Internet Journal of Allied Health Sciences and Practice

Volume 21 | Number 3 Article 16

June 2023

Experiences and Outcomes of Athletic Trainers Using Complementary and Integrative Health: A Qualitative Study

Katherine Cantlebary
Indiana State University, klcantle@gmail.com

Matthew J. Rivera
Indiana State University, matthew.rivera@indstate.edu

Shannon Hamilton
Indiana State University, shannon.hamilton@indstate.edu

Lindsey E. Eberman
Indiana State University, lindsey.eberman@indstate.edu

Recommended Citation

Cantlebary K, Rivera MJ, Hamilton S, Eberman LE. Experiences and Outcomes of Athletic Trainers Using Complementary and Integrative Health: A Qualitative Study. The Internet Journal of Allied Health Sciences and Practice. 2023 Jun 29;21(3), Article 16.

Experiences and Outcomes of Athletic Trainers Using Complementary and Integrative Health: A Qualitative Study

Abstract

Purpose: Complementary and integrative health (CIH) is common among patients in the U.S. and is a useful tool for athletic trainers to provide holistic treatment. There is currently minimal literature regarding athletic trainers' experiences and outcomes of using CIH modalities for patient treatments. The purpose of this project was to explore the experiences and outcomes of collegiate athletic trainers using CIH modalities. **Methods:** This study used qualitative semi-structured interviews, analyzed by phenomenological approach, using consensual qualitative research analysis. Trustworthiness and credibility of the consensus codebook were established by member checking, multi-analyst triangulation, and auditing. Fourteen athletic trainers (7 females, 7 males, age=38±12 years, years of experience=15±12 years) engaged in an online interview (Zoom, San Jose, CA). All interviews were audio-recorded and transcribed. **Results:** Four domains (Figure 1) emerged regarding the experiences and outcomes of CIH use by athletic trainers: 1) education, 2) motives, 3) clinical application, and 4) barriers. Participants had divergent educational pathways; self-directed learning was the most common pathway. Motives for using CIH interventions included improved subjective outcomes and patient preference. Participants discussed a variety of modalities and outcomes to assess their implementation. Barriers included stakeholder buy-in and resources. **Conclusions:** Participants noted improved outcomes via addressing the whole patient when using CIH. As athletic trainers interact with diverse patient populations, CIH interventions may provide more opportunities to include holistic care. However, education on CIH varies between participants. Education surrounding interventions in athletic training, regardless of the level of learning, should focus on quantifiable and meaningful clinical and patient-rated outcomes, which should include CIH approaches. Moreover, additional objective research regarding the outcomes of using CIH as a treatment modality is needed among athletic populations to increase stakeholder buy-in.

Author Bio(s)

Katherine Cantlebary DAT, LAT, ATC is a graduate of the Indiana State University Doctorate in Athletic Training program.

Matthew J Rivera, DAT, LAT, ATC is an assistant professor in the Indiana State University Doctorate in Athletic Training program in the department of Applied Medicine and Rehabilitation.

Shannon Hamilton DAT, LAT, ATC is a graduate of the Indiana State University Doctorate in Athletic Training program and head athletic trainer at Saint Mary of the Woods College in Terre Haute, IN.

Lindsey E Eberman PhD, LAT, ATC is a professor an the program director of the Indiana State University Doctorate in Athletic Training program in the department of Applied Medicine and Rehabilitation.

IJAHSP™
The Internet Journal of Allied Health Sciences and Practice
Dedicated to allied health professional practice and education
Vol. 21 No. 3 ISSN 1540-580X

Experiences and Outcomes of Athletic Trainers Using Complementary and Integrative Health: a Qualitative Study

Katherine Cantlebary
Matthew J. Rivera
Shannon Hamilton
Lindsey E. Eberman

Indiana State University

United States

ABSTRACT

Purpose: Complementary and integrative health (CIH) is common among patients in the U.S. and is a useful tool for athletic trainers to provide holistic treatment. There is currently minimal literature regarding athletic trainers' experiences and outcomes of using CIH modalities for patient treatments. The purpose of this project was to explore the experiences and outcomes of collegiate athletic trainers using CIH modalities. **Methods:** This study used qualitative semi-structured interviews, analyzed by phenomenological approach, using consensual qualitative research analysis. Trustworthiness and credibility of the consensus codebook were established by member checking, multi-analyst triangulation, and auditing. Fourteen athletic trainers (7 females, 7 males, age=38±12 years, years of experience=15±12 years) engaged in an online interview (Zoom, San Jose, CA). All interviews were audio-recorded and transcribed. **Results:** Four domains (Figure 1) emerged regarding the experiences and outcomes of CIH use by athletic trainers: 1) education, 2) motives, 3) clinical application, and 4) barriers. Participants had divergent educational pathways; self-directed learning was the most common pathway. Motives for using CIH interventions included improved subjective outcomes and patient preference. Participants discussed a variety of modalities and outcomes to assess their implementation. Barriers included stakeholder buy-in and resources. **Conclusions:** Participants noted improved outcomes via addressing the whole patient when using CIH. As athletic trainers interact with diverse patient populations, CIH interventions may provide more opportunities to include holistic care. However, education on CIH varies between participants. Education surrounding interventions in athletic training, regardless of the level of learning, should focus on quantifiable and meaningful clinical and patient-rated outcomes, which should include CIH approaches. Moreover, additional objective research regarding the outcomes of using CIH as a treatment modality is needed among athletic populations to increase stakeholder buy-in.

Keywords: complementary integrative health, athletic training, clinician experience

INTRODUCTION

There has been an increase in the use of complementary and integrative medicine among the general public, and especially among non-white individuals.[1] According to 2012 data, more than 30% of United States (US) adults and around 12% of children use some sort of complementary medicine for injuries and/or illnesses.[2] Specifically in regards to athletic injuries, according to a 2004 study in National Collegiate Athletics Association (NCAA) Division I collegiate athletes, 56% of athletes reported using complementary and integrative health (CIH) modalities in the last year, with massage and chiropractic therapy being the most common.[3]

Athletic trainers are multi-skilled healthcare professionals who provide primary, emergent, preventative, and rehabilitative care, as well as examination, clinical diagnoses, and wellness promotion.[4] Athletic trainers commonly treat diverse student-athlete populations in the college setting, who seek out complementary health options.[5,6] It should be specially noted that collegiate athletes use CIH modalities at a higher rate than any other subset of the US adult population.[6] Further, some of the modalities that align with CIH are often used within the athletic training setting, like massage.

Across previous studies of physicians and nurses in Australia, Iran, and the US, the percentage of these healthcare professionals that believe CIH modalities are beneficial in treating disease and illness as well as have a positive effect on patient satisfaction range from 49.7% to 87.9%.[7-10] A common theme from these studies is that healthcare professionals, despite having positive personal beliefs about CIH, are less likely to recommend and/or refer out for CIH modalities when their confidence and knowledge of those modalities is low and/or they are not confident in the quality of evidence-based information regarding these therapeutic modalities.[7-10]

There are minimal studies regarding athletic trainers' experiences and outcomes of CIH use despite the large percentage of patients, particularly athletes, in the US that use CIH modalities. The purpose of this study was to explore the experiences and outcomes of CIH use by athletic trainers in the US to understand the clinical application, motives, barriers, and education of CIH by these healthcare professionals.

MATERIALS AND METHODS

Design

A qualitative, phenomenological approach was used to explore athletic trainers' experiences and outcomes of using CIH. The phenomenological approach was chosen to explore individuals' lived experiences integrating CIH into the care they provide. An online semi-structured interview with a consensual qualitative research (CQR) analysis design was used for this study. The study was conducted from May until July of 2021. All data are qualitative narrative responses. This research study was deemed exempt by the Indiana State University Institutional Review Board.

Participants

Participants were sourced from the National Athletic Trainers' Association (NATA) email list. Seventy-seven (77) participants were invited via email to participate in this study. Inclusion criteria for the participants included individuals 18 years of age or older who are collegiate athletic trainers in good standing with NATA and who use CIH in their practice. Exclusion criteria included retired athletic trainers, athletic trainers not currently working in the collegiate setting, and athletic training students.

Data Collection and Analysis

A semi-structured interview script was created using previous literature and previous interviews of CIH use by physicians and nurses[7,8] to ask participants questions regarding their experiences and outcomes using CIH. Those previous interviews suggest that healthcare professionals believe CIH modalities are beneficial in treating disease and illness as well as having a positive effect on patient satisfaction. Questions in the interview included participants;' education of CIH, their motives for use, the barriers in implementing CIH, and their clinical application of CIH. The interview was sent to athletic trainers that use CIH in their practice for content validation. The interview was conducted in 4 practice interviews to ensure the questionnaire was clear, concise, and interpreted consistently between interviewees. The practice interview data are not included in this study.

Participants read and signed an informed consent form and scheduled an interview with the primary Investigator (PI). All participants included in this study were interviewed via the Zoom© platform, a teleconferencing software (version 5.5.1; Zoom©, San Jose, CA), by the PI. The PI re-stated the inclusion criteria and purpose of the study and gained verbal consent from the participant before beginning the interview. All interviews (avg 30 min) were recorded and transcribed using artificial intelligence before being de-identified and checked for accuracy by the PI. The de-identified transcripts were then sent back to the individual participants to correct or clarify answers.

The data analysis team used the CQR approach to analyze the data.[11] The CQR method allows for identifying themes in these responses from participants. The CQR method was chosen for this research due to its high validity and reliability in analyzing themes through constant comparative analysis.[11] In the first phase, the team reviewed 4 transcripts independently and took notes on the common themes found. The team then met to compare their notes and created an initial draft of the codebook. In the second phase, the team independently reviewed 2 of the initial transcripts and 2 additional transcripts using the codebook. The team met again and confirmed themes in the first draft of the codebook and added or changed any themes for a final draft of the codebook, the consensus codebook. During the final phase, the PI used the consensus codebook to individually analyze all 14 transcripts from this research. At the end of analysis, a frequency count of categories, using the codebook, was conducted. The coded transcripts were then sent to an external auditor for review and validation.

RESULTS

A total of 14 participants were included in this study, and varied across age (mean=38.3), years of experience as an athletic trainer (mean=15.1), and ethnicity (Table 1). A total of four domains emerged from the data: 1) education, 2) motives, 3) clinical application, and 4) barriers. Table 2 details the frequency of the categories noted from each domain as well as supporting quotes for each category.

Table 1. Demographic Information

Participant	Age in Years	Years of Experience	Gender	Ethnicity
1	30	6	F	Caucasian
2	40	17	F	Caucasian
3	38	4	M	Caucasian
4	31	9	F	Caucasian
5	26	4	M	Caucasian
6	54	30	M	Caucasian
7	30	15	M	Hispanic/Latinx
8	30	8	F	Hispanic/Latinx
9	53	30	M	Caucasian
10	25	4	F	Caucasian
11	64	39	M	Caucasian
12	27	1	F	Caucasian
13	40	20	F	Caucasian
14	48	25	M	N/A

Legend: F = Female, M = Male

Table 2. Supporting Quotes and Frequencies for the Education Domain and Categories

Category: Subcategory Frequency Count (n)	Supporting Quotes
Education	
Formal/Organized (9 cases, Typical)	"I was a massage therapist before I became an athletic trainer." "I was a member of the initial cohort for the Doctor of Athletic training degree and that's where my introduction, came from and what prompted me to start using them more in my clinic."
Informal: Learning on the Job (6 cases, Variant)	"I recently got a new assistant, and she kind of introduced me to some things… but showing me how other things can potentially be used." "It was introduced during my education, even though it wasn't in lecture in classes, it was more practical introduction and then, as I progressed in my own practice and my own career kind of took from what I learned then and work that in as best I could."

Category: **Subcategory** **Frequency Count (n)**	**Supporting Quotes**
Informal: Familial Exposure (2 cases, Rare)	"My mother actually was a natural therapeutics specialist, who actually was trained in alternative medicine and complementary medicines, mostly the Chinese and the alternative medicines that are Eastern medicines. And I gained a natural therapeutics specialist certification as well."
Self-Directed (12 cases, Typical)	"In going to professional conferences, whether it's NATA National Convention or going to our regional meetings here or the Indiana Athletic Trainers' Association, I realized that I more gravitate towards treating the whole body."
Motives	
Clinical Reasoning: Treat the Whole Patient (9 cases, Typical)	"…the role I would say, would be more along the lines of a holistic model, and when I say holistic, I'm speaking about the whole person, about the whole body." "I would say 75% of it is focusing on that holistic psychosocial with the 25% being the physiological. I want to address the whole patient … there's going to be a lot of anxiety around injury. A lot of anxiety around performance. … And that's going to help their therapeutic outcomes be more successful in my mind."
Clinical Reasoning: Additional Modality (8 cases, Typical)	"I think it's a new area that people are exploring right now, and as healthcare providers, as athletic trainers, we need to not only go with our basis, which is our orthopedic and physical therapy background, but also be able to expand that background, that knowledge, into alternative medicines but also alternative practices that are starting to come about now, with new research and new practices."
Clinical Reasoning: Improved Subjective Outcomes (12 cases, Typical)	"And that's the main focus, that patients are doing better anecdotally… let's keep it going this way and in researching best practices and seeing if this kind of falls in line and try to bridge those gaps."
Stakeholder Views and Acceptance (1 cases, Rare)	"I haven't had pushback from my administration. Mostly one because I have that relationship that they trust that what I'm doing is within scope and it's something that you know I'm qualified to do, but also when the administration that was there when I first started at the College is no longer at the College. So, the administration that I now have this is something that I've always done so they haven't really pushed back on me because they're like Oh, this is just always been something you do this hasn't been something that is unusual."
Previous Experience with a Modality (5 cases, Variant)	"When I was an athlete it [CIH] was something you expected it was one of the treatments they [athletic trainers] used and it's a treatment they teach you and they encourage certification for in athletic training programs."
Patient Preference (10 cases, Typical)	"A lot of the cupping and using instrument assisted soft tissue mobilization really made a big … they'll say that that really helped out a lot, I'm like okay great, so let's try this again, and we keep kind of working toward it."
Social Media Exposure (3 cases, Variant)	"Here's where I found it, I saw Michael Phelps, his shoulder at the 2016 Olympics."
Clinical Application	
Types/Modalities (14 cases, General)	"I do a lot more hands on, so I would say, a preferred method is massage but I'm doing a lot of cupping as part of that hands on too." "So when someone initially suffers an injury, I do talk to them a lot about breathing to control, whether it's a spasm or the pain, from having let's say an acute ankle injury or any trauma. I'll utilize that and that makes a huge difference." "I integrate CAM pretty regularly into my clinical practice, specifically for mental health so that includes yoga, guided imagery, and journaling is typically something that I integrate into my clinical practice, and those are the things that I used most often."

Category: Subcategory Frequency Count (n)	Supporting Quotes
Outcomes (10 cases, Typical)	"I try to use a global and a specific [outcomes] so I'll try to use three different measures. I can get an ankle or a lower extremity [outcome] and then I can get a global change, and then I can get a general [outcome] like the DPAS the GROC is more, you know long term that allows me to see me get more of a window into how they feel as some psychometric properties." "…the most often I use the PHQ9 or the GAD7 … And then, if associated with another condition another musculoskeletal condition it's typically the patient outcome that I've chosen for that condition, whether it's the DASH or LEFS or anything along those lines."
Barriers	
Formal Research (6 cases, Variant)	"There's no research…well technically there is…as Americans, we can't read it, because we don't have that background in whichever language it is."
Resources (10 cases, Typical)	"I would like to learn more, it's just hard because being an athletic trainer in this setting, you're so busy and it's hard to keep up, obviously with everyone." "I live in rural XX. Ironically, alternative medicine is not very well liked here, just because there isn't much resources, like the nearest acupuncturist I have is probably in XX, which is about three hours away from me.
Stakeholder Buy-In (11 cases, Typical)	"Patients say, 'no I'm fine,' or, they feel like there's still an image associated with going to see a counselor. I think you still have the people who are, and myself included, coming out of my [professional] curriculum program, you still have the people that are very Western medicine focused and, 'Why should I try something else."

Legend: General = 14 cases; Typical = 7-13 cases; Variant = 3-6 cases; Rare = 2 cases

Education

In the education domain, three categories were identified: *formal/organized education, informal education,* and *self-directed learning*. Regarding formal/organized education, almost 80% of the participants learned about CIH modalities in school, most commonly at the post-professional level through a master's program or through a Doctor of Athletic Training program. Of those, 4 individuals obtained a degree with a focus in CIH modalities such as a licensed massage therapist degree, natural therapeutics specialist degree, and yoga certification degree. Participants described using this training in conjunction with their athletic training certification for patient treatments. Rarely, participants indicated familial exposure was their source of education, where either a parent was a CIH healthcare professional, or they grew up using those modalities for personal medical purposes. Less than half of participants in this study learned about CIH modalities from other informal education sources such as co-workers, professional-level educators, preceptors, or other students. The most common method of education of CIH modalities was directed learning, specifically professional conferences at the national or state level, and online courses.

Motives

The motives behind athletic trainers' use of CIH included *clinical reasoning* with subcategories of *treating the whole patient, CIH as an additional modality*, and *improved subjective outcomes* noted by either the patient or the athletic trainer when using CIH. About 66% of participants stated that CIH modalities allow them to treat a patient holistically, in both mind and body, and felt that this created better outcomes for patients. In addition, 57% of participants described that when traditional modalities are no longer providing positive outcomes for a patient, they will add a CIH modality to the patient's treatment. Multiple participants stated that they combine Western and Eastern medicine together in their "toolbox," as more comprehensive treatments led to better patient outcomes, and that the goal of any treatment should improve patient outcomes.

Other motives for using CIH as a treatment modality were positive and supportive *stakeholder views and acceptance*, having a *previous experience with a modality*, a *patient preference* for a modality, and seeing a modality on *social media*. Participants stated that the more common CIH modalities were integrated into treatment protocols, the more accepted they became, and the less pushback there was from stakeholders to use those modalities. Almost 90% of participants mentioned that they have personally seen *improved subjective outcomes* from patients, including pain relief and decreased feeling of tightness, among other positive

benefits. This leads into patient preference, as 71% of participants stated that because of those improved subjective outcomes, patients have requested continuing those modalities for treatment. One-third of participants mentioned that they like to use CIH modalities because they have used them for their own medical care or when they were a collegiate athlete themselves. From their own experience, the CIH modality helped with their own outcomes.

Clinical Application

When discussing the clinical application domain, two categories emerged including *types/modalities* of CIH, and *outcomes* used for CIH treatments. The most common types/modalities of CIH used by athletic trainers are cupping, massage, yoga, essential oils, and breathing techniques. A total of 21 different CIH modalities were used in daily practice, as shown in Table 3. It should be noted that a list of CIH modalities was not given during the interviews. Therefore, Table 3 reflects the lived experiences of and feedback from the participants in this study. Outcome measures were used by 71% of participants, and a comprehensive list of the kinds of outcome measures can be seen in Table 4. The most common outcome measures used were range of motion and pain measures. Only 1 participant used functional outcome measures, and only 3 participants used global outcome measures and region-specific outcome measures. It should also be noted that a list of outcome measures was not given to the participants. Therefore, the outcome measures presented in Table 4 reflect the lived experiences of and feedback from the participants in this study.

Table 3. CIH Modalities Used by Athletic Trainers

Modality Used	Count, N=14
Cupping	12
Massage	5
Yoga	4
Essential Oils	4
Instrument-Assisted Soft Tissue Mobilization	3
Gua Sha	3
Breathing Techniques	3
Visualization	3
Meditation	3
Manual Therapy	2
Graston	2
Dry Needling	2
Energy Medicine	2
Meridian Points	1
Herbs	1
CBD (Cannabinoid)	1
Online Mental Health	1
Sound Therapy	1
Journaling	1
Rock Floss™	1
Matrix™ Energetics	1

Table 4. Outcome Measures Used by Athletic Trainers for CIH Interventions

Outcome Measure Used	Count, N=14
Range of Motion	7
Pain	7
Girth Measure	4
Region Specific Measure	3
Psychological Readiness Measure	1
Functional Outcome Measure	1
Patient Health Questionnaire-9	1
General Anxiety Disorder-7	1
Global Measure (other)	1
None	4

Barriers

In the barriers domain, *formal research, resources,* and *stakeholder buy-in* were identified as categories. Less than half (43%) of the subjects in this study stated that lack of formal research made it difficult to promote the use of CIH to stakeholders, such as patients, coaches, administrators, and other co-workers. Of those participants, 33% mentioned that access to research was an additional barrier. About 75% of the study participants stated that resources were an issue to implementing CIH modalities. The largest resource barrier was time, followed by physical location resources – either being in a rural area and not having access to CIH healthcare professionals or not having access to an athletic training facility – and human resources (Table 5). Approximately 80% of the study participants stated that the previously mentioned stakeholders not accepting CIH modalities was a barrier either currently or at some point in the past to being hesitant or being unable to implement CIH techniques in the athletic training facility.

DISCUSSION

This study explored the experiences and outcomes of collegiate athletic trainers using CIH modalities. Athletic trainers reported implementing a range of CIH interventions and are exposed to these interventions in a variety of different educational experiences. To the research team's knowledge, this is the first investigation to explore the experiences of athletic trainers' implementation of CIH and can inform future research and clinical practice.

Education

Participants described a wide range of educational experiences regarding CIH. Self-directed learning was typical of the participants. Although a useful and easily accessible tool, self-directed learning does not always come with evidence-based research or standardization.[12] For example, a systematic study of CIH educational websites shows that not all of these sources have balanced information, transparency of sources used, and more benefits listed than potential harms of the modalities.[13] This previous study found that among CIH websites, a majority are made to educate healthcare practitioners, yet the information that is provided on self-directed educational sources is not consistent. It is important for practicing clinicians using self-directed learning mechanisms to ensure they are using evidence-based resources.

Additionally, some participants noted they learned about CIH interventions through a post-professional degree. With previous research indicating that many patients seek out these interventions,[14-16] it is necessary for athletic trainers to gain this knowledge to properly communicate the role of CIH in a care plan. Previous investigations looking at the education and information seeking behaviors of medical students, residents, and faculty found that the internet and journal articles were the two most common forms of education on CIH interventions.[17] Similarly, when looking at our participants educational experiences self-directed learning was the most common form of education. As athletic trainers look to implement CIH interventions into the care they provide, it is important to seek out reliable and accurate information when engaging in self-directed learning.

Motives

As CIH modalities are a common patient preference it is important that athletic trainers gain this education to provide value-based care for the patients they serve.[14-16] Studies show that using modalities that patients request will ensure better patient satisfaction.[18,19] Therefore, patients who want to receive CIH modalities in their care from athletic trainers may see better adherence if they do. Moreover, with any musculoskeletal injury, there is a component of pain perception and stress, and that must also be addressed with the physical healing, according to biopsychosocial model of pain.[20] Athletic trainers interviewed in this study believed that CIH modalities address the stress levels of the patients that they serve, which in turn improved the physiological symptoms of pain that they are experiencing. Addressing both the physical and psychological aspects of injury have shown that patients who use complementary and alternative medicine modalities have a higher affect than those who do not.[21]

Clinical Application

Participants in this study detailed cupping, relaxation techniques (breathing, visualization, and mediation combined), massage (soft tissue mobilization), yoga, and essential oils as the most used CIH modalities. These findings align with previous investigations that found the most common CIH modalities used across a range of settings include relaxation techniques, yoga, and massage.[14,22,23] These previous investigations include settings such as primary care, Veterans Affairs, and chronic pain management. One previous investigation found that participants more commonly used vitamin therapy and special diets as a common CIH interventions; however, this was not reported by the participants in this study.[24] This could be due to athletic training and Western Medicine seeing nutrition as a separate domain of health, rather than a CIH modality. Chiropractic care and acupuncture are also some of the most common CIH techniques utilized by patients in the US, but unless an athletic trainer has a dual degree, they do not perform these modalities due to licensure regulations and scope of practice.[25,26]

Participants stated that expanding their knowledge and integration of CIH modalities into their clinical practice improved patient outcomes. Patients rate CIH treatments as having greater effectiveness, and our findings are consistent.[21] It has been suggested

that to properly measure the effectiveness of CIH treatments, a framework of outcome domains be used.[27] Spiritual, social, psychological, and physical outcomes must all be used in conjunction with one another to fully comprehend the positive effect that CIH modalities have on a patient's holistic well-being. However, this study shows that athletic trainers are not using comprehensive outcome measures aligned with the suggested framework. Therefore, conclusions are limited from this study's data in the holistic usefulness of CIH modalities that were implemented. When more athletic trainers actively measure their outcomes and contribute those findings in point of care research, greater evidence will be established for the use of CIH in practice, which can also aid in the lack of reliable evidence used in self-directed learning.

Barriers

Participants noted stakeholder buy-in as a barrier to their implementation of CIH interventions. When seeking out CIH modalities, like mental and spiritual wellness, there is still some hesitancy from stakeholders, namely patients, as there is still stigma associated with seeking help for mental and spiritual health.[28] Participants stated that among patients they serve, those that are experiencing mental, emotional, and spiritual health deficits are ashamed, and don't want others to know they are being treated for those aspects of their health. In a qualitative study of administrators of the Veteran's Administration, some strategies used to increase stakeholder buy-in of leadership included presentation of scientific evidence (research) and sharing patient success stories.[29] Athletic trainers can leverage the support for CIH in order to treat patients holistic well-being to gain more stakeholder buy-in.[30]

Other barriers include access to research, specifically due to international inconsistency and cultural barriers. Participant concerns from this study are validated by a systematic review published by Ho et al. stating that there are international literature barriers in determining the definition and criteria for CIH use, which makes cross-cultural comparison in literature challenging.[31] A systematic study of CIH literature from Australia, the US, and Canada have detailed the logistical and cultural barriers in researching CIH.[32] Many participants in the previous study lacked training in research skills and the ability to implement high quality research findings into practice, whereas other participants had limited access to CIH resources and/or financial means necessary to conduct research. Regarding cultural ability, beliefs, attitudes, and behaviors of participants that used CIH modalities, it was found that these participants, overall, had a lack of interest in using and conducting high-quality research. On a smaller scale, inconsistency barriers may include the lack of scope of training and state practice acts not including CIH, depending on where athletic trainers live.

Limitations

This study asked participants to volunteer into the interview process, which may only represent those who have more positive attitudes and beliefs towards CIH interventions. This limits the conclusions regarding expressed barriers towards implementation as a whole. Further investigation into athletic trainers who are not using CIH interventions should be conducted to have a more comprehensive understanding of true barriers to CIH implementation.

Future research should include a wide-scale survey of implementation, education, and outcomes of CIH modality use by athletic trainers, including translating current research of CIH modalities into English and determining quantitative and objective outcome measures for CIH use in the athletic training profession. Current athletic trainers using CIH modalities should consider conducting practice-based research using validated patient-reported and clinician-rated outcome measures.

CONCLUSIONS

Overall, among athletic trainers in this study, CIH modalities are viewed as a useful tool to treat a patient holistically through a patient-centered approach. However, the introduction and education on CIH varies between participants. With increased patient preference related to CIH athletic trainers should seek out additional education and exposure to CIH to expand treatment options. Moreover, additional objective research regarding the outcomes of using CIH as a treatment modality are needed among athletic populations to increase stakeholder buy-in.

REFERENCES

1. Committee on the Use of Complementary and Alternative Medicine by the American Public Board on Health Promotion, Disease Prevention, and Institute of Medicine. *Complementary and Alternative Medicine in the United States.* Washington, D.C.: National Academies Press; 2005.
2. Complementary, Alternative, or Integrative Health: What's In a Name? NIH. Published 2018. Accessed February 1, 2021.
3. Nichols AW, Harrigan R. Complementary and alternative medicine usage by intercollegiate athletes. *Clin J Sport Med.* 2006;16(3):232-237. doi: 10.1097/00042752-200605000-00008.
4. NATA. What is Athletic Training? Web site. https://www.nata.org/about/athletic-training Accessed March 16, 2022.
5. NCAA Demographics Database: Demographics by Race/Ethnicity. 2022. https://www.ncaa.org/sports/2018/12/13/ncaa-demographics-database.aspx. Accessed February 6, 2022.
6. Nichols A, Harrigan R. Complementary and Alternative Medicine Usage by Intercollegiate Athletes. *Clinical journal of sport medicine : official journal of the Canadian Academy of Sport Medicine.* 2006;16:232-237. doi: 10.1097/00042752-200605000-00008.
7. Wahner-Roedler DL, Vincent A, Elkin PL, et al. Physicians' attitudes toward complementary and alternative medicine and their knowledge of specific therapies: a survey at an academic medical center. *Evid Based Complement Alternat Med.* 2006;3(4):495-501. doi: 10.1093/ecam/nel036
8. Shorofi SA, Arbon P. Complementary and alternative medicine (CAM) among Australian hospital-based nurses: knowledge, attitude, personal and professional use, reasons for use, CAM referrals, and socio-demographic predictors of CAM users. *Complementary Therapies in Clinical Practice.* 2017;27:37-45. doi: 10.1016/j.ctcp.2017.03.001.
9. Balouchi A, Rahnama M, Hastings-Tolsma M, et al. Knowledge, attitude and use of complementary and integrative health strategies: a preliminary survey of Iranian nurses. *Journal of Integrative Medicine.* 2016;14(2):121-127. doi: 10.1016/S2095-4964(16)60245-5.
10. Trail-Mahan T, Mao C-L, Bawel-Brinkley K. Complementary and Alternative Medicine: Nurses' Attitudes and Knowledge. *Pain Management Nursing.* 2013;14(4):277-286. doi: 10.1016/j.pmn.2011.06.001
11. Hill CE, Thompson BJ, Williams EN. A Guide to Conducting Consensual Qualitative Research. *The Counseling Psychologist.* 1997;25(4):517-572. doi: 10.1177/0011000097254001.
12. Jennings SF. Personal development plans and self-directed learning for healthcare professionals: are they evidence based? *Postgraduate Medical Journal.* 2007;83(982):518. doi: 10.1136/pgmj.2006.053066.
13. Chen AT, Taylor-Swanson L, Buie RW, et al. Characterizing Websites That Provide Information About Complementary and Integrative Health: Systematic Search and Evaluation of Five Domains. *Interact J Med Res.* 2018;7(2):e14. doi: 10.2196/ijmr.9803.
14. Schwartz MR, Cole AM, Keppel GA, et al. Complementary and Integrative Health Knowledge and Practice in Primary Care Settings: A Survey of Primary Care Providers in the Northwestern United States. *Global Advances in Health and Medicine.* 2021;10:21649561211023377. doi: 10.1177/21649561211023377.
15. Malone MA, Gloyer K. Complementary and Alternative Treatments in Sports Medicine. *Primary Care: Clinics in Office Practice.* 2013;40(4):945-968. doi: 10.1016/j.pop.2013.08.010
16. Youn B-Y, Ju S, Joo S, et al. Utilization of Complementary and Alternative Medicine among Korean Elite Athletes: Current Status and Future Implications. *Evid Based Complement Alternat Med.* 2021;2021:5572325-5572325. doi: 10.1155/2021/5572325.
17. Lie DA, Boker J. Comparative survey of Complementary and Alternative Medicine (CAM) attitudes, use, and information-seeking behaviour among medical students, residents & faculty. *BMC Medical Education.* 2006;6(1):58. doi: 10.1186/1472-6920-6-58.
18. Ruland CM. Decision Support for Patient Preference-based Care Planning: Effects on Nursing Care and Patient Outcomes. *Journal of the American Medical Informatics Association.* 1999;6(4):304-312. doi: 10.1136/jamia.1999.0060304.
19. Williams R, Farquharson L, Palmer L, et al. Patient preference in psychological treatment and associations with self-reported outcome: national cross-sectional survey in England and Wales. *BMC Psychiatry.* 2016;16(1):4. doi: 10.1186/s12888-015-0702-8.
20. Meints SM, Edwards RR. Evaluating psychosocial contributions to chronic pain outcomes. *Prog Neuropsychopharmacol Biol Psychiatry.* 2018;87(Pt B):168-182. doi: 10.1016/j.pnpbp.2018.01.017
21. Owens JE TA, Degood D. Complementary and Alternative Medicine and Psychologic Factors: Toward an Individual Differences Model of Complementary and Alternative Medicine Use and Outcomes. *The Journal of Alternative and Complementary Medicine.* 1999;5(6):529-541. doi: 10.1089/acm.1999.5.529.

22. Farmer MM, McGowan M, Yuan AH, et al. Complementary and Integrative Health Approaches Offered in the Veterans Health Administration: Results of a National Organizational Survey. *The Journal of Alternative and Complementary Medicine.* 2021;27(S1):S-124-S-130. doi: 10.1089/acm.2020.0395.
23. Rhee TG, Leininger BD, Ghildayal N, et al. Complementary and integrative healthcare for patients with mechanical low back pain in a U.S. hospital setting. *Complementary therapies in medicine.* 2016;24:7-12. doi: 10.1016/j.ctim.2015.11.002.
24. Chen AT, Flaherty MG, Threats M. Attitudes, Provider and Treatment Selection of Complementary and Integrative Health among Individuals with Pain-Related Conditions. *Complementary Therapies in Medicine.* 2020;51:102410. doi: 10.1016/j.ctim.2020.102410
25. Berman BM, Singh BB, Hartnoll SM, et al. Primary care physicians and complementary-alternative medicine: training, attitudes, and practice patterns. *J Am Board Fam Pract.* 1998;11(4):272-281. doi: 10.3122/jabfm.11.4.272.
26. Levine SM, Weber-Levine ML, Mayberry RM. Complementary and alternative medical practices: training, experience, and attitudes of a primary care medical school faculty. *J Am Board Fam Pract.* 2003;16(4):318-326. doi: 10.3122/jabfm.16.4.318.
27. Verhoef MJ, Vanderheyden LC, Dryden T, et al. Evaluating complementary and alternative medicine interventions: in search of appropriate patient-centered outcome measures. *BMC Complementary and Alternative Medicine.* 2006;6(1):38. doi: 10.1186/1472-6882-6-38.
28. Sickel AE, Seacat JD, Nabors NA. Mental health stigma update: A review of consequences. *Advances in Mental Health.* 2014;12(3):202-215. doi: 10.1080/18374905.2014.11081898
29. Bolton RE, Bokhour BG, Dvorin K, et al. Garnering Support for Complementary and Integrative Health Implementation: A Qualitative Study of VA Healthcare Organization Leaders. *The Journal of Alternative and Complementary Medicine.* 2021;27(S1):S-81-S-88. doi: 10.1089/acm.2020.0383.
30. American Psychological Association. Survey: Americans Becoming More Open About Mental Health. American adults mostly harbor positive views about mental health, though some stigma remains. APA. Published 2019. Accessed February 21, 2022.
31. Ho EY, Bylund CL, Wollney E, et al. A systematic review of communication about Complementary and Integrative Health (CIH) in global biomedical settings. *Patient Education and Counseling.* 2021;104(12):2900-2911. doi: 10.1016/j.pec.2021.05.015
32. Veziari Y, Leach MJ, Kumar S. Barriers to the conduct and application of research in complementary and alternative medicine: a systematic review. *BMC Complementary and Alternative Medicine.* 2017;17(1):166. doi: 10.1186/s12906-017-1660-0.