- Her father's house has clean running water, and they have access to nutritious food.

Neighborhood and Built Environment
- She has her driver's license and a small compact car. She can drive herself to her appointment if needed.
- The neighborhood she lives in is more urban and has had one break-in since she has lived there because someone left their garage door open all day. Overall, she feels safe in their neighborhood.
- She lives in a 2-bedroom, 2-bathroom house in a suburban neighborhood.
- She lives with her father and has no siblings or pets.
- They had a mold issue in the basement that was resolved a couple of years ago.
- She does not have any concern of being evicted or becoming unhoused.
- Her house is across the street from a park that her cross-country team sometimes runs at, so she can walk to it.
- She attends a mid-size, public 9-12 high school (approximately 2000 students).
- She used to take the bus to school, but now she drives.
- She has a sidewalk in her neighborhood and a safe way to cross the street to access the park with several soccer fields in it. Every house in her neighborhood has some kind of grass yard in it.
- She has never experienced any form of abuse in her home, and none of her family members have been arrested, if asked.

Economic Stability
- Her socioeconomic status is middle class (she is well off financially, has good access to food, has access to physicians if she needs them), but she does not want to bother her father with her personal issues since he seems stressed and withdrawn most of the time.
- She is not employed.
- She is not concerned about debt or medical bills.
- She does not have any concern about her father not being able to pay their monthly bills or having enough money for clothes or food.
- Her mother had a life insurance policy that helped pay for the funeral and burial expenses. They are adjusting to life with one income, but no concerns at this time.

Social and Community Context
- She is an only child and tends to have to figure things out by herself. She has an uncle (father's brother; divorced) and cousin (father's child) who live within the state within a 1 hr. drive.
- She has run for two years and is entering her third cross country season. Running is a way for her to get away from her problems and stress.
- Her mother passed away about a year ago from a vehicular accident. Her father is still grieving the loss of his wife, which has caused a lot of strain on her relationship with him. Paternal depression is present, but undiagnosed. He cares about her, but

Appendix. Continued

	he has begun to not only neglect her emotional needs, but also some of her physical needs. • Her relationship with her father is good, but he has been somewhat distant since the loss of his wife, her mother. • Her family is Jewish, and she occasionally goes to synagogue. She has not been discriminated against for her spirituality. • She wanted to try playing basketball last year, but it was during track season. It was not due to cost or transportation, but scheduling. • She has felt lonely and isolated from some of her friends this past year because a lot of them do not seem to know how to relate to someone who has lost a parent, but she has not felt discriminated against. • She has a couple good friends, but some of her acquaintances have not been as close recently, possibly due to her losing her mother. A social support system is present in her life but strained. • Her neighbors are fine, but none of them really talk at a deep level. They all used to be close when they were kids and played at each other's' houses, but now they are all in high school and busy. • Her teachers have been supportive of her, and her track and cross-country coaches, specifically Coach Jones, know that she has been through a lot in the past year. They are more compassionate than they are actively supportive, but it is to be expected since the team is large. • Her English teacher suggested keeping a journal of her emotions that she writes in each day after class. • She has not accessed the AT for more than an ice bag or two before this injury.
Family Medical History:	No pertinent family medical history. Her mother was in good health when she abruptly passed away during a tragic motor vehicle accident.
History of Present Condition:	Patient has had bilateral tibial pain on and off for two weeks. She has never had her shins hurt while running. No known inciting event or treatments to date.
Physical Exam Findings:	Inspection • Negative for discoloration/bruising, swelling, or deformity. • Excessive navicular drop (>10 mm; high arches) Palpation • Tenderness to palpation: Distal 2/3 of posteromedial lower leg (greater than 5 cm of pain) • Reported pain: Bilateral Posterior Tibialis Range of Motion: • ROM for Ankle Dorsiflexion, Inversion, and Eversion is WNL • ROM for Hip and Knee (all movements) are WNL • Excessive plantarflexion – 50° • Pain of a 4/10 on the NPRS with AROM Eversion, RROM Inversion and Plantarflexion Manual Muscle Test(s) • Tibialis Anterior - 5/5 • Tibialis Posterior - 4/5 • Soleus - 4/5 • Gastrocnemius - 5/5 • Calf raise is painful (4/10 on the NPRS) ○ Pain is located on the anterior, distal 2/3rd of the tibia Selective Tests: • Shin Palpation Test – positive (*Test should be used for MTSS*) • Tuning Fork Tests – negative (*Test should be used for fracture assessment)* • Squeeze Test – negative but hurts if squeeze distal 2/3 of tibia (*Test should be used for syndesmotic ankle sprain*)

Appendix. Continued

	• Bump Test - negative (*Test has no diagnostic accuracy*) Neurological testing • Lower Quarter Screen - WNL • Deep Tendon Reflexes - WNL Pain Assessment • Pain is a 7/10 with running after 5-7 minutes • Pain is a 2/10 with rest, but does not experience night pain • Has not taken anything for the pain Diagnostic Imaging or Lab tests • Refer for radiographs if pain persists with no change or worsening of symptoms Patient-Reported Outcomes: PHQ-9: Score of 10 indicating moderate depression severity LEFS: 58/80 which is 72.5%; moderate disability; the lower the score the greater the disability MTSS Score – 5; ranges from 0-10; delay running if above 4
Training and Nutrition Regimen:	• Started running two years ago and averages between 30-40 miles a week in the off season and 40-50 during the season. • Did not train during this past summer • Eats about two meals a day (lunch and dinner) • She has poor eating habits due to the lack of prepared meals. Unable to run more than 1 mile, solely due to pain returning. She is in good cardiovascular shape, and she has not experienced any palpitations, chest tightness, or asthmatic symptoms.
Differential Diagnosis:	Bilateral medial tibial stress syndrome, tibial stress response, tibial fracture, bone cancer, syndesmotic ankle sprain, compartment syndrome
Special Instructions:	• She should consider her running surfaces (where she trains), her training regime (how often she trains), and her shoe wear (what she trains in). • She should follow-up with the athletic trainer to discuss healthy eating and easy to prepare meals for breakfast, lunch, and dinner. She recognizes her religion (Judaism) may influence her dietary practices. • She should be referred to Mental Health Services for counseling because of her signs of depression. She could re-start her sessions with the grief counselor she saw before or could see a community/private provider.
Designed for:	Athletic training students
Case Author:	Kaitlynn Moll, SCAT, ATC - May 2022 *Primary Investigator*
Case Reviewers:	Zachary Winkelmann PhD, ATC – July 2022 *Research Chair* Jessica Edler Nye PhD, ATC – August 2022 *Research Team* Kelsey Picha PhD, ATC – August 2022 *Research Team* Lindsey Eberman PhD, ATC – August 2022 *Research Team* Jeremy Houser PT, PhD – August 2022 *Orthopedic Expert* Rebecca Christopher LMSW – August 2022 *SDOH Expert* Nancy Uriegas MS, ATC – August 2022 *DEI Expert*
Date of Case Development & Revision	Final Revision: 8/19/2022 Peer Revision: 7/26/2022 Initial: 5/31/2022