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ORIGINAL RESEARCH

Athletic Training Student Core Competency Professional Behavior Implementation Between Immersive and Non-immersive Clinical Experiences: A Report From the Association for Athletic Training Education (AATE) Research Network

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Context: The Commission on Accreditation of Athletic Training Education requires athletic training programs to emphasize the use of professional behaviors that are associated with 6 core competencies, 5 of which were measured in this study: patient-centered care, interprofessional education and collaborative practice (IPECP), evidence-based practice (EBP), health information technology (HIT), and quality improvement (QI). The purpose of this study was to examine the association between clinical experience type and student implementation of behaviors associated with the core competencies.

Design: Multisite, panel design.

Setting: Twelve professional athletic training programs (7 graduate, 5 undergraduate).

Patients or Other Participants: A total of 338 athletic training students logged patient encounters for 1 academic year in the E*Value system.

Main Outcome Measure(s): Students reported clinical experience type (immersive versus nonimmersive) and implementation of behaviors associated with core competencies. Counts of professional behaviors were calculated, and differences in behavior implementation between immersive (ICEs) and non-immersive (N-ICEs) clinical experiences were assessed using a generalized estimating-equations approach for patient-centered care, IPECP, EBP, HIT, and QI behaviors ($P < .05$).

Results: Students implemented more behaviors associated with IPECP ($P = .002$), EBP ($P = .002$), and HIT ($P = .042$) during ICEs than N-ICEs. Students implemented the QI behavior more often during N-ICEs than during ICEs ($P = .001$). Patient-centered care behavior did not differ between clinical experience types.

Conclusions: Immersive clinical experiences facilitate increased implementation of behaviors associated with EBP, IPECP, and HIT, while N-ICEs offered increased opportunities for QI behaviors. Program administrators should consider placement of ICEs and N-ICEs in the curriculum that align with students' capability to perform core competency behaviors. Preceptors of both ICEs and N-ICEs should be encouraged to provide students with opportunities to implement all core competencies during their clinical experience.

Key Words: clinical education, quality improvement, health information technology

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Athletic Training Student Core Competency Professional Behavior Implementation Between Immersive and Non-immersive Clinical Experiences: A Report From the Association for Athletic Training Education (AATE) Research Network

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KEY POINTS

- Students implemented significantly more behaviors associated with interprofessional education and collaborative practice, evidence-based practice, and health information technology during immersive clinical experiences than nonimmersive experiences.
- Regardless of experience type, program administrators should establish specific objectives to promote student implementation of behaviors associated with core competencies.
- Athletic training program administrators should advise preceptors about objectives related to student implementation of core competency behaviors during both immersive and nonimmersive clinical experiences and prepare preceptors for how to make a conscious effort to include and instruct on them during patient interactions.

INTRODUCTION

In June 2002, the Committee on the Health Professions Education Summit was formed as an interdisciplinary response to the Institute of Medicine's Quality Chasm report, which detailed the ways that health professions education programs are not adequately preparing students to manage the changes in patient populations or demands for clinical advancement seen at the turn of the 21st century.[1] Six core competencies were developed to improve the quality of health professions education, including evidence-based practice (EBP), interprofessional education and collaborative practice (IPECP), patient-centered care (PCC), health information technology (HIT), professionalism, and quality improvement (QI).[1] With this summit, members of the committee hoped to encourage interprofessional student engagement by instituting the 5 competencies across disciplines as well as enhancing oversight and accreditation to increase the quality of patient care provided by clinicians from all health professions.[1] The Commission on Accreditation of Athletic Training Education (CAATE) has required all of these competencies in professional-level athletic training programs since fall 2020.[2] Athletic training education will now include instruction specifically on these competencies, in part through emphasizing student use of professional behaviors.

Clinical education experiences serve as a vital tool for athletic training programs by affording students opportunities for skill development, professional socialization, and role awareness.[3,4] The ability to have realistic and meaningful clinical experiences can advance students' dedication to the profession and ability to identify the practice setting that best suits their strengths and goals.[3,4] Clinical experiences also provide students with opportunities for preceptor and peer mentorship, which has been identified as an influential factor in successful transition to practice among athletic trainers.[3,5] The importance of clinical education in athletic training is multifaceted, and program administrators should consider the ways in which they use experiences to foster students' use of behaviors associated with the core competencies.

One avenue for students to better engage in core-competency-associated professional behaviors may be through the use of immersive clinical experiences (ICEs). Since fall 2020, all professional master's athletic training programs have been required to implement at least 1 ICE in their curricula, which involves students spending at least 4 weeks at a clinical site under the supervision of an athletic trainer.[2] Since ICEs theoretically allow students to attend clinical during times of the day that otherwise would be spent in class, it is anticipated that students may gain opportunities to practice skills with more meaningful patient encounters (PEs) that occur earlier in the day before prepractice or competition preparations begin. These experiences are also intended to provide students with more accurate depictions of full-time athletic training practice, including administrative and other organizational responsibilities.[6] By serving as a more realistic representation of the profession for students, ICEs may positively influence successful transition to practice.

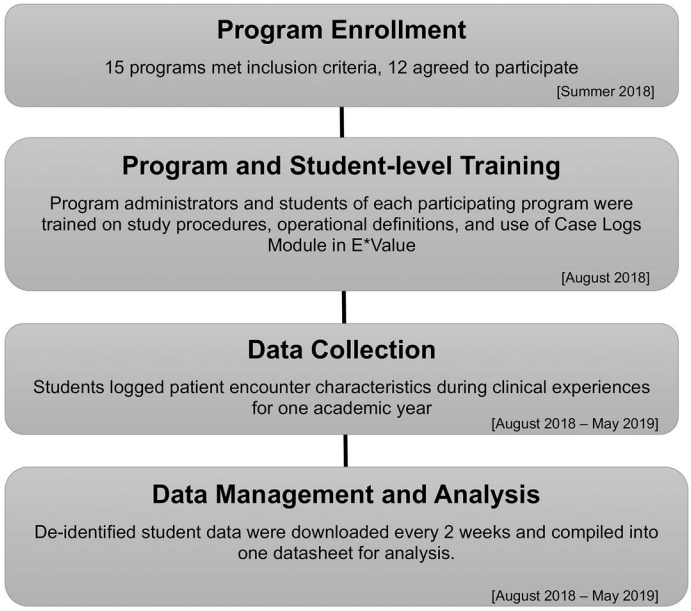
The ICE model should provide the greatest opportunity for students to engage in behaviors associated with the core competencies; however, this has not yet been established. Research examining the use of ICEs is necessary to ensure that such experiences are being used effectively, including student engagement in behaviors related to the core competencies. As a result of the publication of the Quality Chasm report,[7] all health professionals, regardless of discipline, have been expected to integrate behaviors associated with the core competencies into their clinical practice long before the CAATE mandated the inclusion of the competencies in athletic training education in fall 2020. Preliminary research has been conducted to examine the predictive abilities of certain clinical experience characteristics on professional behavior implementation, but this study did not differentiate between ICEs and non-immersive clinical experiences (N-ICEs).[8] Therefore, the purpose of this study was to examine the association between clinical experience type and athletic training students' implementation of professional behaviors associated with 5 core competencies during PEs.

METHODS

Design

This study used a multisite panel design to record athletic training student PE characteristics from 12 CAATE-accredited professional programs (5 undergraduate, 7 graduate)

Figure. Study procedures flowchart.[1,2]



using the E*Value program (MedHub). The collection of data specific to ICE and N-ICE variables spanned 1 academic year, beginning in August 2018, and concluding in May 2019. Institutional review board approval was obtained by the sponsoring and participating institutions in association with a larger study.[9,10] A flowchart detailing an overview of the procedures for this study can be found in the Figure.

Participants

A total of 338 students were recruited to examine various aspects of the characteristics of PEs experienced by athletic training students.[9,10] Recruitment was targeted toward CAATE-accredited professional athletic training programs that used the E*Value software for students to record PEs (case logging) during clinical experiences. Program inclusion criteria were (1) use of the E*Value case-logging system for more than 1 year before the start of the study, (2) program requirement of students to log all PEs using the E*Value software, and (3) have a Board of Certification 3-year aggregate first-time pass rate of 85%.[9,10] The research team contacted the program directors of programs (n = 37) identified as meeting all inclusion criteria. At the conclusion of recruitment, 12 CAATE-accredited programs (5 undergraduate and 7 graduate) agreed to participate in the study.

Instrumentation

The Case Logs module within the E*Value software system was used for this study, documenting athletic training students' PE characteristics during their clinical experiences. Students were asked to use the system to log details about the PEs they had while at their clinical sites. The variables related to PEs that the research team examined for this study were clinical experience type (ICE or NICE) and use of any of the professional behaviors associated with 5 of the 6 core competencies identified by the CAATE (PCC, IPECP, EBP, HIT, and QI). The research team decided to exclude behaviors related to professionalism from this study, as it would be difficult to measure that competency through individual PEs. A list of these behaviors is provided in the Table.

Data Collection

Before the start of data collection, program directors and/or coordinators of clinical education from all participating programs received training on study design setup of PEs in the Case Log Module of the E*Value system.[9,10] A member of the research team then conducted a training session with students to review operational definitions and logging procedures, aiming to increase consistency among students of participating programs.[9,10] Students were instructed by their faculty members and clinical supervisors to log each of their PEs during each day of their clinical experiences. Patient encounter information was stored securely within the E*Value system and was downloaded by a member of the research team every 2 weeks. A member of the research team de-identified the data and organized them into one file for data analysis.

Data Analysis

Patient encounter data were analyzed using SPSS (v. 27; IBM Corp). Composite scores (counts) were calculated, indicating the number of behaviors that were implemented for each core competency during each PE. Differences in professional behavior implementation between ICEs and N-ICEs were assessed using a generalized estimating equation with a negative binomial link for behaviors associated with PCC, IPECP, EBP, and HIT ($P < .05$) and a logit link for the QI behavior ($P < .05$). We chose to emphasize percentages in data analysis to control for variation (exposure) in N-ICE versus ICE experiences. Nonimmersive clinical experiences occurred more frequently than ICEs, and we were interested in the relative probability of exposure to behavior implementation in both. While no singular reporting tool accurately captures the methodology of this study, we used the Reporting of Studies Conducted using Observational Routinely-Collected Health Data (RECORD) statement to ensure the quality of data reporting.[9,10]

RESULTS

In 1 academic year, a total of 30 630 PEs were documented from the 12 participating programs, including 10 999 (35.9%) encounters occurring at ICEs and 18 228 (59.5%) encounters occurring at NICEs. A total of 1403 PEs (4.6%) did not list a clinical experience type. Students implemented at least 1 professional behavior associated with any of the core competencies in 16 431 (90.1%) N-ICE PEs and 10 380 (94.4%) ICE PEs. The frequencies of behavior implementation for both ICEs and N-ICEs are reported in the Table.

Evidence-Based Practice

A total of 13 139 (72.1%) N-ICE PEs and 8673 (78.9%) ICE PEs involved use of at least 1 of the EBP behaviors. Students in ICEs implemented significantly more behaviors associated with EBP than those in N-ICEs ($\chi^2[1] = 10.024$, $P = .002$, $M_{diff} = 0.10$, 95% CI = 0.04, 0.16). Students were more likely to implement the following behaviors during PEs at ICEs than N-ICEs: asking a question of a clinician ($\chi^2[1] = 4.847$, $P = .028$, $M_{diff} = 0.04$, 95% CI = 0.00, 0.07) and applying previously learned information ($\chi^2[1] = 6.484$, $P = .011$, $M_{diff} = 0.05$, 95% CI = 0.01, 0.08).

Table. Frequencies of EBP, PCC, IPECP, and HIT Behavior Implementation

Core Competency	Professional Behavior	Frequency of Implementation: In 18228 N-ICE Encounters, No. (%)	Frequency of Implementation: In 10999 ICE Encounters, No. (%)	% Difference
EBP	Ask a question of a clinician (including your preceptor)	5868 (32.2)[a]	3916 (35.6)	3.4
	Search for any available evidence	1981 (10.9)	1558 (14.2)	3.3
	Apply evidence previously learned	10792 (59.2)[a]	7476 (68.0)	8.8
	Unduplicated total: EBP	13139 (72.1)	8673 (78.9)	6.8
PCC	Discuss the patient's goals with the patient	7524 (41.3)	4294 (39.0)	2.3
	Collect information through a patient-rated outcome measure	6163 (33.8)	2810 (25.5)	8.2
	Collect information through a clinician-reported outcome measure	2986 (16.4)	1337 (12.2)	4.2
	Unduplicated total: PCC	10747 (59.0)	6058 (55.1)	3.9
HIT	Document the information obtained from this encounter in an electronic health or medical record	6653 (36.5)	3402 (30.9)	5.6
	Use information from an electronic health or medical record to assist with the clinical decision-making process	938 (5.1)[a]	448 (4.1)	1.0
	Unduplicated total: HIT	6900 (37.9)	3579 (32.5)	5.4
IPECP	Interact with another athletic trainer besides your preceptor	1645 (9.0)[a]	1404 (12.8)	3.8
	Interact with another health care provider(s) outside of athletic training besides your preceptor	1163 (6.4)	713 (6.5)	0.1
	Interact with another learner besides an athletic training student	561 (3.1)	518 (5.3)	2.2
	Unduplicated total: IPECP	2944 (16.2)	2439 (22.2)	6.0
Quality improvement	As a result of this patient encounter, did you reflect on your experience to identify potential areas for improvement and success?	12396 (68.0)	9080 (82.6)[a]	14.6

Abbreviations: EBP, evidence-based practice; HIT, health information technology; ICE, immersive clinical experience; IPECP, interprofessional education and collaborative practice; N-ICE, nonimmersive clinical experience; PCC, patient-centered care.

[a] Denotes significance in accordance with the generalized estimating equation (GEE) analysis, as described in the text.

Patient-Centered Care

A total of 10747 (59.0%) N-ICE PEs and 6058 (55.1%) ICE PEs involved use of at least 1 of the PCC behaviors. No significant difference was found in the total number of PCC behaviors implemented between ICEs and N-ICEs ($P = .099$). No significant difference was found in students' use of a discussion of the patient's goals ($\chi^2[1] = 2.829$, $P = 0.093$, $M_{diff} = 0.03$, 95% CI = −0.01, 0.07), patient-reported outcomes ($\chi^2[1] = .004$, $P = 0.95$, $M_{diff} = 0.00$, 95% CI = −0.03, 0.03), or clinician-reported outcomes ($\chi^2[1] = .424$, $P = .52$, $M_{diff} = 0.01$, 95% CI = −0.02, 0.03) between ICEs and NICEs.

Health Information Technology

A total of 6900 (37.9%) N-ICE PEs and 3579 (32.5%) ICE PEs involved the use of at least 1 of the HIT behaviors. Students in ICEs implemented more total behaviors associated with HIT than those in N-ICEs ($\chi^2[1] = 4.146$, $P = .042$, $M_{diff} = 0.08$, 95% CI = 0.00, 0.15). Data further revealed that the significant difference in this core competency between ICEs and N-ICEs lies in students' use of information from an electronic health or medical record ($\chi^2[1] = 4.455$, $P = .035$, $M_{diff} = 0.03$, 95% CI = 0.00, 0.05).

Interprofessional Education and Collaborative Practice

A total of 2944 (16.2%) N-ICE PEs and 2439 (22.2%) ICE PEs involved the use of at least 1 of the IPECP behaviors. Students in ICEs implemented significantly more behaviors associated with IPECP than those in N-ICEs ($\chi^2[1] = 9.640$, $P = .002$, $M_{diff} = 0.07$, 95% CI = 0.03, 0.11). Students were more likely to interact with another athletic trainer besides their preceptor in ICEs than N-ICEs ($\chi^2[1] = 9.589$, $P = .002$, $M_{diff} = 0.05$, 95% CI = 0.02, 0.08). The differences in frequency of students' reported interaction with another health care provider or another health professions learner did not differ between ICEs and N-ICEs.

Quality Improvement

A total of 12396 (68.0%) N-ICE PEs and 9080 (82.6%) ICE PEs involved use of the QI behavior. Students in ICEs (82.6%) were more likely to engage in the QI behavior than in N-ICEs (68.0%; $\chi^2[1] = 11.466$, $P = .001$, $M_{diff} = 0.06$, 95% CI = 0.02, 0.09).

DISCUSSION

Immersive Clinical Experiences and Behavior Implementation

Limited information regarding athletic training student implementation of professional behaviors associated with the core competencies has been published,[8,9,11] and our study is the first to compare implementation of these behaviors between ICEs and N-ICEs. The data for this study were collected before full implementation of the clinical experience type and core

competency standards from the CAATE; however, it is important to investigate the current use of ICEs as well as the core competencies to better inform athletic training programs on how they may most effectively implement these new concepts. Athletic training programs now must include 1 ICE within their clinical education curricula,[12–15] but the CAATE provides little guidance or regulation as to how that ICE should be implemented. Potential goals of ICEs in athletic training clinical education are to allow for students to engage in more meaningful PEs, provide students with opportunities to gain experience with more administrative responsibilities, increase student feelings of confidence and preparedness for autonomy, interact with clinicians of varied health professions, and expose students to more complex and long-term patient cases.[6,16–18] Literature from the nursing profession indicates that ICEs support high certification examination pass rates and students' perceptions of preparedness for autonomous practice after completion of their professional program.[19,20]

Considering the versatility of ICEs in fulfilling clinical education requirements set by the CAATE and enhancing students' overall experience in clinical education, programs should strive to assign specific objectives for students to meet while completing ICEs versus N-ICEs. One way for programs to differentiate student experience between ICEs and N-ICEs may be to examine the implementation of professional behaviors associated with the EBP, IPECP, PCC, HIT, and QI competencies. Our study indicates that athletic training students implemented significantly more professional behaviors associated with EBP, IPECP, and HIT during ICEs than N-ICEs. This suggests that students may be given more opportunities to engage in these professional behaviors during ICEs; however, more research is needed to determine other factors that contribute to these increased opportunities.

Evidence-Based Practice and Health Information Technology

The high percentage of PEs that involved at least 1 professional behavior associated with EBP is not surprising, as the implementation of EBP in clinical practice has been heavily emphasized across the athletic training profession for more than a decade.[21,22] An effort to emphasize EBP has also occurred in nursing education, where students are taught how to use research and incorporate EBP using available resources and technology.[23,24] Researchers in athletic training have identified that students are largely influenced by the actions and tendencies of their preceptors, including during the implementation of EBP during PEs.[12,25] In this study, student-reported frequency of asking a question of a clinician and applying previously learned evidence was significantly higher in ICEs than N-ICEs. It is possible that students had more opportunities to discuss patient cases with preceptors due to more time spent at the clinical site outside of practices and games.

Regarding HIT, we asked students to report not only whether they used an electronic health or medical record to document the PE but also if they used information that had been previously documented related to the PE. While no difference was found in students' reports of new documentation, they did report using previously documented health information from an electronic health or medical record system more frequently during ICE PEs. As noted, students may be able to spend more time at ICEs outside of attending practices and games, allowing them to engage in the full spectrum of clinician responsibilities; this realignment of time spent at the clinical site could enable students to spend more time reviewing notes in patient files. The increase in HIT behavior implementation seen in our results could have also resulted from students having more opportunities in ICEs to work with increasingly complex or long-term cases, which often require more reflection on clinician notes within the patients' records.

As with other competencies, students may be influenced by preceptor behavior related to HIT practices. Preceptors and other athletic trainers have frequently cited lack of time and resources as barriers to both EBP and HIT behavior implementation in clinical practice.[13–15,26] Athletic trainers with 0–5 years of experience reported that they felt the least prepared by their professional programs to engage in HIT behaviors than any other competency.[27] The results from our study, as well in a previous study,[27] suggest that establishing high-quality documentation behaviors may not currently be emphasized by program administrators or preceptors during any clinical experiences. Students may also be affected by logistic barriers to documentation at their clinical site, as institutions may be unwilling or unable to provide athletic training students with their own login information to access electronic medical records. This would require the student to have access to their preceptor's login information to document new patient case information.

To take advantage of the full breadth of potential benefits of ICEs, program administrators and preceptors should emphasize use of these behaviors during ICE PEs. If programs are using clinical experiences to provide students with opportunities to engage in more behaviors associated with EBP and HIT, ICEs should be more frequently incorporated than N-ICEs due to reports of students more frequently implementing these behaviors. Regardless of clinical experience type, program administrators should ensure that preceptors have an adequate understanding of programmatic expectations regarding their ability to provide students opportunities to engage in those behaviors associated with HIT.

Interprofessional Education and Collaborative Practice and Patient Centered Care

Athletic trainers tend to agree that IPECP is important in athletic training practice but also report engaging with other health care providers in only 42% of patient cases.[28] Additionally, only 54% of athletic trainers identified that they work in an interprofessional team that consists of individuals with diverse training.[27] Clinicians have identified lack of access to other health care providers as well as a lack of communication and role identification with other health care providers as potential barriers to implementing behaviors associated with IPECP.[29] Some of these barriers may influence preceptor engagement in behaviors associated with IPECP and, therefore, opportunities for students. Authors have noted that the challenges of providing students with opportunities to engage in IPECP include lack of institutional readiness and resources available, improper institutional housing of athletic training programs, and influence from preceptors' biases about IPECP.[29,30]

Findings from this study indicate that students engaged in significantly more IPECP behaviors during ICEs than N-ICEs, which aligns with athletic training researchers' hopes for ICE

use in programs as well as students' reports.[16,18] However, according to our data, it seems as if most of that difference is driven by the occurrence of students interacting with other athletic trainers or other health professions learners and not necessarily clinicians of other health professions. Data collected in this study suggest that programs are not using ICEs to emphasize student exposure to IPECP with clinicians from other health care professions. However, ICEs may potentially provide students with more opportunities for participating in tasks not usually conducted during competition hours, such as communicating referrals with specialists or accompanying patients to specialist visits; program administrators should consider emphasizing this point to preceptors during development.

Varying athletic training employment models have emerged in the last few decades as the profession has advanced as a player in the health care team. The most commonly found models are the athletic model, in which an athletic trainer is hired by and reports to an athletic director with no medical training, and the medical model, in which the athletic trainer reports to another health care professional such as a team physician.[31] The medical model has been identified by researchers as the best employment option to foster professional relationships with other health care providers and open lines of communication within a health care team.[28] If programs intend to use ICEs to expose students to IPECP, the model of athletic training employment may be a valid indicator of students' potential exposure to other health care providers. In traditional academic-type athletic training settings (eg, colleges or university, secondary schools) if the structure of the health care system does involve an interdisciplinary care team that is regularly present, then student interaction with other providers appears limited. If the care team is enveloped in a medical model, this may increase inherent interaction with other health care providers for students placed there. Even though placement at clinical sites where the preceptor is not an athletic trainer may offer students a unique perspective regarding that profession, placing students at athletic training sites housed in the medical model of employment may offer more opportunities for students to observe and take part in collaboration between professions.

Program administrators may find that students can engage in more complex, long-term patient cases during ICEs. In these situations, students should be using patient- and clinician-reported outcomes to track patient progress as well as maintain a continuous dialog regarding the patient's goals. However, findings from this study reveal that clinical experience type did not affect professional behavior implementation for PCC, including the frequency of students' documented use of patient-reported outcomes, clinician-reported outcomes, or discussion of the patient's goals during the encounter. While no difference was found in the implementation of these behaviors between clinical experience types, the implementation of these behaviors is still relatively low. Previous researchers have suggested that, of all the core competencies, PCC behaviors may be the most likely to be implemented during a PE regardless of clinical experience type.[9] However, with an average of 57.1% implementation of at least 1 of the PCC professional behaviors in all PEs, findings of this study suggest that programs may need to examine student use of these behaviors more closely.

In one study, authors surveyed collegiate student-athletes about their perceptions regarding patient-centeredness of the care they received from athletic trainers and reported that only 37% of patients indicated that the athletic trainer asked about their goals for treatment and used these goals as part of their care plan.[32] Authors of another study found that only 21.7% of surveyed clinicians reported regular use of patient-reported outcomes, noting lack of resources and time as barriers to implementation.[33] If clinicians and preceptors are not using these behaviors to conduct PCC in their practice, it serves as a possible explanation for why students are not as well. Program administrators should emphasize the use of PCC behaviors during preceptor development to increase the likelihood that students will also engage in these behaviors.

Quality Improvement

Quality improvement is essential to athletic training health care as a means for monitoring patient outcomes, increasing the quality of care, and reducing the cost of care.[34] For the purpose of this study, we asked students if they reflected on their role and actions pertaining to that PE as well as potential areas for improvement and success. Reflection has been used in many health professions education programs as a means to foster students' clinical reasoning development and increase confidence in their skills.[8,11] Students reported that they engaged in QI behaviors such as reflecting on the PE and identifying potential areas for improvement significantly more frequently during N-ICEs than ICEs; however, this finding seems to be influenced by the distribution of the total number of PEs between ICEs and N-ICEs. Students reported engaging in the QI behavior at a higher percentage of the total number of ICE encounters than N-ICEs. If athletic training program's structure ICEs to last for a longer period of their academic calendar than N-ICEs, they may have more opportunities to engage in PEs; this factor may lead programs to emphasize student engagement in QI behaviors as a potential goal for ICEs.[8,11]

Quality improvement efforts in health care are generally conducted to improve patient or organizational outcomes over an extended period of time, as clinicians and institutions require time to implement strategies for measurement and improvement.[33] Strategies to implement QI are also cyclical in nature; for example, the Plan-Do-Study-Act cycle is commonly used by clinicians to make improvements in patient health outcomes.[32] Due to these features of implementing QI in both health care practice and education, examining student use of QI in isolated PEs may not serve as an accurate estimate of those efforts. Additionally, a multitude of behaviors can contribute to student use of QI that may not have been captured in the single QI-related question included in this study.

Limitations and Future Directions

Our findings are based on self-reported data and rely on athletic training students' ability to log PE information accurately and consistently. As it pertains to logging professional behavior implementation, students may be unfamiliar with how the professional behavior is presented in clinical skill situations. Additionally, we did not ask students to report the total length of time that they spent at ICEs or N-ICEs, although students did report the length of time of the individual PE. This lack of data may limit the generalizability of the findings as it pertains to the specifics of how each program chooses to implement ICEs and N-ICEs as well as the timing of these experiences in their curriculum. Additionally, the amount of time spent at specific clinical experiences may have affected the total number

of behaviors that could have been implemented in ICEs and N-ICEs.

Students reported engaging in reflection during or after a PE for a high percentage of the time, but the question does not include a way to check for accuracy of student responses and may be an inaccurate representation of true QI efforts. Additional questions related to QI may have provided further insight to student implementation of specific QI-related behaviors.

Lastly, our data collection occurred before the CAATE's mandate that programs include ICEs for professional athletic training students. Future researchers should account for the timing of ICEs within program curricula to examine the potential for increased professional behavior implementation as students' progress through a program. Authors of future studies should also aim to include preceptor verification of case logging to triangulate student-reported data.

CONCLUSIONS

Students in ICEs implemented significantly more behaviors associated with EBP, IPECP, and HIT; students in N-ICEs implemented the behavior associated with QI more frequently. Educators should consider the balance of opportunities to implement these behaviors within their clinical education curriculum and set specific objectives for implementation of these behaviors in both ICEs and N-ICEs. If they have not done so already, program administrators should also consider student implementation of professional behaviors associated with the core competencies when creating objectives specific to ICEs; some behaviors are better suited for experiences that allow for more time and opportunities for students to engage with more complex or long-term patient cases. Since previous literature has established that preceptors largely influence multiple aspects of athletic training student skill development and professional socialization, athletic training programs should ensure that their preceptors are made aware of the programs' specific objectives for both ICEs and N-ICEs, including student use of behaviors related to the core competencies.

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