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Abstract

Occupational therapy practitioners address pain management across settings, populations, and the lifespan. Occupational therapy practitioners offer unique contributions to pain management through biopsychosocial approaches, targeting supported self-management and occupational engagement. Comprehensive pain education is necessary to prepare entry-level occupational therapy practitioners to address pain in practice, yet no standards exist in entry-level occupational therapy education. This survey describes the status of pain-related education in entry-level occupational therapy programs across the United States. A total of 41 entry-level occupational therapy programs completed the survey. Total instructional time for pain content was reported to be an average of 9.68 hours, ranging from 1 to 30 hours, indicating significant variability. Average lecture (4.88 hours) and lab-based (5.05 hours) time devoted to pain content were similar. More time was devoted to teaching pain interventions (4.91 hours) than pain assessments (2.82 hours). Most programs integrated pain content throughout the curriculum (73%). One program utilized a standardized pain curriculum (International Association for the Study of Pain Occupational Therapy Curriculum). Open-ended questions revealed a breadth of evidence-based resources, pain assessments, and interventions covering all domains of the biopsychosocial model of pain. The majority of faculty (61%) felt their current amount of pain education was insufficient, citing the need for increased time and educational activities for pain education across all program years. Given the essential and unique role of occupational therapy practitioners in pain management, improving pain education and practitioner competence is an important consideration across entry-level occupational therapy education. Further discussion is needed regarding educational standards and entry-level occupational therapy curricula relating to pain management.

Keywords

Curriculum, education, instruction, occupational therapy, pain

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Survey of Pain Curriculum Among Entry-Level Occupational Therapy Programs in the United States

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ABSTRACT

Occupational therapy practitioners address pain management across settings, populations, and the lifespan. Occupational therapy practitioners offer unique contributions to pain management through biopsychosocial approaches, targeting supported self-management and occupational engagement. Comprehensive pain education is necessary to prepare entry-level occupational therapy practitioners to address pain in practice, yet no standards exist in entry-level occupational therapy education. This survey describes the status of pain-related education in entry-level occupational therapy programs across the United States. A total of 41 entry-level occupational therapy programs completed the survey. Total instructional time for pain content was reported to be an average of 9.68 hours, ranging from 1 to 30 hours, indicating significant variability. Average lecture (4.88 hours) and lab-based (5.05 hours) time devoted to pain content were similar. More time was devoted to teaching pain interventions (4.91 hours) than pain assessments (2.82 hours). Most programs integrated pain content throughout the curriculum (73%). One program utilized a standardized pain curriculum (International Association for the Study of Pain Occupational Therapy Curriculum). Open-ended questions revealed a breadth of evidence-based resources, pain assessments, and interventions covering all domains of the biopsychosocial model of pain. The majority of faculty (61%) felt their current amount of pain education was insufficient, citing the need for increased time and educational activities for pain education across all program years. Given the essential and unique role of occupational therapy practitioners in pain management, improving pain education and practitioner competence is an important consideration across entry-level occupational therapy education. Further discussion is needed regarding educational standards and entry-level occupational therapy curricula relating to pain management.

Introduction

Pain is a major source of suffering and disability with significant psychological, social, and economic ramifications (American Occupational Therapy Association [AOTA], 2021; Brennan et al., 2007; Treede et al., 2019). Pain is the most common reason people seek medical care, affecting more individuals than diabetes, heart disease, and cancer combined (Wager, 2022). About 50 million adults in the United States (U.S.) experience chronic pain, and about 20 million adults experience high-impact chronic pain— a pain that affects an individual’s ability to participate in meaningful activities (Dahlhamer et al., 2018; U.S. Department of Health and Human Services [HHS], 2019). Chronic pain is experienced among individuals of all ages, including children and adolescents (HHS, 2019). Pain is a recognized public health issue, and access to pain management is considered a fundamental human right (HHS, 2019; International Association for the Study of Pain [IASP], 2010).

Occupational therapy practitioners (OTPs) commonly treat individuals experiencing pain (AOTA, 2021; Engel, 2018; Engel, 2019; Lagueux et al., 2018; Rider & Smith, 2023; van Griensven et al., 2013). Acute and chronic pain contributes to decreased occupational performance and participation across multiple areas of occupation and is often accompanied by significant distress (AOTA, 2021; Ashby et al., 2012; Dorfman, 2018; Fine, 2011; Treede et al., 2019). Using a biopsychosocial approach, OTPs help to reduce pain’s impact on health and well-being and increase engagement in meaningful and valued occupations (AOTA, 2021). OTPs emphasize functional outcomes as the primary goal of treatment, encouraging clients to focus on improvements in their occupational engagement and quality of life and supporting self-management strategies rather than solely emphasizing pain reduction (AOTA, 2021; Lagueux et al., 2018; Fisher et al., 2007; Rider & Smith, 2023; Rider & Tay, 2022).

Several studies have identified gaps in pain knowledge among occupational therapy (OT) students and clinicians and suggest that OT curricula should include courses primarily focusing on pain (Reyes & Brown, 2016; Rochman, 1998; Strong et al., 1999). While that may not be feasible in all entry-level OT programs, evidence suggests more training is necessary within OT education (Reyes & Brown, 2016; Robinson et al., 2011; Rochman, 1998; Strong et al., 1999). However, little is known about what pain-related content is covered and if OT programs follow any standard pain curriculum. Further research is needed to understand entry-level OT pain education to identify areas for curriculum improvement.

The International Association for the Study of Pain (IASP) has developed a free, evidence-based, comprehensive curriculum outline for OT programs to embed pain education and training (IASP, 2018). The curriculum aims to prepare entry-level OTPs to be competent in identifying and addressing the comprehensive impact of the pain experience on the client's occupational performance and participation in meaningful activities (IASP, 2018). To meet this aim, OTPs need a strong foundation in the biopsychosocial components of the pain experience, including evaluation and intervention approaches across the lifespan and practice settings (AOTA, 2021; IASP, 2018).

Despite the widespread prevalence of pain across populations and areas of practice where OTPs commonly work and an international guideline for pain curricula, no specific standards currently mandate OT curricula to address pain (Accreditation Council for Occupational Therapy Education [ACOTE], 2018). Robinson and colleagues (2011) have highlighted that while OTPs have the potential to address the occupational disruption caused by chronic pain, OTPs may use inappropriate evidence when working with people experiencing chronic pain and may not receive adequate training. Moreover, evidence indicates significant deficits in the knowledge of healthcare professionals regarding pain mechanisms and evidence-based pain management (IASP, 2010). However, a recent position statement from AOTA describes OTPs' significant role in pain management, asserting that OTPs are distinctly prepared to work with individuals experiencing pain in independent and collaborative approaches (AOTA, 2021). Pain literature is also growing within the OT profession, providing examples of the unique contributions of OTPs (AOTA, 2021; Goodall & Brown, 2022; Hill, 2016; Lagueux et al., 2018; Rider & Smith, 2023; Rider & Tay, 2022; Simon & Collins, 2017).

With the growing prevalence of pain in the U.S., the lack of ACOTE standards related to pain education for entry-level OTPs, and increased evidence supporting the unique role of OT within pain management, we developed a survey to assess the extent of pain education in OT education. This study aimed to understand the status of pain education in entry-level OT programs in the U.S. More specifically, we sought to examine how much time is devoted, what academic resources are utilized, and what content is covered, including assessment and intervention approaches and faculty perceptions.

Methodology

To determine how much time is devoted to pain topics within entry-level OT curricula, what content is covered, and what educational resources are utilized, we developed a 23-question survey (see Appendix A for survey questions). This study received approval from the Institutional Review Board at Touro University Nevada. The survey was piloted among OT faculty, reviewed by an experienced survey researcher, and revised accordingly. Based on feedback, the survey included open-ended questions to ensure respondents were not influenced in their responses regarding content covered (e.g., interventions, assessments, etc.) or resources utilized. The survey obtained no personal information regarding the respondent beyond their geographical locations and institution names. We collected institution names only to prevent duplicate data, and no duplicate data was received. All institutional names were deleted after confirming that no surveys were completed from the same institution, and only geographical area was analyzed.

The survey was administered through a university Qualtrics account (Qualtrics, 2017) in September 2022 and was available until January 2023. Using the School Directory from www.acoteonline.org/schools, we emailed all program directors of entry-level master and doctoral programs with accredited, pre-accredited, and candidacy status in the U.S., inviting them to participate in the study. Program directors were emailed directly and invited to participate in the survey or forward the survey to the appropriate faculty member. Additionally, we promoted the survey through social media platforms directed at OT educators. A total of 271 schools were emailed and invited to participate.

After the survey closed, the complete data set was exported from Qualtrics to a CSV file for further analysis. Descriptive statistics, frequencies, and percentages were calculated for closed-ended responses using Microsoft Excel (Microsoft, 2013). The open-ended responses were individually analyzed and summarized by the authors. Frequently used terms and similar responses were grouped, color-coded, and tallied.

Results

A total of 48 institutions began the survey, with 41 completing the survey. Seven respondents started the survey and completed the consent process but did not answer any questions. See Table 1 for detailed information regarding the survey respondents.

Table 1

Respondent Demographics

Respondents	N (% of total)
Faculty position	Program director = 18 (44%) Full-time assistant/associate/professor = 22 (54%) Adjunct faculty = 1 (2%)
Time in academia	0-5 years = 10 (24%) 6-10 years = 12 (29%) 11-15 years = 6 (15%) 16-20 years = 6 (15%) 21-25 years = 2 (5%) ≥26 years = 5 (12%)
Primary instructor for pain content	Yes = 16 (39%) No = 16 (39%) Did not answer = 9 (22%)
Institution	
Entry-level degree offered	OTD = 16 (39%) MS = 15 (36%) OTD and MS = 10 (24%)
Accreditation status	Accredited = 38 (93%) Candidacy = 2 (4%) Pre-accreditation = 1 (2%)
Region	West = 5 (12%) Midwest = 7 (17%) Southwest = 1 (2%) Southeast = 11 (27%) Northeast = 17 (42%)

*Regions consisted of the following states: West (WA, OR, ID, MT, WY, NV, CA, UT, CO, AK, HI), Midwest (ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, OH, MI), Southwest (AZ, NM, TX, OK), Southeast (AR, LA, MS, AL, GA, FL, SC, NC, VA, WV, KY, TN), Northeast (ME, VT, NH, MA, NY, PA, RI, CT, NJ, DE, MD).

Time Devoted to Pain Instruction

Respondents were asked how much total instructional time was devoted to pain content in the curriculum, including an understanding of pain, assessment methods, or intervention approaches. Respondents were then asked to break down the total instructional time based on how much was delivered in a lecture-based or lab-based format and how much was devoted to assessment methods or intervention techniques. Table 2 provides complete information regarding the amount of time devoted to pain content in the curriculum and types of instructional methods.

Table 2

Pain Instructional Content

Pain Content and Instructional Method	Instructional Time (hours): Mean (Standard Deviation)	Instructional Time (hours): Median	Instructional Time (hours): Range
Total instructional time devoted to pain content in the curriculum, including an understanding of pain, assessment, and interventions	9.68 (6.74)	8	1-30
Lecture-based instructional time devoted to pain content	4.88 (3.82)	4.5	0-15
Lab-based instructional time devoted to pain content	5.05 (3.79)	4.5	0-15
Instructional time devoted to teaching pain assessment methods	2.82 (2.31)	2	0.3-10
Instructional time devoted to teaching pain intervention techniques	4.91 (3.82)	3.5	0-14

Pain Curriculum

Respondents were asked about the delivery of pain content within the curriculum, timing, utilization of specific pain curriculum, and awareness and utilization of the IASP curriculum designed for OT education. Table 3 provides the complete results for the questions about the pain curriculum.

Table 3*Pain Curriculum*

Faculty responsible for teaching pain content	Core OT faculty within the department = 26 (63%) Taught in an interdisciplinary fashion with another discipline = 2 (5%) Taught by another discipline outside the OT department = 1 (2%) Prefer not to answer = 12 (30%)
Delivery of pain content within the curriculum	Integrated throughout the curriculum = 30 (73%) Separate/specialized course = 3 (7%) Prefer not to answer = 8 (20%)
Courses that include specific content on pain	Intervention and clinical courses for adults, older adults, and pediatrics = 16 (39 %) Conditions or physical disabilities/dysfunction courses = 15 (37%) Anatomy, kinesiology, or neuroscience courses = 11 (27 %) Assessment courses = 7 (17%) Mental health courses = 4 (10%) Assistive technology courses = 4 (10%) Research courses = 3 (7 %) All courses = 3 (7%) Health and wellness courses = 2 (5%) Physical agent modalities courses = 1 (2 %)
The year that pain content is taught within the curriculum (Respondents could select more than one year for integrated pain content)	First year = 22 (48%) Second year = 22 (48%) Third year = 2 (4%)
Utilization of a specific pain curriculum	No specific pain curriculum = 35 (86%) Specific pain curriculum = 1 (2%) Prefer not to answer = 5 (12%)
Aware of the International Association for the Study of Pain (IASP) OT curriculum	Unaware of the curriculum = 31 (76%) Aware, but not using any part of the curriculum = 2 (5%) Aware, using some part of the curriculum = 2 (5%) Prefer not to answer = 6 (15%)

Lastly, open-ended questions were asked about the content included in the instruction, such as specific pain assessments or intervention techniques and any resources they used for pain education. The final two questions asked about the respondents' satisfaction with the current amount and type of pain education provided across their curriculum and any changes they would make to prepare students better to manage acute and chronic pain as entry-level OTPs.

What pain assessments, types of assessments, or assessment approaches are taught in your program?

Participants reported teaching multiple types of assessments, including pain severity assessments (e.g., Numerical Rating Scale, Visual Analog Scale, Wong-Baker Faces Scale, etc.), multidimensional (e.g., McGill Pain Questionnaire, Brief Pain Inventory, etc.), site-specific or diagnosis-specific assessments (e.g., Oswestry Disability Index, QuickDASH and DASH, Central Sensitization Inventory, etc.), and performance domain and client factor assessments (e.g., Pain Catastrophizing Scale, Pain Self-Efficacy Questionnaire, Pain Coping Inventory, Occupational Experience Profile, Pain Diaries, Adolescent/Adult Sensory Profile, etc.). The Canadian Occupational Performance Measure, generic quality of life scales, sensory testing, and observational measures, such as pain behaviors and physiological signs, were also taught as part of the pain curriculum. Approaches to assessment included pain evaluation across the lifespan and among individuals with impaired cognition.

What intervention approaches to manage pain are taught in your program?

Participants reported intervention approaches applicable across the lifespan and practice settings. While intervention approaches reported do not only address one aspect of the biopsychosocial model of pain, they are categorized in this manner (e.g., bio, psycho, social/activities of daily living) for easier reporting, with a recognition that many intervention approaches reported are holistic and address multiple aspects of the individual experiencing pain.

Bio:

- Physical agent modalities
- Manual therapy techniques, soft tissue mobility, and joint mobilizations
- Therapeutic exercise, including movement-based strategies, aquatic approaches, stretching, yoga, and tai chi
- Biofeedback
- The Alexander Technique
- Work and environmental modifications
- Ergonomics and postural/body mechanics training
- Edema management
- Peripheral nerve glides
- Orthotics
- Sensory desensitization techniques
- Sensory approaches (e.g., sensory processing styles, sensory diets, etc.)
- Elastic therapeutic taping
- Joint protection techniques
- Medication management and proper use of pharmacological approaches

Psycho:

- Cognitive behavioral therapies, including Acceptance and Commitment Therapy
- Relaxation strategies, such as visual imagery, meditation, and progressive muscle relaxation
- Breathing techniques
- Mindfulness-based techniques
- Stress management techniques
- Pain neuroscience education
- Cognitive functional therapy
- Motivational interviewing
- Graded motor imagery
- Techniques to address catastrophizing, depression, fear, and anxiety
- Virtual reality

Social/Activity of Daily Living:

- Therapeutic activities
- Adaptive and compensatory approaches, including task modifications for home and work
- Increasing occupational engagement through graded exposure to occupations
- Activity pacing and energy conservation
- Use of adaptive equipment, assistive technology, and durable medical equipment
- Sleep hygiene
- Self-regulation strategies
- Self-advocacy and assertiveness training
- Self-management training/relapse prevention
- Education and training for family/caregivers and support system

What specific resources do you use for your pain education (e.g., significant articles, textbooks, textbook chapters, continuing education courses, videos, fact sheets, position papers, etc.)?

The following textbooks were identified as being used as required readings or resources to prepare pain lectures and labs because they had specific chapters or content related to pain:

- Atchison, B. J., & Dirette, D. P. (2016). *Conditions in occupational therapy: Effect on occupational performance* (5th ed.). Wolters Kluwer.
- Bracciano, A. G. (2022). *Physical agent modalities: Theory and application for the occupational therapist* (3rd ed.). Slack Inc.
- Brown, C., Stoffel, V. C., & Munoz, J. P. (2019). *Occupational therapy in mental health: A vision for participation* (2nd ed.). F. A. Davis Company
- Dirette, D. P., & Gutman, S. A. (2020). *Occupational therapy for physical dysfunction* (8th ed.). Wolters Kluwer.
- Gutman, S. A. (2016). *Quick reference neuroscience for rehabilitation professionals: The essential neurologic principles underlying rehabilitation practice* (3rd ed.). Slack Inc.

- Louw, A., Puentedura, E., Schmidt, S., & Zimney, C. (2018). *Pain neuroscience education: Teaching people about pain* (2nd ed.). Orthopedic Physical Therapy Products.
- Lundy-Ekman, L. (2018). *Neuroscience: Fundamentals for rehabilitation* (5th ed.). Elsevier. (Note: The 6th edition was published after the completion of this study.)
- Moseley, G. L., & Butler, D. S. (2017). *Explain pain supercharged*. Noigroup Publications.
- Pendleton, H. M., & Schultz-Krohn, W. (2017). *Pedretti's occupational therapy: Practice skills for physical dysfunction* (8th ed.). Elsevier.
- Skirven, T. M., Osterman, A. L., Fedorczyk, J., Amadio, P. C., Feldscher, S., & Shin, E. K. (2020). *Rehabilitation of the hand and upper extremity* (7th ed.). Elsevier.
- Smith-Gabai, H. (2017). *Occupational therapy in acute care* (2nd ed.). AOTA Press.
- van Griensven, H., Strong, J., & Unruh, A. M. (2013). *Pain: A textbook for health professionals* (2nd ed.). Elsevier. (Note: The 3rd edition was published after the completion of this study.)
- VanMeter, K. C., & Hubert, R. J. (2022). *Gould's pathophysiology for the health professions* (7th ed.). Elsevier.
- Wietlisbach, C. M. (2017). *Cooper's fundamentals of hand therapy: Clinical reasoning and treatment guidelines for common diagnoses of the upper extremity* (3rd ed.). Elsevier.

All participants indicated using articles related to pain and OT assessment or management of pain, including AOTA fact sheets and resources. The following articles were specifically mentioned:

- American Occupational Therapy Association. (2021). Role of occupational therapy in pain management. *American Journal of Occupational Therapy*, 75(Supplement_3), 7513410010. <https://doi.org/10.5014/ajot.2021.75S3001>
- Brand, P. (1997). Pain--it's all in your head: A philosophical essay. *Journal of Hand Therapy*, 10(2), 59–63.
- Breeden, K., & Rowe, N. (2017). A biopsychosocial approach for addressing chronic pain in everyday occupational therapy practice. *OT Practice*, 22(13), 1-8.
- Lapointe, J. (2012). Cancer-related pain: The role of occupational therapy in prevention and management. *Occupational Therapy Now*, 14(5), 10–12.
- Rider, J., & Tay, M. (2022). Increasing occupational engagement by addressing psychosocial and occupational factors of chronic pain: A case report. *Open Journal of Occupational Therapy*, 10(3), 1-12. <https://doi.org/10.15453/2168-6408.2027>
- Simon, A., & Collins, E. (2017). Lifestyle Redesign® for chronic pain management: A retrospective clinical efficacy study. *American Journal of Occupational Therapy*, 71(4), 7104190040p1–7104190040p7. <https://doi.org/10.5014/ajot.2017.025502>
- Thompson, B. L, Gage, J., & Kirk, R. (2020). Living well with chronic pain: A classical grounded theory. *Disability and Rehabilitation*, 42(8), 1141–1152. <https://doi.org/10.1080/09638288.2018.1517195>

Many participants reported taking continuing education courses (e.g., Pain Management courses from AOTA and NBCOT, Lifestyle Redesign® for Pain Management) and utilizing resources from those courses, such as case studies, or providing students with the opportunity to take continuing education courses themselves. Multiple participants reported using online resources from the American Pain Society, the Noigroup, and the IASP when developing curriculum and as student resources.

Do you believe the current amount and type of pain education provided across your curriculum is sufficient for your graduate to comprehensively address a client's pain after graduation from your program?

Yes = 13 (32%)

No = 25 (61%)

Prefer not to answer = 3 (7%)

If not, please explain why and how much additional time or what additional content should be devoted to pain education in your program.

All responses indicated that more time and content were necessary and would be beneficial, but it would require removing content elsewhere or adding to the curriculum.

“More time would be beneficial, but what topic/content would be removed to address pain in more depth?”

Multiple responses indicated that doubling the amount of time was necessary to adequately train students to address pain management competently in clinical practice.

“I think there should be more time allocated to this very important topic. I would like to see at least double the amount of in-class time allocated to pain and pain management in my program.”

Most participants indicated that pain content should be better woven throughout all years of the curriculum and scaffolded each year.

“More pain education needs to be integrated into the curriculum to be consistent with clinical practice guidelines and to properly educate clients about their pain.”

“More time should be added in the third year and more time specifically for chronic pain.”

A few participants reported that the expectation is that new practitioners who work heavily with clients experiencing pain will need to gain continuing education after graduation.

“If they work in an area where pain is a significant factor, I expect graduates to take additional training.”

What, if any, additions to your curriculum do you believe would better prepare students to manage acute and chronic pain as a clinician?

Most participants indicated that adding specific experiences to their curriculum would help prepare students better, such as standardized patients or individuals with lived experience coming into the classroom, developing case studies dedicated to pain assessment and interventions, increasing clinical simulations and lab time related to pain content, incorporating guest lectures from experts in the field of pain, spending more time on the biopsychosocial model, and providing the students with more evidence-based resources highlighting the unique role of OT and non-pharmacological approaches.

Multiple participants reported they wanted to consider incorporating the OT curriculum from the IASP after learning about it during this survey and exploring other resources, such as pain textbooks, continuing education courses and certificates, and peer-reviewed articles from OT literature.

Discussion

This study aimed to examine the status of pain education in entry-level OT programs in the U.S. and to understand how much time is devoted, what academic resources are utilized, and what content is covered in OT curricula. Our results add to the limited information regarding pain education in OT. While similar studies have been completed in other countries (Briggs et al., 2011; Leegaard et al., 2014; Watt-Watson et al., 2009), to our knowledge, this is the first survey among U.S. entry-level OT programs, providing foundational information about OT pain education and training in the U.S.

We found that pain content was taught for an average of 9.68 hours throughout OT programs. The range of time spent was between 1 and 30 hours, indicating significant variability across programs, and that OT students are not all receiving similar amounts of instruction related to pain in the U.S. Research on pain education in OT programs outside of the U.S. also indicates discrepancies across OT education and healthcare disciplines (Briggs et al., 2011; Laekeman et al., 2021; Leegaard et al., 2014; Watt-Watson et al., 2009). Lecture-based and lab-based time were similar, around 5 hours each on average. More time was devoted to teaching pain intervention techniques (4.91 hours on average) compared to pain assessment methods (2.82 hours on average). Given the discrepancies across curricula in the U.S. and other countries, further research is needed to evaluate entry-level OTP outcomes related to pain management. Further consideration regarding developing and standardizing learning objectives related to pain education in entry-level OT programs is also warranted.

Most programs (73%) integrate pain content throughout the curriculum, with the first two years carrying the most pain content. Many courses provided pain-related content, with clinical and condition courses hosting the most. Because people of all ages and with various conditions experience pain, pain management should be covered throughout the curriculum and addressed explicitly in pediatric, adult, and older adult courses since previous research has indicated gaps in knowledge surrounding pediatric pain

management (AOTA, 2021; Laekeman et al., 2021). Evidence suggests that specific courses taught on pain by instructors with pain expertise can increase pain knowledge and attitudes among OT students (Rochman et al., 2013). Further research is needed to understand if a stand-alone pain course is more effective than integrating pain content throughout the curriculum and what training is necessary for faculty teaching pain-related content.

Only one program surveyed used a specific pain curriculum, the IASP OT curriculum (IASP, 2018). Most faculty were unaware that this curriculum existed (76%). The IASP is a global leader in the study and practice of pain and pain relief. Given that there are no accreditation standards related to pain in the Accreditation Council for Occupational Therapy Education Standards and Interpretive Guide (ACOTE, 2018), it is concerning that OT faculty responsible for developing or teaching pain content are not aware of or using an evidence-based curriculum, which is provided at no cost. The content recommended in the IASP curriculum outline for pain for OT could be covered in one semester or divided between semesters and courses (IASP, 2018). The lack of ACOTE standards citing pain content is a possible explanation for the varied time dedicated to pain education in entry-level OT programs. More than 50% of our respondents (61%) indicated that they believed more time should be spent on pain education and that pain education should be integrated into each year of the OT students' education. However, the feasibility of incorporating new content may result in removing content elsewhere or increasing the student course load. Further research and discussion among educators are needed to identify innovative ways of increasing content on pain without decreasing other critical content or contributing to an overwhelming student course load. Hush and colleagues (2018) found that physical therapy (PT) students improved their knowledge about pain and achieved higher levels of clinical competence in pain management after embedding the IASP curriculum for PT in their curriculum. Utilizing the IASP curriculum and developing ACOTE standards related to pain management may improve consistency and competency among entry-level OT education.

A few participants reported that there is an expectation that new OTPs working with clients experiencing pain will need to gain continuing education after graduation. While advanced skills regarding pain management may require continued education, this does not address the gaps among entry-level education (Laekeman et al., 2021; Reyes & Brown, 2016; Robinson et al., 2011). Furthermore, OTPs working in all settings and with all populations address pain and its significant impact on occupational performance, necessitating an entry-level competence. Reyes and Brown (2016) found gaps in OTs' evidence-based knowledge of multiple aspects of pain. Those gaps included evidence-based knowledge of pediatric pain, chronic versus acute pain, pain assessment, and pain medications (Reyes & Brown, 2016). Robinson and colleagues (2011) found OTPs using inappropriate evidence when working with people experiencing chronic pain and the underutilization of relevant evidence. Laekeman and colleagues (2021) also found insufficient specific education on managing pediatric pain for OTs and PTs. These gaps likely stem from the limited and varied training in entry-level programs and the expectations that OTs will gain further training after graduation. Reyes and Brown (2016) suggested that OT training programs and OT associations should provide

education with a particular focus on identified pain knowledge gaps. Occupational therapy educators should reflect on and review current educational practices in entry-level education to ensure their congruence with available evidence and clinical practice guidelines, such as the AOTA position statement on OT's role in pain management (AOTA, 2021) and the IASP OT curriculum (IASP, 2018).

Faculty indicated the use of many current resources, such as textbooks, peer-reviewed articles, professional pain organizations (e.g., the American Pain Society, the Noigroup, and various IASP resources), content from continuing education courses, including case studies, and even providing students with the opportunity to take continuing education courses. Occupational therapy educators can utilize the resources listed in this study, including the assessments and intervention approaches taught, to build their pain content. Faculty reported using a breadth of assessments, including pain severity, multidimensional, site-specific, diagnosis-specific, performance domain, and client factor assessments across the lifespan and among individuals with impaired cognition. However, assessments varied significantly across programs. Faculty reported teaching intervention approaches applicable across the lifespan and practice settings, including approaches to address all biopsychosocial aspects of the pain experience. Still, intervention approaches, like most pain content, varied across programs, contributing to inconsistencies across entry-level education. All medical practitioners have a critical role in preventing pain, conducting comprehensive pain assessments, and promoting evidence-based treatment practices (Shipton et al., 2023). Further work is needed to improve the standardization of pain education across OT programs and provide students with comprehensive resources and training in assessment and intervention approaches. Occupational therapy programs must equip students with the skills to identify and apply evidence-based practice when treating individuals experiencing pain (Robinson et al., 2011).

Limitations

Limitations of this study include nonrespondent bias and the inability of the survey to reach all faculty who provide pain education in their curriculum. Although we had a limited number of responses, the responses generated were gathered from faculty members across the U.S., and each region was represented. Still, the results may not represent the variability in pain content across entry-level OT programs in the U.S. We contacted key personnel, starting with program directors, and then faculty listed on program websites if program director emails were returned. We sent direct emails to each program at least two times. The survey was also posted online and through social media, targeting OT educators. It is possible that the faculty completing the survey may not have been aware of pain content taught by other faculty or in other classes; however, we did ask them to consider pain content across their program and curriculum, and program directors were instructed to send the survey to faculty responsible for pain content. Another limiting factor may have been the time required to complete the survey, given that seven faculty began the survey but did not finish it, and we were unable to use their responses.

Implications for Occupational Therapy Education

This study adds to the body of literature demonstrating gaps in OT education regarding pain management despite the significant prevalence and impact of pain, a robust professional position statement on the role of OT, and evidence highlighting OTs' unique contributions in this area of practice (AOTA, 2021, Lagueux et al., 2018). The following recommendations stem from the issues identified in this study, namely significant variability across pain curricula and lack of standardized learning objectives, highlighting available evidence and resources. Occupational therapy educators should review and reflect on their current pain curriculum and if student outcomes are congruent with available evidence and clinical practice guidelines, such as the AOTA position statement on OT's role in pain management (AOTA, 2021). Occupational therapy educators can consider using the IASP Curriculum Outline on Pain for Occupational Therapy (2018) to guide their pain content or develop learning objectives. Utilizing a standardized curriculum across entry-level OT educational programs has the potential to address inconsistencies and gaps in training. The IASP approach addresses current educational recommendations from national and international pain experts, addressing the gaps in pain knowledge and improving the future of the OT workforce to competently address the complexity of issues that individuals experiencing pain deal with daily. The World Health Organization (WHO) International Classification of Functioning, Disability, and Health (ICF) model (WHO, 2001) and the biopsychosocial model (Breen & Rowe, 2017; Engel, 1978) can be considered complementary frameworks for pain curriculum and are embedded within the IASP curriculum.

A blended learning approach that incorporates lectures, case studies, simulated patient experiences, and flipped classrooms has been successfully used by a PT school that integrated the IASP Pain Curriculum (Hush et al., 2018). Standardized patients have been shown to be predictive of fieldwork and clinical performance and may help faculty identify students needing additional preparation to manage pain appropriately during level II fieldwork (Frasier et al., 2022). Occupational therapy educators should incorporate simulated and standardized patient experiences, including acute and chronic pain influenced by diverse biopsychosocial factors. Interprofessional collaboration is necessary for professional practice, and creating interprofessional learning opportunities for pain management can help prepare OT students for effective clinical collaboration (Gordon et al., 2018). Longitudinal evidence suggests that standardized interprofessional pain curriculum improves knowledge, beliefs, and interprofessional pain management care plan development (Cioffi et al., 2021). In addition to the IASP curriculum (IASP, 2018) and the AOTA position statement (AOTA, 2021), models of interprofessional pain curriculum (Watt-Watson et al., 2017), examples of implementation (Gordon et al., 2018), and outcomes (Cioffi et al., 2021) can be used as guides by OT educators to decrease the burden of developing novel pain curriculum and interprofessional activities.

Early in the program, OT students should learn the multidimensional nature of pain, including pain science, pain mechanisms, and neurophysiology. Pain content can then progress to an understanding that pain is a public health problem with personal, social,

ethical, and economic considerations, leading to the impact of pain on daily life and occupational participation, including social determinants of pain and the lived experience. Occupational therapy students should be exposed to individuals with lived experience (Scanlan et al., 2022). Specific pain conditions should be included throughout the curriculum. After a foundation of pain science and the impact of pain, students can learn and apply evidence-based assessment and intervention approaches across the lifespan that are appropriate for all practice settings. The unique role of OT in pain management should be emphasized, with specific attention to occupation-based models and frameworks, the biopsychosocial model of pain, including assessments and interventions addressing each domain, a focus on the person (training, skill development, and education), self-management strategies, and enabling occupation (AOTA, 2021; IASP, 2018; Lagueux et al., 2018). Pain education should cover the lifespan and all program years to address gaps in pediatric pain management (Laekeman et al., 2021). Students should also learn about the cultural aspects of pain, including prevention and intervention at the micro (individual) and macro (socio-political) levels (IASP, 2018).

Occupational therapy students should be able to complete an activity analysis to determine the impact of pain on a client's occupational performance while considering the biological, behavioral, psychological, social, spiritual, and environmental components of pain that contribute to actual (or potential) challenges in the client's everyday life (AOTA, 2021; IASP, 2018). Students should learn about the reliability, validity, benefits, and limitations of self-report, observational, behavioral, and physiological measures to assess and measure pain, the pain experience, and the interference of pain in everyday life (Engel, 2019; IASP, 2018). Students should be able to critically appraise pain measurement tools to determine the best measures to use in clinical practice (Engel, 2019).

Using simulated patient experiences with clients experiencing various clinical conditions, the student should conduct client-centered intervention through collaborative activity goal setting, using concepts and strategies from clinical reasoning based on prior learning. Students should apply interventions that demonstrate the full scope of OT. Case-based learning experiences allow students to use a clinical reasoning framework to recognize the biopsychosocial contributors to an individual's pain experience and to develop person-centered interventions to address those factors (Hush et al., 2018). Occupational therapy educators can use the findings of this study to reflect and initiate a discussion within their department regarding their pain curriculum and identify evidence-based resources to ensure graduates are prepared to comprehensively and holistically address the multidimensional nature of pain to enable occupation.

Conclusion

This survey demonstrates how pain content is currently incorporated into U.S. entry-level OT curricula, including faculty perspectives. Faculty reported an average of approximately 10 hours teaching pain content. However, findings demonstrate an extensive range of time spent teaching pain content, between 1 and 30 hours, indicating

significant variability in the amount of time dedicated to teaching pain across OT programs and inconsistencies in entry-level exposure to pain content and preparation for clinical practice. Faculty reported using a variety of pain assessment and intervention techniques. Most programs integrate pain content throughout the curriculum, and only one program reported using an established pain curriculum. Over half of the faculty believe that more time should be spent teaching evidence-based pain knowledge to OT students. Given the essential and unique role of OTPs in pain management, improving pain education and practitioner competence should be an important consideration across curricula in entry-level OT programs.

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Appendix A: Survey Questions

1. Please indicate your faculty position
 - Program director
 - Full-Time Assistant/Associate/Professor
 - Part-Time Assistant/Associate/Professor
 - Adjunct Instructor
 - Other, please describe
 - Prefer not to answer

2. How long have you been in academia?
 - 0-5 years
 - 6-10 years
 - 11-15 years
 - 16-20 years
 - 21-25 years
 - More than 26 years
 - Prefer not to answer

3. What areas of practice have you worked in as an occupational therapist? Check all that apply.
 - Pediatrics
 - School-based
 - Hand therapy
 - Private practice
 - Inpatient rehabilitation
 - Outpatient rehabilitation
 - Acute care
 - Skilled nursing facility
 - Home health
 - Mental health
 - Geriatrics
 - Other, please specify
 - Prefer not to answer

4. Are you the primary instructor for pain content?
 - Yes
 - No
 - Prefer not to answer

5. Is your program an entry-level Masters (MS, MSOT) or clinical doctorate (OTD) program?
 - Masters (MS or MSOT)
 - Clinical doctorate (OTD)
 - Both

6. What is the accreditation status of your program?
 - Accredited
 - Preaccreditation
 - Candidacy

7. What geographical area is your program located?
 - West (WA, OR, ID, MT, WY, NV, CA, UT, CO, AK, HI)
 - Midwest (ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, OH, MI)
 - Southwest (AZ, NM, TX, OK)
 - Southeast (AR, LA, MS, AL, GA, FL, SC, NC, VA, WV, KY, TN)
 - Northeast (ME, VT, NH, MA, NY, PA, RI, CT, NJ, DE, MD)

8. What is the name of your institution? (This information will only be used to ensure no duplicate data is provided. After any duplicates are removed, all institution names will be deleted before analysis)

9. How many total hours of instruction time are devoted to pain education in your curriculum? (This can be a general understanding of pain, assessments, or interventions)

10. How much of the total instruction time on pain education is lecture-based? (e.g., 5 hours of class time or half of the total instruction time)

11. How much of the total instruction time on pain education is lab-based/hands-on? (e.g., 10 hours of class time or half of the total instruction time)

12. How much of the total instruction time on pain education is devoted to teaching pain assessment methods? (e.g., 5 hours of class time)

13. What pain assessments, types of assessments, or assessment approaches are taught in your program?

14. How much of the total instruction time on pain education is devoted to teaching pain intervention techniques? (e.g., 5 hours of class time)

15. What intervention approaches to manage pain are taught in your program?

16. Who teaches your pain education content? (Check all that apply)
 - Within the OT department by OT faculty
 - Interdisciplinary (e.g., taught with other disciplines such as PT, MD/DO, PA, RN/NP, etc.)
 - By faculty/professionals outside the OT department
 - Prefer not to answer

17. Is your pain education taught as a separate/specialized course or integrated throughout other courses?
- Separate/specialized pain course (If separate/specialized, how many credit hours is the course?)
 - Integrated throughout the curriculum (If integrated, which courses include specific content on pain?)
 - Prefer not to answer
18. Please select each year(s) that specific pain education content is provided throughout your curriculum. (Select all that apply)
- 1st year
 - 2nd year
 - 3rd year
19. What specific resources do you use for your pain education? (e.g., significant articles, textbooks, textbook chapters, continuing education courses, videos, fact sheets, position papers, etc.)
20. Do you follow a specific pain curriculum?
- No
 - Yes (If so, what specific pain curriculum do you use?)
 - Prefer not to answer
21. Is your program aware of the International Association for the Study of Pain OT Pain Curriculum?
- No
 - Yes, but we do not use any part of it in our program
 - Yes, and we use it or some part of it in our program
 - Prefer not to answer
22. Do you believe the current amount and type of pain education provided across your curriculum is sufficient for your graduate to comprehensively address a client's pain after graduation from your program?
- Yes
 - No (If not, please briefly explain why and how much additional time or what additional content should be devoted to pain education in your program)
 - Prefer not to answer
23. Lastly, what, if any, additions to your curriculum do you believe would better prepare students to manage acute and chronic pain as a clinician?