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Delivering Patient-Centered Care With Respect to Patient Education and Health Literacy in Athletic Training Job Settings

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Context: A patient-centered care (PCC) environment allows athletic trainers (ATs) to develop trusting relationships with patients, enabling them to make the most informed care decisions. To provide PCC, the AT should assess health literacy and deliver quality patient education.

Objective: To explore the lived experiences of ATs from different job settings to identify how they deliver PCC specific to health literacy and patient education.

Design: Qualitative.

Setting: Virtual interviews.

Patients or Other Participants: Twenty-seven ATs (age = 34 ± 10 years; women = 15, men = 12) from the physician practice (n = 10), college (n = 9), and secondary school (n = 8) settings.

Main Outcome Measure(s): We interviewed the participants using a semistructured interview protocol. Three researchers coded the transcripts after the consensual qualitative research process for each job setting. Trustworthiness was achieved through multianalyst triangulation, member checking, and internal auditing.

Results: Four domains emerged from all interviews: (1) work environment, (2) essential traits and skills, (3) health literacy assessment strategies, and (4) patient education materials and delivery. In the work environment, ATs described the patient load, interprofessional relationships, and patient characteristics across settings. Essential traits and skills varied widely between settings, and ATs needed different strategies based on differing patient needs. For health literacy assessment strategies, ATs did not formally assess health literacy and relied on perceptions and assumptions. Effective digital information and health informatics strategies were described for patient education materials and delivery.

Conclusions: ATs from physician practice, college, and secondary school settings describe using various strategies to create a patient-centered environment. Participants shared their behaviors in assessing health literacy and delivering patient education from various job settings.

Key Words: plain language, orthopaedics, communication

Key Points

- Athletic trainers (ATs) across college, secondary school, and physician practice settings prioritized establishing trusting relationships, fostering open communication, and ensuring transparency with patients as essential components of delivering patient-centered care.
- Despite time constraints, ATs in the physician practice setting often excel in delivering comprehensive patient education, potentially due to the structured nature and focused interactions typical of these settings.
- Enhancing patient-centered care can be achieved by ATs across various job settings through a deeper understanding of health literacy, including defining the concept, implementing screening tools, and providing responsive patient education.

In 2021, the Institute of Medicine (now the National Academy of Medicine) released the Quintuple Aim, which strategizes the priorities for health care in the United States.[1] The Quintuple Aim expands on the Triple (2008) and Quadruple (2014) Aims to now include a focus on health equity that aligns with the central tenets of patient-centered care (PCC).[1] A PCC approach respects the patient's experience, values, needs, and preferences in planning, coordinating, and delivering care.[2–4] A central component of PCC is the therapeutic relationship between the patient and the team of health care professionals, which creates meaningful engagement with the health care system and has the patient's wishes respected throughout decision-making.[2–4] A newer concept to PCC is replacing the "Golden Rule" with the "Platinum Rule," by which we provide care and treatment to the patient concerning how they wish to be treated rather than how we would have liked to be treated. Using the Platinum Rule over the Golden Rule is essential in adequately using PCC, as this rule puts the patient at the forefront. Although PCC has similar principles across job settings, the demographics of the patient and the job setting may influence how this is delivered. For example, providers should consider social determinants

of health factors, such as access to care and education, social risk factors, such as food insecurity and community safety, and vulnerable populations based on race, ethnicity, and culture when engaging with patients.[5]

Providers who create and promote a patient-centered environment can do so by exploring and addressing a patient's health literacy levels and delivering patient education that is respectful and responsive to the individual.[2–4] Recently, Healthy People 2030 set a main goal to increase the population's health literacy.[6] In doing so, Healthy People 2030 elaborated on the definitions of health literacy by recognizing the need to improve the health literacy of the general population through personal and organizational means.[6,7] *Organizational health literacy* is defined as the "degree to which organizations equitably enable individuals to find, understand, and use information and services to inform health-related decisions and actions for themselves and others," whereas *personal health literacy* is focused on the "degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others."[6,7] A 2018 literature review suggested that adolescents from high-income and well-educated households are more likely to have parents with high health literacy.[8] Additionally, researchers have identified that collegiate student-athletes have adequate general, digital, and musculoskeletal health literacy.[9,10] Low health literacy is most prevalent among populations with adults living below the poverty level, individuals who are 65 and older, and Hispanic adults[11]; therefore, these populations are considered vulnerable populations.[12] Vulnerable populations are disproportionately affected by factors that make them more likely to have low health literacy, such as limited access to high-quality education, limited English proficiency, type of health insurance, and cognitive impairment.[11,13] A systematic review identified increased emergency care and hospital use among people with lower health literacy, resulting in poorer health outcomes.[14] It is thought that individuals with low or limited health literacy struggle to comprehend medical information, such as at-home instructions and self-care for their illness or injury.[15–17] Inadequate health literacy can lead to more frequent hospital admissions with more extended stays, being prone to missing medical appointments, and poor adherence to treatment recommendations.[18]

Health care organizations and providers unaware of a patient's health literacy can have an immediate and lasting impact on potential outcomes.[19–21] Healthy People 2030 has set goals to increase the number of adults who report that their health care provider asks them to demonstrate how they will follow instructions, involve them in health care decisions, and reduce the number of adults who report poor patient and provider communication.[7] It will also increase the number of people who find their online medical records accessible and the number of adults with limited English proficiency who state that their health care provider explains things in an easily understood way.[7] This is the process of organizational health literacy in which, in the case of athletic training, the athletic training facility staff have a role and responsibility to improve the shared decision-making process by making information navigation more accessible.[22,23]

Patient education is seen as an empowering activity, consisting of a planning phase whereby the provider assesses a patient's learning preferences and expectations, followed by setting outcomes, implementing the education via differential instructional methods while considering the place and timing, and concluding with an evaluation of outcomes.[19,24] For patient education to be meaningful and directed, the provider should explore the patient's health literacy to determine the methods that best align with their needs.[4] Patient education guides individuals to comprehend their condition and treatment options by providing important health information to patients and their support systems and, ultimately, empowering patients to enhance their autonomy to achieve therapeutic goals.[19,24] However, barriers to patient education include the need for additional time, unawareness of patients' needs, the specific timing of patient education, and methods to follow up on whether patients understood what they were taught.[25]

At this time, the research calls health care providers and researchers to action to increase research on health literacy and patient education to improve the provider-patient relationship and influence overall health outcomes.[15–18,26–32] However, there needs to be more literature on how, if at all, athletic trainers (ATs) explore their patients' health literacy levels and deliver patient education. The Board of Certification Content Outline for Practice Analysis, 8th edition, revised the domains of clinical practice.[33] Specifically, task 0103 from domain 1 (Risk Reduction, Wellness, and Health Literacy) states that ATs must

> promote health literacy by educating patients and other stakeholders in order to improve their capacity to obtain, process, and understand basic health information needed to make appropriate health decisions.[33]

It is essential that ATs in all settings improve their competence and use of health literacy assessment and patient education delivery to provide patients with the best care possible. More evidence is needed on patient education strategies and implementation specific to athletic training. These critical areas of information are necessary for the delivery of PCC to be affected. Therefore, the purpose of this study was to explore the lived experiences of ATs from 3 job settings—physician practice, college, and secondary school—regarding how they explore health literacy and deliver patient education to identify if they are creating a PCC environment.

METHODS

Research Design

The study was guided using the consensual qualitative research (CQR) tradition to explore the lived experiences of ATs in physician practice, college, and secondary school settings when creating a patient-centered environment, assessing a patient's health literacy, and delivering patient education.[34,35] We used the Standards for Reporting Qualitative Research to guide project development and data presentation.[36] The institutional review board at the University of South Carolina deemed this study exempt.

Data Collection

Interview Protocol. Two research team members (A.M.M., Z.K.W.) developed an interview protocol to explore the lived experiences of ATs specific to the research question. The protocol was then sent to the other research team members to provide feedback. Two rounds of revisions occurred until agreement was met among all 6 members of the research team. The interview questions were modified based on feedback for

Table 1. Interview Protocol

Demographics
How old are you?
What gender do you identify with?
What is your highest level of education or training?
Do you have any other specialty certifications, training, or credentials?
How many years of experience do you have as an athletic trainer?
What job setting or settings do you currently work in as an athletic trainer?
1. Could you tell me briefly about what your day-to-day job responsibilities look like?
2. I am going to read you a brief definition. A *patient encounter* is defined as any interaction with a patient when an athletic training service is provided, or a communication occurs regarding their health status. Could you estimate how much time you have in your job setting for each patient encounter?
3. Do you work with other providers? Could you tell me more about collaborations?
Patient-Centered Care
In your opinion, how would you describe or define patient-centered care?
In what ways, if any, do you demonstrate the behaviors of a patient-centered provider?
How do you create a patient-centered environment in your clinical practice?
1. If the participant does not have anything or they say they treat everyone the same, follow up with: How do you account for differences in patient background and demographics?
What are some challenges in your current setting, in providing patient-centered care?
Health Literacy
In your opinion, how would you describe or define health literacy?
In what ways, if any, do you assess your patient's ability to obtain, process, or understand basic health information?
In your job setting, do you believe that your patients are relatively health literate?
1. What evidence do you have to support this?
2. Do you change how you provide care if you identify they are health illiterate?
a. If yes, how so?
b. If not, do you feel this has impacted your outcomes?
Consider a previous encounter where the patient or their support system could not process information to make appropriate health decisions. How did you navigate this experience?
1. If not experienced: How do you ensure all patients and their support systems can process the information you are providing?
Patient Education
In your opinion, how would you describe or define patient education?
How, if at all, do you go about implementing patient education into your practice?
1. How do you determine the preferences and expectations of the patients in regard to patient education?
2. At what point in the encounter do you deliver (timing) the education?
3. Where do you deliver patient education in the health care facility?
4. What methods or deliverables do you use for patient education?
What are some barriers or challenges you have experienced in your job setting providing patient education?
In what ways, if any, do you individualize patient education with your patient?
Is there anything about their health literacy that influences your communication?
How do you follow up with the patient or their support system to ensure they really understood what they were taught?

wording, rephrasing, and elaborating on questions. The final interview protocol comprised 14 questions, including 4 regarding PCC, 4 on health literacy, and 6 on patient education. Before data collection, the interviewer (A.M.M.) conducted a pilot test of the interview (not included in data analysis) to rehearse and ensure professionalism and consistency in the interview process. No additional edits were made to the interview protocol after the pilot test. Table 1 provides the interview protocol used for all participants regardless of job setting.

Participants and Sampling. We used a multimodal recruitment process, including social media postings, specifically on Facebook and X (formerly Twitter), and through the National Athletic Trainers' Association (NATA) research database to identify potential participants from the physician practice, college, and secondary school settings. To begin recruitment, we emailed 1000 NATA research database AT members. We evenly distributed recruitment among the college, secondary school, and physician practice job settings (approximately 333 ATs per setting). The email contained an invitation to participate in a short web-based demographic survey (Qualtrics, Inc). At the end of the survey, the participants were asked to provide their preferred email address to set up their one-on-one interview. We then responded to the interested participants to set up a date and time for the interview.

In total, 47 recruitment surveys were completed from NATA and 28 from social media. Of the 75 potential participants who responded to the survey, 5 did not wish to participate, and 20 did not provide their demographics or contact email, leaving 50 individuals eligible. We completed interviews to align with best practices in CQR methodology to compare nonhomogeneous samples, meaning we needed at least 7 ATs per job setting while also seeking data saturation.[34] In total, 27 ATs (age = 34 ± 10 years; women = 15, men = 12; clinical experience = 10 ± 9 years) from either the physician practice (n = 10), college (n = 9), or secondary school (n = 8) setting completed the study. Table 2 provides the full demographics of the participants.

Procedures

One research team member (A.M.M.) conducted each audio-only interview through a web-conferencing platform

Table 2. Participant Demographics

Pseudonym	Gender	Age, y	Experience, y	Highest Degree Earned	Current Job Setting	Additional Certifications
1. Courtney	Woman	33	8	Clinical doctorate	College/university	CES, PES, ART
2. Jo	Woman	35	12	Postprofessional master's	College/university	CES
3. Megan	Woman	24	3	Postprofessional master's	College/university	
4. Porter	Woman	25	3	Postprofessional master's	College/university	
5. Ray	Man	45	22	Postprofessional master's	College/university	
6. Stacy	Woman	50	28	Postprofessional master's	College/university	
7. RJ	Man	45	22	Postprofessional master's	College/university	CSCS, CKTI, CES, USAW
8. Umar	Man	29	6	Professional master's	College/university	
9. Jonathan	Man	39	17	Postprofessional master's	College/university	
10. Angela	Woman	27	5	Clinical doctorate	Physician practice	
11. Bob	Man	43	20	Postprofessional master's	Physician practice	OTC, BCS-O
12. Bryan	Man	57	34	Clinical doctorate	Physician practice	CSCS, FMS, Graston, SFMA, PSP
13. Carter	Woman	27	4	Professional master's	Physician practice	
14. Felicity	Woman	37	14	Postprofessional master's	Physician practice	OTC, residency trained
15. Ian	Man	40	2	Professional master's	Physician practice	CES, residency trained
16. Kari	Woman	28	5	Clinical doctorate	Physician practice	OTC
17. Amber	Woman	32	10	Postprofessional master's	Physician practice	OTC
18. Ophelia	Woman	33	7	Postprofessional master's	Physician practice	OTC
19. Remy	Man	31	9	Postprofessional master's	Physician practice	
20. Alexis	Woman	27	4	Professional master's	Secondary school	
21. Frederick	Man	29	4	Clinical doctorate	Secondary school	CSCS
22. Howard	Man	24	2	Professional master's	Secondary school	IASTM
23. Jane	Woman	25	1	Professional master's	Secondary school	
24. Jose	Man	23	1	Bachelor's	Secondary school	
25. Sasha	Woman	34	12	Postprofessional master's	Secondary school	
26. Stevie	Man	23	1	Bachelor's	Secondary school	
27. Lorna	Woman	56	26	Postprofessional master's	Secondary school	

Abbreviations: ART, active release techniques; BCS-O, Board Certified Specialist in Orthopaedics; CES, Corrective Exercise Specialist; CKTI, Certified Kinesio Taping Instructor; CSCS, Certified Strength and Conditioning Specialist; FMS, Function Movement Systems; IASTM, instrument assisted soft tissue mobilization; OTC, Certified Orthopaedic Technologist; PES, Performance Enhancement Specialist; PSP, Power Sports Performance; SFMA, Selective Functional Movement Assessment; USAW, USA Weightlifting.

(Zoom Video Communications Inc) between June 2023 and August 2023. At the onset of the interview, participants provided verbal informed consent. The researcher then conducted a semistructured interview guided by the interview protocol. Throughout each interview, the interviewer engaged in reflexivity by taking notes to address their biases and assumptions, specifically to acknowledge previous employment and socialization experiences in college and secondary school settings. The interviews lasted, on average, 29 minutes. After the interview, the audio files and transcripts were downloaded. The interviewer deidentified the transcriptions and saved them to a secured cloud server. This ensured the participant's protection and an unbiased data analysis process, as a member of the coding team was also the interviewer. Participants were sent their transcripts to verify the accuracy of the transcript. Two participants sent additional edits to their transcripts during member checking.

The extensive research team on this project has a noteworthy background. The authors are a mix of clinicians (A.M.M. = secondary school, T.A.A. = college, T.J.P.G. = physician practice) and educators (E.R.N., L.E.E., Z.K.W.) with previous athletic training experience in college and secondary school settings. Our firsthand experiences, academic training, and prior assumptions might have influenced how we interacted with participants or reviewed the data during coding.

Data Analysis and Trustworthiness

To analyze the data, we used the CQR method, which allows the researchers to document the personal experiences of ATs, analyze the data, and agree on a common interpretation of the findings.[34–36] To minimize researcher bias and establish consensus, interview transcripts were analyzed by 3 separate 3-person coding teams dependent on experience in a job setting (physician practice, college, secondary school).

To begin phase 1 of data analysis of the physician practice transcripts, 3 coding team members (A.M.M., L.E.E., T.J.P.G.) read and reviewed 4 physician practice transcripts and created a domain list, categories, and subcategories from the participant responses. The coding team then met for consensus on commonalities and made the physician practice codebook. In phase 2 of data analysis, each coding team member read and reviewed 2 transcripts used in the first phase of review and 2 new physician practice transcripts to verify that the preliminary codebook represented the data. The team once again met for consensus on commonalities to finalize the physician practice codebook. In phase 3A of data analysis, the coding team evenly divided and coded the remaining unique physician practice transcripts for the domains and categories within the consensus codebook. In phase 3B, transcripts were exchanged among the code team to cross-check each other for the accuracy of the consensus physician practice codebook. A final consensus coding meeting was planned, at which all codes were confirmed with at least two-thirds agreement.

The data analysis process was repeated for the college and secondary school and transcripts with a different coding team for each job setting (college: A.M.M., E.R.N., T.A.A.; secondary school: A.M.M., E.R.N., Z.K.W.). The final coded transcripts and codebook were then sent to an individual of the research team for an internal audit for coding accuracy

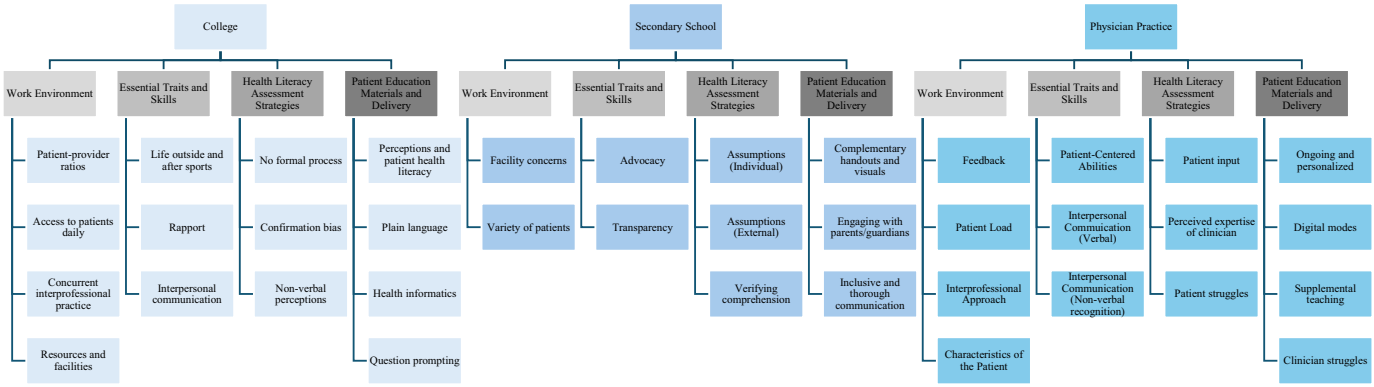

Figure. Categories by domain and job setting.

(physician practice: Z.K.W.; college: Z.K.W.; secondary school: L.E.E.).

Categories were assigned as *general* (all or all but 1 transcript), *typical* (fewer than general but more than half of the transcripts), *variant* (fewer than typical but more than 2), or *rare* (1 or 2 transcripts) depending on the job setting and the number of participants who mentioned that category during their interview.[34–36] The research team established trustworthiness and credibility through member checking, triangulation, and internal auditing. The final steps of the research process consisted of developing narrative counts across cases and describing illustrative cases by extracting select quotes to represent each category.

RESULTS

Four domains emerged during the analysis: *work environment*, *essential traits and skills*, *health literacy assessment strategies*, and *patient education materials and delivery.* Based on the participants' responses, each job setting had the same domains but distinct categories, which are represented in the Figure. Table 3 provides the frequency counts by job setting and domain and a description of each category.

Domain 1: Work Environment

Table 4 provides extracted quotes for this domain by job setting. Participants from the physician practice setting expressed that they often saw many patients, which affected the delivery of patient education. The characteristics of the patients, specifically comorbidities and social determinants of health, usually created complex patient education needs. Participants noted that the work environment provided opportunities to work collaboratively and receive feedback on patient satisfaction. Particularly, Felicity discussed receiving feedback from patients and using it to improve her practice:

> We ask [the patients] to give us feedback, particularly about different aspects. Ask for feedback about the process and their understanding of the process, always trying to update our best practices to ensure that patients have a smooth and concise health care experience.

The collegiate ATs described their work environment as challenging based on the patient to provider ratio, resources, and facilities that led to time and space concerns. In addition, the ATs stated that daily access to patients and concurrent interprofessional practice allowed for continuity of care. Specifically, Courtney discussed seeing patients every day, stating, "In a university setting, I think it might be a little bit easier than some of their settings because we see our patients every day by being at their practices and their games."

Finally, ATs in the secondary school setting discussed concerns about their facility, with privacy, resources, and space being issues. Participants also discussed providing care for various patients, differing on social determinants of health, faith, volumes, and sports. Frederick stated having issues with privacy and space being an issue with their large patient load:

> Privacy is the biggest thing. I work at a high school, and my room is always filled with people. So, if I am trying to have a private conversation, I have to go out of the way. It is why [I say] come in early or stay after or conversely, kick everyone out of my room so that I can have that closed-door conversation.

Domain 2: Essential Traits and Skills

Table 5 provides extracted quotes for this domain by job setting. The ATs in physician practice described their essential traits and skills for delivering PCC through shared decision-making, transparency, and providing options. Interpersonal communication through verbal mechanisms and nonverbal recognition were also discussed. Remy discussed delivering PCC in his practice and considering the patient as a whole when creating a treatment plan:

> So, one thing I have worked on in my career is really looking at the whole person. Really thinking what that person needs to do on a day-to-day basis outside of their activity. How can someone walk around their house better before they get back to running or playing a sport? And most importantly, for a younger, more athletic population, how can they get back to normal life to be able to either walk around campus or drive or work a job that they need to do? So, keeping all those other facets of life in mind while developing a plan.

Collegiate ATs suggested that rapport with the student-athletes facilitated a trusting relationship that influenced their interpersonal communication. These essential traits and skills created a patient-centered environment that allowed them to explore the student-athlete's life outside and after sport. Specifically, Umar discussed providing care for athletes

Table 3. Domains and Category Frequency Counts by Job Setting

Domain	Physician Practice (n = 10)	Count	Label	College (n = 9)	Count	Label	Secondary School (n = 8)	Count	Label
Work environment	Feedback	4	Variant	Patient-provider ratios	8	General	Facility concerns	6	Typical
	Patient load	3	Variant	Access to patients daily	9	General			
	Interprofessional approach	9	General	Concurrent interprofessional practice	7	Typical	Variety of patients	7	General
	Characteristics of the patients	10	General	Resources and facilities	8	General			
Essential traits and skills	Patient-centered abilities	10	General	Life outside and after sports	9	General	Advocacy	7	General
	Interpersonal communication—verbal	9	General	Rapport	9	General			
	Interpersonal communication—nonverbal recognition	4	Variant	Interpersonal communication	9	General	Transparency	6	Typical
Health literacy assessment strategies	Patient input	10	General	No formal process	8	General	Assumptions—individual	8	General
	Perceived expertise of clinician	7	Typical	Confirmation bias	9	General	Assumptions—external	5	Typical
	Patient struggles	10	General	Nonverbal perceptions	7	Typical	Verifying comprehension	7	General
Patient education materials and delivery	Ongoing and personalized	10	General	Perceptions of patient health literacy	9	General	Complementary handouts and visuals	8	General
	Digital modes	10	General	Plain language	9	General	Engaging with parents/guardians	6	Typical
	Supplemental teaching	10	General	Health informatics	9	General	Inclusive and thorough communication	7	General
	Clinician struggles	7	Typical	Question prompting	8	General			

and keeping their health and safety as a priority over their sport:

> Their health is the number 1 priority, based on what they are telling me. My role is to educate them and say, Listen, your health and safety is my number 1 priority. That is the only reason that I am here. Yes, you participate in sport. I want you to succeed in that as well. I want you to succeed on and off the field. However, at the end of the day, your health and safety are my number 1 priority. So, it is my job to give you a voice.

Finally, ATs in the secondary school setting discussed educating their patients on autonomy and fostering ownership of their care by encouraging them to be vocal and engaged, advocating for themselves, providing their input, and making decisions based on the ATs' recommendations. Participants also discussed being transparent with patients, giving them reminders about their open-door policy, being available, and being honest with the patient. Jose described giving patients the opportunity to participate in shared decision-making when it came to their rehabilitation plans:

> I am giving the patients choices where possible, whether that be in rehab exercises. I will give them like a group of exercises, and I will say, okay, pick 5 of these. So, it makes the patients feel like they have a say and are not just being told what to do. It does not make them feel like they do not have any control over themselves or control over the process. It makes them feel involved in the decision-making process.

Domain 3: Health Literacy Assessment Strategies

Table 6 provides extracted quotes for this domain by job setting. Regarding health literacy assessment, the physician practice ATs reported using patient input and perceived expertise to determine patient health literacy. However, they expressed struggles in assessing patient health literacy due to language barriers and needing to know the definition of health literacy, which leads to not measuring it. Angela described struggling with assessing the patient's health literacy if they did not speak the same language:

> It is difficult to manage conversation when [people] do not all speak the same language; I understand that. But when you do not understand the health system, what [magnetic resonance imaging] is, what communicating injuries with that person and then especially communicating that injury with a minor through a parent through an interpreter.

Most participants from the college setting noted they had no formal process but used nonverbal perceptions such as reading facial expressions to gather information. The ATs also expressed confirmation bias in that they often overlooked health literacy assessments for those athletes with insurance or a health-related academic major. Specifically, Jo detailed that she did not use a formal process when assessing health literacy: "I do not do anything specific to try and measure [health literacy] other than just being an active listener."

ATs in the secondary school setting discussed assuming a patient's health literacy based on individual traits such as background, language, word tense, location, disabilities, and

Table 4. Work Environment Domain

Job Setting	Category	Selected Quotes
Physician practice	Feedback	• "We hand out a patient satisfaction survey with the current doctor that I work with. Patient education is one of his lower-scoring areas, like explanation of the condition, so definitely an area upon which we could improve." —Angela
	Patient load	• "I would say it is more difficult because we do not see patients on a regular basis. In physical therapy or a type of rehab setting, they are seeing patients on a weekly or biweekly basis, whereas we are seeing a patient every 4 to 6 weeks." —Bob
		• "I think one of the barriers is probably time. We do have a busy orthopaedic surgical clinical practice, so sometimes time is of the essence, and if we are running behind, it gets harder to provide all the education that we want to provide to them. But I think it is important for us to take a step back and try to do that as much as we can. I do not want to rush a patient and make sure they understand the care that they have." —Ophelia
	Interprofessional approach	• "I work in a multidisciplinary facility, so we have multiple types of health care practitioners, and sometimes, making sure that communication is the same throughout all practitioners that that patient may see in a given visit can be a challenge." —Bryan
		• "I help to facilitate a patient-centered environment by coordinating between the patient, physician, and any type of rehabilitation with physical therapy as well as actively listening to the patient and their needs, and then helping to put orders in for the patient." —Ian
	Characteristics of patients	• "It is individualized because we may see someone who is in their 80s or retired, and they need the same surgery as someone who is in their 50s, and they still work. And so, the information that I am providing them is different because the person who is retired is not going back to work. They may not need to know as much about what I am supposed to do, how long I am going to be out of work, when I can get back to desk duty, and when I can get back to manual labor. So, I would say, most times when I am talking to someone, it is figuring that out. I might be talking to an older person who helps care for their loved one 24/7. And so, I have to know what I need to tell them about their recovery because they are responsible for doing transfers for their husband at home. I think it is pretty regular that it is an individualized thing just because of the variety of lifestyles that people live." —Amber
		• "Obviously, we have our younger patients whose parents are with them, and they typically understand a decent amount. I think it depends on the patient population. We have patients who are in their 80s and 90s who have dementia, you know, and Alzheimer's, who are not going to remember and are having another health care provider with them, or someone from their assistive living facility, or family members, which is usually what we require for that. I would say it is 50/50. Some people really understand, and some other people are just impaired by other things in their life, like other disabilities or drugs and alcohol." —Carter
College	Patient-provider ratios	• "I would say that some of the challenges are the number of athletes I have. I have about 68 current athletes for whom I am directly responsible. With practices and sports schedules, there is not always a ton of time to take 15–20 minutes per patient who comes in to have that full-length conversation." —Porter
		• "Patient-to-practitioner ratio. For today, when I had everyone who had an injury because they all finished at the same time come in, and they all very patiently waited, I have only recently learned not to become anxious and freaked out because I have so many people waiting on me because I do not have any assistance. Sometimes you must spread out your educational pieces as the timing of everything fits. It makes it a whole lot easier. When you have many people trying to see you because they have to get somewhere else, I think that can take away from the time that you can spend to explain things in depth." —Stacy
	Access to patients daily	• "Thankfully for me, most of my kids are on campus, so I get to see them every single day." —Jo
	Concurrent interprofessional practice	• "Do they have access to a provider if they need help with that, or we are asking them if they feel comfortable talking with us about any situation or would they like to speak to a specialist? We also ask them, are there any concerns that you would like to discuss with our team physician? We do that with nutritionists as well." —Umar
		• "It is preparing them for their appointments with their doctor or if we are sending them out for specialized physical therapy. So, that they [in other terms] have a script or they have their questions written down so that they are prepared to ask the questions to get the answers that they need to make decisions." —RJ
	Resources and facilities	• "Some of the major ones are resources in terms of types of modalities or even just types of tape and things like that. We do have some limited resources. So, if they come from somewhere else, a lot of times, they will ask about things that we do not have here." —Megan
		• "Another challenge would be the facilities that we have on campus. We have 2. We have one athlete training facility that is going to service 8 of our sports, and then we have a much smaller clinic, which is in our gymnasium, which is going to service our court sports. So, just with those 2 different spaces, it is a challenge to provide quality care. We have to get creative with a policy to sign up for rehab appointments. Those are just a few challenges that we have in my setting to provide patient-centered care." —Umar
Secondary school	Facility concerns	• "Working at a high school, you do not necessarily have access to the best equipment and the best facilities. For example, I am not really in a closet, but I am not really in a dedicated athletic training room." —Stevie
	Variety of patients	• "In some cases, I have a huge group that is Muslim. I usually will; when we were in Ramadan, I had to ask them questions because there were certain things that were causing problems with some of their rehab and/or lack thereof. So, I usually try to incorporate their faith, and possibly I try to get some of them depending on the settings that they live in and trying to work around that, as well." —Lorna
		• "I do work with a lower socioeconomic group, so I have issues with people being in third shifts, so their parents are not even able to pick them up." —Sasha

Table 5. Essential Traits and Skills Domain

Job Setting	Category	Selected Quotes
Physician practice	Patient-centered abilities	• "You make a relationship with them. I feel like the clinic is a great example. They come in, and I ask them about their shoulders. You get to know about their whole family. Next thing you know, I am signing them up for surgery, and then, since I get to go into the operating room, I get to see it from start to finish, so I get to meet the person, get their history, know a little about them and their families, do the surgery, come out of the surgery, follow up with them. So, it is from start to finish. And I think that is super important because you get to see the patient from sometimes at their worst, to heal them, and that is very satisfying in a lot of ways to get to see the patient improve." —Carter
	Interpersonal communication—verbal	• "I think slowing down when you are communicating with [the patients]. Continuing throughout the process to ask, "What can I make clearer for you?" "What questions do you have for me?" —Angela" • "I would say it is ensuring through the best communication with the patient that they have all the resources and all the knowledge available to them to understand, and then to also reiterate to another person what it is that they are going through, or what it is that they will be doing as a treatment plan." —Kari
	Interpersonal communication—nonverbal recognition	• "They are asking this question in a way that I can comprehend that they are not understanding what I am saying. So, I think just using those little tidbits of they look confused, or they are asking a lot of questions. . .maybe I need to explain it differently." —Amber • "The biggest factor when I talk to the patients is just watching their visual cues. A lot of times, if I am talking to a patient, and I am using very high-level medical terms under- and a lot of medical terminology, their eyes kind of glass over. They seem disordered, disengaged from it, you know, bringing it back to a level that they understand." —Bob
College	Life outside and after sports	• "But now you are telling [the athlete she] cannot play. Yes, because you are not going to be able to play with your kids in 10 years if you keep trying to do this. So, trying to explain the severity of it and her parents just supporting whatever decision she wanted to make instead of listening to the medical reasons of why we said we did not want her to continue playing." —Stacy
	Rapport	• "You really build long-term relationships with them in the university setting, so you get to really know them as people." —Courtney • "Building that trust and building that credibility with the patient, those things are critical." —Jonathan
	Interpersonal communication	• "I think communication in our aspect is the best practice for either the athlete or their parents because the more you I think about things, I feel like the more understanding they are going to have, and the more comfort they are going to have." —Jo • "If the student does not understand it, we have to find this spot you understand and then build up from there. That is essentially what I do with the students. I find where it is that they understand with health, and then I build up from there with that." —RJ
Secondary school	Advocacy	• "Once we are in our rehab process, I say, "Hey, how do we feel today? Do we feel better today with rehab? About the same or worse than what we felt?" I do ask that with treatments so making sure that my patient population. . .that they feel a sense of ownership in their care." —Alexis
	Transparency	• "I just make everybody feel comfortable when they are in [the facility]. So, we try to get full transparency. And we try to make them feel as comfortable as possible, so they are able to tell us everything. We do not want them to leave anything out." —Howard • "I would say just being open and encouraging, as well as being friendly and kind to them. . .making them feel the most comfortable." —Jane

experience with injury. Participants also assumed a patient's health literacy based on external traits such as the patient's parent or guardian's experience with the doctor and the parent or guardian's attitudes toward health care, which then manifested similarly in the child. Lastly, the ATs discussed verifying the patient's comprehension to assess health literacy using knowledge checks/teach-back, one-on-one follow-up meetings, and distinct questions for middle school versus high school athletes. Jane described making individual assumptions about her patients' health literacy levels based on age and education level:

> We have 3 different athletes, all with one injury. One is a very young child, one is in middle school, and one is a senior in high school, right? All are at different education levels, so they have different levels of comprehension. The younger child may not understand larger medical terms. So, it would have to be simplified more than [for] the senior in high school who better understands anatomy and physiology. They may understand the processes that go on within the body. It will still be explained to the younger child, but just in a much simpler way.

Domain 4: Patient Education Materials and Delivery

Table 7 provides extracted quotes for this domain by job setting. The participants from the physician practice setting discussed patient education as an ongoing, personalized process complemented by digital resources and supplemental teaching. When delivering patient education, the struggles they identified were knowing how to modify for a specific patient and limited time. Kari disclosed that in her practice, she took time to

Table 6. Health Literacy Assessment Strategies Domain

Job Setting	Category	Selected Quotes
Physician practice	Patient input	• "By just getting a feel for where they are. Some patients are really interested in what is going on. Some patients really do not care too much. They want basic understanding. They do not want to go in-depth. All the patients want to go really in-depth into what their condition is. So, it really depends on the patient." —Bryan
		• "I have always taken the patients into accountability and consideration whenever treating or recommending any steps in a treatment plan. So, I want them to be active, not only be present in the conversations but have an active voice. . .active and informed in their treatment plans." —Ian
	Perceived expertise of clinician	• "I think you can usually get a gauge of patients who need a little extra time for education. If that is the case, as the athletic trainer, I bring them in, and I go over just basic surgical education with them. I think that is something that is huge for athletic trainers. We are really good at giving patient education, and that is one of my main roles in the clinic setting, so there is not a great way to assess it other than just reading the patient and asking those questions if they understand." —Carter
		• "You know, I have been doing this for 20+ years, and I have a kind of a speech that I give with regards to different conditions. I have had students that I've precepted for, and they will say it on the first couple, and then they will come out after the third or fourth, and we are like, "Oh, you just said that same thing." —Bob
	Struggles	• "I would also say patients are willing to take the extra couple of minutes to go over it. Some want to know exactly what is going on, and others are like whatever, I trust the doctor, I will be on my way. I trust you. Just get me back on the field as quick as I can." —Remy
College	No formal process	• "I am not really sure what you mean by that. I do not document smiley faces or rate it from 0 to 6. I do not. I am not sure that I formally measure [health literacy]." —Stacy
	Confirmation bias	• "Insurance is a big thing for us because we have a lot of kids who have Medicaid, and they have to have insurance that works in [state], and so explaining how that works, explaining how deductibles work, and all that. So as far as assessing it, I think the biggest thing is just checking in." —Jonathan
		• "One of the things that I do is I will start by asking certain things like what is your major? So, a kinesiology major that is a senior. You would have a better grasp of certain concepts than a freshman. That is a communications major, but freshman kinesiology majors usually will have more of a desire to have an exam, you know, to have an understanding or want to speak with you in more technical terms. Versus, say, a business major. Okay, a business major may not understand the darn thing you are saying. And, to a certain extent, may not care. So, I have to use more and more layman's terms so that they can understand what exactly is happening." —RJ
	Nonverbal perceptions	• "I try to just pick up on what they seem to be feeling based off body language, facial expression, tone of their voice, and kind of let them let them determine when it is time for them to make the decision when they want to kind of talk about it a little bit more." —Porter
		• "Watching facial expressions and body language to see if what is coming out of their mouth is consistent with what their body is telling us." —Ray
Secondary school	Individual assumptions	• "Every once in a while, I show them some of the studies, but for the most part, like with the age group I have, I usually am talking to them and telling them what we end up doing with other patients and what they might see at the college level and stuff." —Jose
	External assumptions	• "Health literacy is their understanding of medical terminology, medical injuries, ailments, things like that. So, I feel like somebody who is not around this environment often, and automatically, I think about my parents. I do not know if their health literacy is great. If they are not someone who is going to the doctor a lot, not in a bad way, but just doing their regularly scheduled things like an appointment versus someone who is like, I have not been in the doctor in like 10 years. I feel like someone who is constant with their care has better health literacy and understanding." —Alexis
		• "If I know that a parent is more hesitant to see a doctor, then I also know that the kid is generally not going to be the most forthcoming about how they are feeling or what they are experiencing because they don't want to burden the parent, and it can be for whatever reason. You see the other side, where, like the parent goes to the doctor for every single thing, and then it kind of manifests in the child as well. So, you get a lot of that mirroring. But then you also get the opposite. It is where, like, the parent does not want to do anything, and the kid does, or vice versa. I see it every day." —Frederick
	Verifying comprehension	• "While I am explaining it to them, I say, "Okay, do you understand what I'm saying?" Like, fully or repeat it back to me what you think is going to happen or, like, what is happening in your own terms." —Howard
		• "The easiest thing specifically for high school–aged kids is them repeating back what you said. And it is like, I said this. . .can you repeat back to me what it is that I said, right? So, the simplest thing is just to say I got you an appointment on Monday at 3 PM with this doctor. I just asked them to repeat that back to me and then telling them, can you please text that to your mom right now?" —Sasha

provide one-on-one patient education to ensure the patient had a full understanding of the treatment plan:

> It is more about being there for the one-on-one experience. After the provider has left the room, a lot of what we are doing is patient education based. So, the provider comes in, presents all the options, and then, as he leaves, or whoever the provider is leaves, we are responsible for making sure that the patient understands what options are available to them and what the option is that they have chosen. What is going to happen to make you know what option they chose to happen, like if they choose physical therapy or if they choose surgery? How do we go about making all that happen and get scheduled? But then making sure that the patient does not have any lingering questions. We do a lot of teaching. Is there anything you do not understand? Can you tell me what time your physical therapy appointment is? Can you tell me what your diagnosis is? And then,

Table 7. Patient Education Materials and Delivery Domain Continued on Next Page

Job Setting	Category	Selected Quotes
Physician practice	Ongoing and personalized	• "We are constantly learning new stuff. Patients are constantly given information throughout the treatment process. As things change, as parameters change, outcomes change. But initially, that is that initial session or two that you really try to educate the patient on what is going on with them and what outcomes and outlooks. You know what the outlook is. It is just something that will be quick. Something that will be more prolonged, will it involve comanagement, etc." —Bryan • "I think educating patients on new research that comes out dispelling some old biases that we have, or that other patients have. I think just educating and keeping patients aloft of new treatment is one of the hardest things, and then not even going into different cultures and how healing and medicine is viewed through their lens." —Remy
	Digital modes	• "If we move on to surgery, then we have a bit more handouts around that. So, they have a resource to look at. We have plans to implement an online version of all those things so that patients can find the information through our website at some point, but that's not life at this time." —Felicity • "We have flyers that we hand out, but we also utilize our electronic medical record. So, we have a lot of educational stuff, whether it be flyers or home exercise programs or even, you know, phrases that we have that we can put into the patients' instructions. I think another thing that we do is provide resources to other departments within our hospital. So that the patients can be taken care of and making sure that they are educated on, like, why we are doing it as well." —Ophelia
	Supplemental teaching	• "Going over their MRI with them and asking them if they understand. But we are going over and then saying this like pointing in the mind, this is the inside of your knees. Instead of saying like, this is the medial aspect of your knee and then obviously drawing pictures for them helps a lot." —Carter
	Struggles	• "There are some people whose first thought is probably, 'Who's this girl? Why did she come in and talk to me? I am about to waste my time talking to her, and the doctor is going to have to ask me this all over again.' This can happen, you know, frequently, but that is also part of working in an educational facility. So sometimes I feel like patients will give me just kind of that, and not necessarily an attitude, but I can tell that they are not willing to tell me everything, or they are like huffing about it, and sometimes it can make it difficult to provide them education whenever they are not willing to listen." —Amber • "I would say some of the biggest barriers are probably just lack of overall education about what we do and what we can provide. Then sometimes it can be on the patient as well. We want to say that it is not or trying to avoid that at all costs. Sometimes, it is just, you know, noncompliance. We cannot do much about that. Unfortunately, some people do not want to do what it takes. They want that magic pill. We kind of break that news to them like, no, this is going to be a 3- to 4-month dedicated recovery and physical therapy. Hard work. They do not like to hear those kinds of things. They want that quick, easy fix, and sometimes they will shut down it. You know we are not able to get that tool." —Ian
College	Perceptions of patient health literacy	• "[Health literacy] is a big barrier because they do not know what they do not know kind of thing. If you tell them certain things, and they are like, yes, yes. And then they might come back the next day and say, 'Yes, you told me this, but I realized I do not really know what you are talking about.'" —Jo • "So, if you are talking to a basketball player, you are going to put things in basketball terms. If you are talking to a football player, you are going to put things in football terms. But other than that, I mean, it is explaining things in the best way that you think people will understand." —Jonathan
	Plain language	• "Just informing the patient of what is happening in their own body. This is especially true with our athletes. It can be very scary when you know someone is telling them, 'Oh, you have a rotator or cuff injury,' and they have no clue. What that means to them could be, 'Oh, am I going to miss 6 weeks of my sport? Oh, am I going to have to get surgery? Oh, is this nothing to worry about?' So, I think it is just in the simplest term I could think of is just informing, fully informing the patient of what is happening." —Porter • "I speak to it like, well, you have sickle cell. Think of it as an intersection and now traffic is backed up, and the oxygen has to be able to get through. Even though your car was not wrecked, you are delayed in getting your oxygen, which could cause your sickle cell. So, I try to explain things in simpler terms, and maybe through stories to explain it, but not always using the most specific science words that they do not understand." —Stacy
	Health informatics	• "I like to have conversations with the athletes and the patients and show them videos or send them links to videos. If they are not grasping a surgery concept, an injury concept, or an exercise concept, I look up videos or articles to send to them." —Courtney
	Question prompting	• "I try to keep an open environment and allow them the opportunity to ask questions and not shoot them down if they ask questions that might be like, oh, this is a dumb question. But when, in reality, it is worth asking. Also, I try not to shoot down those opportunities or say, let us talk about that in a little while about something else if I am busy." —Megan • "Normally, I could just continue to ask them and make sure they understand not just that single day, but in follow-up visits, make sure they still comprehend and do not have any further questions." —Ray
Secondary school	Complementary handouts and visuals	• "I am big fan on infographics. With every concussion, I made an infographic that takes them through our process in a visual way and has all the different kinds of barriers that I have encountered in terms of having to see a doctor if I pull you and you need to get clearance and all those things. So, trying to use a lot more technology and increase my accessibility." —Frederick • "Depending on what it is that is going on, whether it is musculoskeletal or general medical, depending on what it is. When it comes to muscular, pulling out diagrams or skeletal figures, using that as a visual representation so that they can see what is going on inside the body." —Jane
	Engaging with parents/ guardians	• "I keep the families of my patients involved. Since I work at a high school, it is the law to keep the families involved of the minors who I work with, so constantly, keeping the parents involved as well." —Jose

Table 7. Continued From Previous Page

Job Setting	Category	Selected Quotes
	Inclusive and thorough communication	• "I was taught that it is important to teach at a fifth-grade level, and then you can go from there because everyone, for the most part, has a knowledge level at that level. So, if you bring it down to that level, then they are able to ask. Follow-up questions are better rather than saying them the way that I would when relaying information to a colleague; I wouldn't necessarily change words; I would say, clavicle, etc. Blah blah blah fracture. All of those keywords are easy for us, and I change them when I am working with my patient knowing that fracture and break are the same thing." —Alexis • "If they are not getting or understanding what I am saying, I will have them explain it. If they do not understand what we are both saying again. I said that we would like to call the doctor if he is available, or if, like the doctor, even there, we could have him come and explain it. Anything like that nature that we will do. We will keep trying to explain in different ways." —Howard

Abbreviation: MRI, magnetic resonance imaging.

making sure that the patient really feels like they have a good grasp on their diagnosis and their treatment plan before they walk out of the room.

Collegiate ATs used their self-perception of the patient's health literacy to guide the patient education they delivered. The participants often used plain language, health informatics, and question prompting to ensure patient education was well received. Specifically, RJ stated that he used health informatics such as pictures on the patient's phone as a method of delivering patient education:

Their phones are the best thing for them. I try to bring up pictures. I try and show them what is going on. You know I can draw those pictures at times to explain what is going on. So, they are using [their phones] a lot of the time.

Finally, ATs in the secondary school setting discussed providing complementary handouts and visuals to deliver patient education, such as using models, diagrams, charts, and videos, and changing their approach based on the patient's learner type. Also, they discussed engaging with parents or guardians during patient education to relay health information about their child and following up with the parent or guardian to answer any questions they had. Lastly, the ATs discussed using inclusive and thorough communication by checking in with the patient during rehabilitation sessions, avoiding medical jargon, describing things differently if they were not understood by the patient, simplifying information, and translating what they knew to the patient regarding their illness/injury. Sasha detailed that in her practice, she kept a support system involved when delivering patient education, whether that was parents/guardians, coaches, or a teammate's parent:

Some of these kids do not have parents that are as supportive. The other thing is talking to a coach or talking to a teammate or a teammate's parent that is the additional support system for them. Some people do not want to deal with me because they do not know who I am or they do not understand me or what I do, or they are off about me for whatever reason. The coach, the other teammates, or the parent route does help a lot.

DISCUSSION

We asked participants to share their experiences assessing health literacy, delivering patient education, and creating a patient-centered environment in their designated job settings. Based on the findings, ATs' practice of PCC differed by job setting. The patient experience was important to each AT; however, there were some discrepancies in formal health literacy and patient education strategies that need to be further explored.

Patient-Centered Care

First impressions and nonverbal communication are essential when creating a patient-centered environment. The first impression made of the clinician by the patient occurs within the first 7 seconds of the patient encounter,[37] and 60% of communication is nonverbal, such as body language, eye contact, and gestures.[37] The 6 domains of PCC supported by the National Academy of Medicine include respect for values and preferences, coordinated care that emphasizes physical comfort, addressing fears and concerns, involving their social support systems, and providing communication and patient education.[2–4] The barriers to PCC include increased workload, focus on task completion, the power imbalance between patients and health care professionals, patients and families not seeking opportunities to be involved in decision-making, cross-cultural factors, and a lack of health literacy.[2–4] During the interviews, we heard participants discuss the domains of PCC and the barriers listed above; however, the overall application of these concepts could have been better. During the interview, participants talked about creating a relationship with the patient, privacy, communicating with and listening to the patient, asking about life outside of the injury/condition, including support systems, and encouraging the patient to participate in decisions involving their care.

Health Literacy

An article by Berkman et al states that various definitions of health literacy exist in the United States and that the definitions evolve based on new technology and developments worldwide.[14,38] Overall, a lack of consensus about the definition of health literacy could hinder progress in its measurement and delay care.[38] On the other hand, the range of definitions shows that health literacy is a complex subject and that different definitions may be needed depending on the patient and the clinician's goal.[38] Also, health literacy levels vary among the general population.[14] An individual's social determinants of health, including age, health status, chronic disease, access to insurance, race, alcohol and drug use, and experience with health care, can influence their health literacy.[14] With respect

to athletic training and sports health care delivery, the social determinants of health may differ based on the patient populations that providers engage with. Picha et al provided a comprehensive overview of social determinants of health and how they intersect with health care delivery.[5] Some participants acknowledged these patient qualities with health literacy levels when defining health literacy and their assessment strategies; however, some definitions and assessments needed to be corrected and made more effective.

Measuring health literacy is best done by using a validated assessment tool.[14,38,39] The most widely used tools to assess health literacy are the Rapid Estimate of Adult Literacy in Medicine, the Test of Functional Health Literacy in Adults, and the Newest Vital Sign.[39,40] Although health literacy is adequately evaluated using a validated tool, none of the participants in our study used or discussed a validated tool. The Agency for Healthcare Research and Quality provides tools to improve organizational health literacy using health literacy universal precautions. As for bloodborne pathogen universal precautions, the toolkit uses an evidence-based framework suggesting that all health information be structured in a manner that is simple and understandable for all people to reduce our implicit and explicit bias in choosing who may need help navigating health information.[41] However, universal precautions limit the engagement of health equity. In achieving the Quintuple Aim, ATs who are creating a patient-centered experience should begin with the health literacy universal precautions and then proceed to an individualized care plan specific to the values and needs of the patient. All participants used verbal/nonverbal communication with the patient and assumptions, bias, and self-experience to assess health literacy. Additionally, many participants discussed that their patients had various health literacy levels in their job settings. Participants stated they perceived that most, few, or half of their patients were health literate. Our study exposed that ATs are not yet competent in health literacy assessment. A lack of proficiency and expertise with this skill can hinder the quality of patient education ATs deliver and the creation of a patient-centered environment.[37]

In the interest of improving health systems, ATs should contribute to creating a health-literate organization. The 10 principles of a learning health system framework include leadership prioritizing health literacy; integration of health literacy into planning, evaluation, patient safety, and quality improvement; preparing the workforce to be health literate; integrating patients and community members into the design, implementation, and evaluation of services; meeting the patients where they are without stigmatization; using health literacy in interpersonal communication; providing easy access to information and services; designing and distributing print, audiovisual, and social media content that is easy to understand and to act on; addressing health in high-risk situations; and communicating clearly about health insurance coverage and what patients will need to pay.[42] A critical component of creating a health-literate organization is developing a health-literate workforce, which requires just-in-time support, assessment and ongoing personalized development, and a regular cycle of analyzing training needs and gap identification.[42] No efforts to assess patient health literacy can be addressed without a health-literate workforce and a learning health system, so even if an AT is capable of assessing patient health literacy but is unaware of how to address it individually or organizationally, patient needs will not be appropriately addressed.

Patient Education

Patient education practices must be continually improved to increase positive health outcomes and ensure that health care providers are updated on recommendations.[19,24,43] Additionally, a study by Eloranta et al involving orthopaedic nurses' perceptions of patient education practice during 9 years at a university hospital in Finland showed no positive change in the nurses' patient education skills or the implementation of patient education.[19] The study results indicated that patient education practices will not change simply through on-the-job interactions without intentional professional development and interventions.[19] ATs should learn about and apply a standardized approach to patient education by identifying the patient's health literacy level and not assuming; this way, patient education methods will be adjusted depending on the patient's health literacy level to ensure effective patient education strategies are applied.[37] A commentary from Madden and Tupper published in the *Journal of Athletic Training* in 2024 provides a comprehensive overview of strategies that an AT can use.[44]

It is essential for the patient to contribute and participate in the health care experience by asking 3 questions: What is the main concern? What do they need to do about it? Why is it important for them to do this?[45] This follows the Institute for Healthcare Improvement Ask Me 3 program, which focuses on a patient-centered approach to education.[45] Other elements to consider include a show-me method, in which the patient models the behaviors they will do once they leave your health care facility, or using a chunk-and-check approach, in which the provider pauses and checks for understanding after every 3 to 5 pieces of information.[46] When responding to the patients, the provider should use plain, nonmedical language to ensure they are given the necessary information and can understand it. During this responsive dialogue, the AT should address culture and social determinants of health and seek feedback.

Following patient education, repeating and summarizing the necessary information, and using the teach-back method will ensure that the patient understands the information given to them.[37] The teach-back method involves asking the patient to repeat the information stated by the clinician in their own words.[37] During this process, incorrect information is corrected, and correct information is reinforced continuously until both parties are satisfied.[37] Data from a national household survey in the United States identified that only 29% of health care providers used a teach-back method.[47] Participants mentioned patient education delivery strategies such as handouts, digital modes, communication in plain language, and the teach-back method. Yet patient education is not adequately delivered without sufficient assessment of the patient's health literacy.[37] Based on their lived experiences, our study's participants seem insufficiently skilled in health literacy assessment. Participants demonstrated that patient education was a comfortable concept for them, yet the best patient education is not being used without adequately assessing the patient's health literacy.

For example, we recommend that ATs in the physician practice setting use brief live questioning, such as 3 questions to identify inadequate health literacy: "How often do you have someone help you read hospital materials?" "How confident are you filling out medical forms by yourself?" and "How often do you have problems learning about your medical condition because of difficulty understanding written information?"[48] The use of a brief questioning process in a face-to-face format may

allow ATs in this job setting to intervene quickly, as patients may not return for future visits. Additionally, it may be helpful for secondary school ATs to consider the parents' or guardians' health literacy, as well as that of the patients, by using tools such as the Parent Health Literacy Questionnaire[49] to address caretaker health literacy and the Rapid Estimate of Adult Literacy in Medicine–Teen[50] for high school-age–related questions. These specific tools could be administered during preseason sports meetings or mass preparticipation screenings. Finally, ATs in the college/university setting may benefit from conducting a health literacy assessment quiz, like the exam provided in the Health Literacy Universal Precautions Toolkit (3rd edition).[51] Data could be collected in such a way that embraces the competitive nature of college athletics. The information gleaned from the quiz can then be paired with the student-athlete's background, including their field of study, socioeconomic background, and gender, to adapt the patient education approach.[52]

Limitations and Future Research

This study has some limitations. Social science research has an inherent self-selection participant bias. The participants in this study came from various educational and personal backgrounds; however, we did not identify everyone's specific professional development in these areas. Additionally, some participants expressed that they had worked in other job settings, which may have influenced some of their answers.

It is vital for researchers to explore further the most effective ways of assessing health literacy and delivering patient education to foster a patient-centered environment. To do so, we recommend that quantitative studies be performed exploring the extent to which ATs deliver PCC by job setting. In addition, future work should explore continuing professional development in these critical areas using multimodal strategies such as simulation and interactive lectures.

CONCLUSIONS

ATs in the physician practice, college, and secondary school settings have different experiences with health literacy and patient education. The patient demographics and culture of these settings vary, making for a unique and varied approach to creating a patient-centered environment. We identified a need to explore and improve organizational health literacy to assess a patient's understanding and be skilled in identifying, adjusting, and providing patient education specific to each AT job setting, resources, and training. Using effective health literacy assessment strategies and methods for patient education delivery will create a patient-centered environment, allowing patients to obtain the best health outcomes.

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