



2015

An Interdisciplinary Analysis of Core Competencies in Pain Management for Prelicensure Education: Curriculum Application for Physical and Music Therapy

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An Interdisciplinary Analysis of Core Competencies In Pain Management for
Prelicensure Education: Curriculum Application for Physical and Music Therapy

by

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A Scholarly Project Submitted to the Graduate Faculty of the

Department of Physical Therapy
School of Medicine and Health Sciences

University of North Dakota


in partial fulfillment of the requirements for the degree of

Doctor of Physical Therapy

Grand Forks, North Dakota
May, 2015

This Scholarly Project, submitted by Shaun Seaburg in partial fulfillment of the requirements for the Degree of Doctor of Physical Therapy from the University of North Dakota, has been read by the Advisor and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.


David Kelley
(Graduate School Advisor)


David Kelley
(Chairperson, Physical Therapy)

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Title An Interdisciplinary Analysis of Core Competencies In Pain Management for Prelicensure Education: Curriculum Application for Physical and Music Therapy

Department Physical Therapy

Degree Doctor of Physical Therapy

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ACKNOWLEDGEMENTS

This research project was supported by The University of North Dakota School of Medicine and Health Sciences Department of Physical Therapy and approved by the University of North Dakota Institutional Review Board (IRB-201406-499).

Special thanks to:

The North Dakota Board of Physical Therapy, The Certification Board For Music Therapists, Bruce Wessman, ND Board Administrator; Dr. Renee Mabey, statistician; Dr. David Relling, Advisor; Dr. Andrew Knight, Advisor; Laurel Wessman, Steven and Phyllis Seaburg, Support-Systems; and the ND Institutional Review Board

ABSTRACT

Core competencies in pain management were recently established for prelicensure health professional education and assessed for ways that they could be integrated into professional physical therapy practice. The competencies present the expected minimal capabilities for graduating health care students for the subject of pain management. The pain competencies include 4 domains: multidimensional nature of pain, pain assessment and measurement, management of pain, and context of pain. The proposed competencies are recommended for educational programs and could be implemented for other health professions. The purpose of this study is to assess the implementation of the pain competencies in physical therapy and music therapy by surveying current licensed or board certified professionals.

Background and Purpose:

Music Therapy is defined as the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program. The goals of music therapy in pain management are to assist the patient in regaining self-control and become actively involved in the management of his/her pain. Recently, core competencies in pain management were established for prelicensure health professional education and postulated as to how they could be implemented into professional physical therapy practice. The purpose of this study is to address where these newly established competencies are applied to the professional music therapy's curriculum and physical therapy curriculums

Subjects:

The subjects of the study included (200) board-certified or licensed music and physical therapy clinician's within the Midwest tri-state area of North Dakota, Minnesota, and South Dakota.

Methods:

Using a web-based survey, professional music therapy and physical therapy clinician's completed an electronic survey, rated on a 6 point Likert-type scale. The survey examined the clinician's impressions of the core competencies in pain management established for prelicensed healthcare professional education and the feasibility of integration of the competencies into professional practice.

CHAPTER I

BACKGROUND AND PURPOSE

The prevalence of chronic pain in the United States varies widely. Recent estimates range between 30-40% within the adult population ^{1, 2} estimate over 100 million adult Americans suffer from chronic pain. Surprisingly, the number of adults with chronic pain surpasses the number of individuals with diabetes, heart disease, and cancer combined ²

In addition to the physical toll pain places on people, it also puts an economic burden on people's lives. The economic cost of chronic pain is estimated to be greater than \$560 billion when health care costs and the cost of lost productivity are combined. ² Separately, the incremental cost of health care is \$261-300 billion while the cost of lost productivity is \$297-336 billion. ² As can be seen, chronic pain is one of the biggest health care problems in the United States, and it is expected these figures will continue to climb with each generation. "The estimated prevalence of pain varies for older adults, but chronic pain severity and related disability do seem to increase with age. ³

Currently, most pre-licensure healthcare education programs have established curriculums designed to address pain management as designated by competencies specific to their own profession. Although accredited healthcare programs across the country may share many commonalities in how to integrate pain management competencies into their curriculum, program specific applications may be diluted. Weakened implementation is especially concerning as practice standards continue to

evolve and already rigorous curriculums are forced to adapt to newly placed expectations, allowing students less time for exposure working within an interdisciplinary team.

For instance, physical therapists are trained to demonstrate patient advocacy and communicate respectfully in a therapeutic manner with patients, which may promote better outcomes and positive patient satisfaction. They accomplish this through patient education, routine monitoring of patient's pain management and outcomes, and the ability to adapt the plan of care for the patient when needed. Generally speaking more time may be spent focusing on treating the mechanical or chemical basis for the pain to achieve a desired outcome. Alternatively, a music therapist is trained to focus on mediating outcomes in pain management by addressing the individual's emotional, cognitive, and interpersonal responsiveness through the use of music and/or the supportive music therapy relationship. Both of these professions bring slightly differing approaches to pain management, each from their own unique backgrounds with tenuous connections to standardized, cross-disciplinary competencies.

A recent report discussed the deficit of pain education across all professions and "promoted the inclusion of standardized information about pain within an interprofessional setting."⁴ Research specific to physical therapy revealed "4 hours of pain education was the most frequently reported in a survey of accredited physical therapist education programs in North America compared to a study of Canadian health sciences programs wherein 7 physical therapy programs responding reported a mean of 41 hours in pain education."^{5,6} Another European study called for pain education that enhanced skills, knowledge and attitudes while challenging misconceptions or negative attitudes. Specifically in pain assessment, problem solving, clinical decision making, empathy,

communication, compassion, critical reflection, advocacy, patient education, and teamwork. Although the study analyzed pain education specific to the profession of physical therapy, one can't help but wonder if other healthcare professions throughout North America are facing similar limitations. Is there enough education or training on the topic of pain management being offered during school? Or is this issue better left for continuing education courses later in professional development?

Because the core competencies in pain management are relatively new, and are standardized for all prelicensed healthcare education programs across the country, it is important to address whether practitioners and graduates have been exposed to these competencies. Additionally, if a practitioner has been exposed to the pain competencies it is important to determine if the competencies are being applied within the daily clinical practice. Physical therapists exposed to the pain competencies are better able to reduce disability in patient's who may be at greater risk for chronic pain.⁴ Which may help improve both patient quality of life measures as well as overall patient satisfaction reports for reimbursement purposes. Alternatively, if up to date information regarding pain management techniques have not been made available to clinicians through entry-level education or continuing education courses, it is possible that intervention methods chosen by clinician's to reduce pain may also result in greater subjectivity. One way to address this issue is to analyze what is currently being done as part of the curriculum for the student music therapist or student physical therapist.

The profession of music therapy is defined as the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program.⁷

Currently, clinical practice in music therapy requires an individual to complete a four-year undergraduate degree in music therapy, which encompasses foundations in music theory, music history, performance, clinical skills, behavioral sciences, ethics/values, communication, as well as fulfillment of university specific essential studies. Upon completion of essential studies and core music and music therapy courses, a six-month internship under the direction of a board-certified music therapist is required for completion of the bachelors of music-in music therapy degree, and the ability to sit for the national board certification exam for music therapists provided by The Certification Board for Music Therapists (CBMT). The Standards for Education and Clinical Training that were established by the American Music Therapy Association or AMTA provide the current foundation for music therapy education in the United States. Music therapy students are expected to demonstrate skill development in all competency areas in order to complete their education.

The professional competencies for a music therapist are currently divided into 25 sections including: musical foundations, clinical foundations, and music therapy. Competencies specific to pain management for a music therapist fall under Clinical Foundations and Music Therapy. Clinical Foundations address therapeutic applications, therapeutic principles, and the therapeutic relationship. Music Therapy includes Foundations and principles, client assessment, treatment planning, implementation, evaluation, documentation, termination, role/ethics, collaboration, supervision and administration, and research. Pain management is also addressed under the category of standards of clinical practice subsection: II – Assessment, 2.9.11 for Pain tolerance and threshold levels. Because these competencies represent a continuum, it is expected that a

student music therapist continue to progress these skills throughout their curriculum including the completion of their six-month internship.

Following completion of their internship, a music therapy student is eligible to sit for the music therapy national certification exam, and upon receiving a satisfactory score they can begin utilizing the designation “music therapist-board certified.” A clinical/professional music therapist is expected to maintain good standing with CBMT by obtaining 100 credit hours every 5 years. Attending regional or national conferences, continued education courses, and/or receiving specialized training are a few ways a music therapist may maintain these credit hours.

The profession of physical therapy is defined as “highly-educated, licensed health care professionals who can help patients reduce pain and improve or restore mobility – in many cases without expensive surgery and often reducing the need for long-term use of prescription medications and their side effects.”⁸ As part of a physical therapist’s educational requirements, one must receive a graduate degree from an accredited physical therapist program before they are allowed to sit for the National Physical Therapy Examination, which is a requirement for licensure in each state. An accredited physical therapy program provides physical therapy students the most specialized education focused on helping people with the restoration and improvement of motion. A growing majority or 96% of physical therapy programs offer a clinical doctorate – Doctor of Physical Therapy (DPT) degree, while some continue to offer a masters with plans implemented to convert to the DPT degree.

The length of a professional DPT program is typically 3 years. Primary content areas in the curriculum may include: biology/anatomy, cellular histology, physiology, exercise

physiology, biomechanics, kinesiology, neuroscience, pharmacology, pathology, behavioral sciences, communication, ethics/values, management sciences, finance, sociology, clinical reasoning, evidence-based practice, cardiovascular and pulmonary, endocrine and metabolic, and musculoskeletal.⁸ As part of the DPT curriculum, students will spend 80 percent of their time in didactic and lab study while the remaining 20 percent is dedicated to clinical education. Most physical therapist education programs require applicants to earn a bachelor's degree prior to admission into the professional DPT/MPT program. Some programs offer a 3+3 curricular format in which 3 years of specific pre-professional (undergraduate/pre-PT) courses must be taken before the student can advance into a 3-year accredited professional PT program.

The Commission on Accreditation In Physical Therapy Education (CAPTE) performs accreditation for physical therapy programs. CAPTE is a voluntary, non-governmental, peer-review process that occurs on a regular basis to ensure the quality of education that students receive. Graduation from an accredited program is the current requirement for all physical therapy students to become eligible to sit for the national licensure examination.

Core competencies expected of a professional physical therapist continue to be an ongoing discussion as part of APTA's Vision 2020 plan. As part of this plan outlined by APTA, representatives throughout the profession of physical therapy are hoping to develop systems to promote and measure continuing competence, determine competencies at different stages of professional development beyond entry-level to facilitate lifelong learning. Areas of Vision 2020 that may be specific to pain management competency for the physical therapist fall under: enhancing the physical

therapist's perception, knowledge, and skills in contemporary and emerging health trends and in the delivery of health care.

Another mechanism for defining the role of a physical therapist involves state-to-state regulations or the State Practice Acts. Whereby each state both defines and governs what a physical therapist is able to do. Pain is most commonly found and loosely defined under "tests and measures" for State Practice Acts, which allows room for interpretation state to state.

As can be seen by contrasting both music therapy and physical therapy competencies, terms and expectations exist on a continuum and will continue to be discussed to meet current changes in healthcare.

As of August 14, 2012 the International Association for the Study of Pain established coordinated curriculum guidelines for individual professions, including: physical therapy, dentistry, medicine, nursing, occupational therapy, pharmacy, psychology, and/or social work.⁹ The curriculum guidelines outlined the following content areas: multidimensional nature of pain, pain assessment and measurement, management of pain, and clinical conditions. "The newly established core competencies in pain management facilitate the development of a cohesive and comprehensive foundation for educational programs that can be readily shared among health care teams. With the idea that all health care professionals have the same basic expected foundation of pain education, they will then be able to improve their practice within their respective disciplines."⁴

These core competencies in pain management were established for prelicensure health professional education programs as demonstrated in a paper by Hoeger (2014) The paper described how the core competencies could be integrated into a professional

physical therapy curriculum. The purpose of this study is to address where these same core competencies for pain management are applied to the professional music therapist and physical therapist's curriculum by providing additional insight to the current understanding of competency in pain management, knowledge of roles when working within an interdisciplinary team, and whether or not professional organizations such as APTA or AMTA have clearly defined these new expectations for clinicians.

CHAPTER II

METHODS

Institutional Review Board (IRB) approval for this study was obtained from the University of North Dakota (IRB-201406-499). Pain competencies utilized for the survey were derived from the article by Hoeger (2014) A Qualtrics® (Provo, UT) electronic, web-based survey was developed to assess ratings of pain competencies for the professions of physical therapy and music therapy. (See Appendix) The questions in the survey included demographic information, specific questions related to pain competencies, and additional questions related to interprofessional education and healthcare. Subjects were asked to rate the questions related to competencies and pain management utilizing a six point Likert scale. Responses ranged from strongly disagree, disagree, somewhat disagree, somewhat agree, agree, and strongly agree.

Inclusion criteria for subjects in the study consisted of licensed physical therapists in North Dakota and certified music therapists in a tri-state area (North Dakota, South Dakota and Minnesota). The North Dakota Board of Physical Therapy was contacted in order to purchase a list of all licensed physical therapists in the state. North Dakota is one of only a very few states which offers a license for music therapists. Initial searches for licensed music therapists in North Dakota resulted in a paucity of subjects. Therefore, to obtain comparable numbers of subjects across survey groups, the subject pool for music therapists was expanded to include the tri-state area. A listing of certified music therapists in the tri-state area was purchased from the Certification Board

for Music Therapists. Subjects for the study included 200 randomly selected physical therapists and 200 certified music therapists. To assure confidentiality of the results each of the subjects was identified by a respondent identifier (Subject 1 PT 1, etc.).

To assess content validity and clarity, the survey was reviewed by two certified music therapists and one licensed physical therapist. The survey was distributed to subjects in July 2014 through email addresses obtained from the respective licensure/certification boards. After the initial invitation email, the survey remained open for 3 months. A reminder email was sent to subjects who had not responded 30 days prior to the closing date of the survey. No incentives were offered for participation.

Results of the survey were collected through the Qualtrics® system. The data was exported to a Microsoft Excel® file. The Excel® file was imported into SPSS® for statistical analysis. Qualitative analyses of descriptive results were provided as means \pm standard deviation where appropriate. Nonparametric analysis of the results was performed with a predetermined level of $\alpha = 0.05$ for tests of significance. Statistical analyses were performed using the statistical package for the social sciences (SPSS).

CHAPTER III

RESULTS

Electronic surveys were distributed to 200 randomly selected, licensed physical therapists and 200 board certified music therapists in the tri-state area. Of the 400 survey invitations, 50 physical therapists and 43 music therapists returned completed surveys. This resulted in a return rate of 23% for the study. The best response came from licensed/board-certified female clinicians, those who had only practiced 1-5 years, with the average age ranging between 26-35 years. The majority (64%) of clinicians who responded were currently working 32+ hours per week within some type of clinical setting, most of which had received specialized training or additional certifications within their respected field of study. Responses directly related to pain management experience demonstrated a split between clinicians as 65% reported minimal (0-10 hours) to no experience whereas 35% reported as having greater than 10 hours of experience or training in pain management.

Because part of the initial study by (Hoeger, M. 2014) called for investigation across professions, researchers investigated clinicians that had participated in an inter-professional healthcare course as part of their pre-professional curriculum as well as their access to the newly established pain competencies. Responses indicated that far fewer music therapists had taken an interprofessional healthcare course than physical therapists, demonstrated by 46.2% of music therapists reporting they had never taken an interprofessional healthcare course. However there was a 96% agreement for physical

therapists and 100% agreement for music therapists in regards to patients perceiving a higher standard of care when they receive healthcare from an interprofessional team, which further supports the significance of treating patients as part of a interdisciplinary team.

There was some discrepancy noted by both physical therapy and music therapy clinicians as to whether or not core competencies in pain management are clearly defined by their professional organizations.

Table 1 Frequency and age of physical therapist and music therapist respondents

		Age					Total
		18-25 years	26-35 years	36-45 years	46-55 years	56+ years	
Physical Therapist	Count	6	22	6	5	11	50
	Expected Count	5.9	22.0	5.4	7.5	9.1	50.0
	% within My profession is best described as	12.0%	44.0%	12.0%	10.0%	22.0%	100.0%
	Adjusted Residual	.1	.0	.4	-1.5	1.0	
	My profession is best described as						
Music Therapist	Count	5	19	4	9	6	43
	Expected Count	5.1	19.0	4.6	6.5	7.9	43.0
	% within My profession is best described as	11.6%	44.2%	9.3%	20.9%	14.0%	100.0%
	Adjusted Residual	-.1	.0	-.4	1.5	-1.0	
	Total						
Total	Count	11	41	10	14	17	93
	Expected Count	11.0	41.0	10.0	14.0	17.0	93.0
	% within My profession is best described as	11.8%	44.1%	10.8%	15.1%	18.3%	100.0%

Table 2. Gender of physical therapist and music therapist respondents

			Gender		Total
			Male	Female	
	Physical Therapist	Count	15	35	50
		Expected Count	9.1	40.9	50.0
		% within My profession is best described as	30.0%	70.0%	100.0%
		Adjusted Residual	3.2	-3.2	
My profession is best described as	Music Therapist	Count	2	41	43
		Expected Count	7.9	35.1	43.0
		% within My profession is best described as	4.7%	95.3%	100.0%
		Adjusted Residual	-3.2	3.2	
Total		Count	17	76	93
		Expected Count	17.0	76.0	93.0
		% within My profession is best described as	18.3%	81.7%	100.0%

Table 3. Years of licensure or certification for respondents

			I have been licensed/certified for					Total
			1-5 years	6-10 years	11-15 years	16-20 years	21+ years	
Physical Therapist	Count		19	10	2	3	16	50
	Expected Count		19.9	10.8	3.2	3.2	12.9	50.0
	% within My profession is best described as		38.0%	20.0%	4.0%	6.0%	32.0%	100.0%
	Adjusted Residual		-.4	-.4	-1.0	-.2	1.5	
	Count	My profession is best described as	18	10	4	3	8	43
Music Therapist	Expected Count		17.1	9.2	2.8	2.8	11.1	43.0
	% within My profession is best described as		41.9%	23.3%	9.3%	7.0%	18.6%	100.0%
	Adjusted Residual		.4	.4	1.0	.2	-1.5	
	Count		37	20	6	6	24	93
Total	Expected Count		37.0	20.0	6.0	6.0	24.0	93.0
	% within My profession is best described as		39.8%	21.5%	6.5%	6.5%	25.8%	100.0%

Table 4. Weekly hours worked for survey respondents

		I am currently working in a clinical setting				Total
		32+ hours/week	20-32 hours/week	1-19 hours/week	Not currently working in a clinical setting	
Physical Therapist	Count	32	6	5	7	50
	Expected Count	30.1	5.9	5.4	8.6	50.0
	% within My profession is best described as	64.0%	12.0%	10.0%	14.0%	100.0%
	Adjusted Residual	.8	.1	-.3	-.9	
My profession is best described as Music Therapist	Count	24	5	5	9	43
	Expected Count	25.9	5.1	4.6	7.4	43.0
	% within My profession is best described as	55.8%	11.6%	11.6%	20.9%	100.0%
	Adjusted Residual	-.8	-.1	.3	.9	
Total	Count	56	11	10	16	93
	Expected Count	56.0	11.0	10.0	16.0	93.0
	% within My profession is best described as	60.2%	11.8%	10.8%	17.2%	100.0%
	Adjusted Residual					

Table 5. Hours of pain specific continuing education reported by respondents.

		The amount of continued education I've received in my career regarding					Total
		pain management skills totals					
		1-10 hours	11-20 hours	21-30 hours	31+ hours	0, no hours related to pain management	
	Count	18	4	5	12	11	50
	Expected Count	22.6	5.4	3.2	9.1	9.7	50.0
	% within My profession is best described as	36.0%	8.0%	10.0%	24.0%	22.0%	100.0%
My profession is best described as	Adjusted Residual	-1.9	-.9	1.5	1.5	.7	
	Count	24	6	1	5	7	43
	Expected Count	19.4	4.6	2.8	7.9	8.3	43.0
Music Therapist	% within My profession is best described as	55.8%	14.0%	2.3%	11.6%	16.3%	100.0%
	Adjusted Residual	1.9	.9	-1.5	-1.5	-.7	
	Count	42	10	6	17	18	93
Total	Expected Count	42.0	10.0	6.0	17.0	18.0	93.0
	% within My profession is best described as	45.2%	10.8%	6.5%	18.3%	19.4%	100.0%
							%

Table 6. Respondent's perception of profession specific pain management core competencies.

		Core competencies in pain management are clearly defined by my professional organization		Total
		disagree	agree	
Physical Therapist	Count	24	24	48
	Expected Count	23.7	24.3	48.0
	% within My profession is best described as	50.0%	50.0%	100.0%
	Adjusted Residual	.1	-.1	
	My profession is best described as			
Music Therapist	Count	21	22	43
	Expected Count	21.3	21.7	43.0
	% within My profession is best described as	48.8%	51.2%	100.0%
	Adjusted Residual	-.1	.1	
	Total			
Total	Count	45	46	91
	Expected Count	45.0	46.0	91.0
	% within My profession is best described as	49.5%	50.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.012 ^a	1	.912		
Continuity Correction	.000	1	1.000		
Likelihood Ratio	.012	1	.912		
Fisher's Exact Test				1.000	.539
Linear-by-Linear Association	.012	1	.912		
N of Valid Cases	91				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 21.26.

b. Computed only for a 2x2 table

Table 7. Respondent's reporting interprofessional healthcare course as part of their pre-professional curriculum

			I took an inter-professional healthcare course as part of my pre-professional curriculum			Total
			As an undergraduate	As a graduate student	Never taken an inter-professional healthcare course	
	Physical Therapist	Count	7	27	16	50
		Expected Count	10.2	16.7	23.1	50.0
		% within My profession is best described as	14.0%	54.0%	32.0%	100.0%
My profession is best described as	Music Therapist	Adjusted Residual	-1.7	4.6	-3.0	
		Count	12	4	27	43
		Expected Count	8.8	14.3	19.9	43.0
Total		% within My profession is best described as	27.9%	9.3%	62.8%	100.0%
		Adjusted Residual	1.7	-4.6	3.0	
		Count	19	31	43	93
		Expected Count	19.0	31.0	43.0	93.0
		% within My profession is best described as	20.4%	33.3%	46.2%	100.0%

CHAPTER IV

DISCUSSION

Although the core competencies apply to prelicensure health professional education across all professions, the authors explicitly state that they are intended to be flexible and moldable to each profession and each school or curriculum or learning experience that seeks to meet the core competencies as a minimal expected outcome.⁴ The competencies have been previously discussed in another paper as to how each domain could be integrated into a professional physical therapy curriculum. The discussion included analysis of fundamental knowledge required by a physical therapist in the subject of pain to be considered clinically competent, the use of standardized measurement tools for objectifying pain such as the SF-36, numerical rating scales, as well as formulation of treatment goals as per the patient-therapist interaction. Physical therapy also plays an integral role in pain management through education, exercise, and application of manual, electrotherapeutic, and physical modalities.

Many of the competencies listed under the management domain are generally incorporated into existing physical therapist curriculum and apply directly to pain care.⁴ This survey demonstrated that although physical therapists may have exposure to the competencies as part of their school's curriculum (if they are recent graduates) or possibly through daily clinical practice as per their understanding of a specific intervention. However there seems to be discrepancy between physical therapy

clinician's as to whether or not these competencies are clearly defined by their professional organization. It should also be noted that 58% of physical therapy clinicians reported as having only 0-10 hours of continuing education specific to pain management. So how do these same domains apply to other healthcare professions and are there similar discrepancies that arise when analyzing how these core competencies are applied to another profession?

“Music has been used for pain relief since ancient times.¹⁰ There have been a growing number of studies in recent years examining the impact of music on pain modulation. A number of these studies have examined music tied to pain relief post operative^{11, 12}; cancer^{13, 14}; labor^{15, 16}; and pediatric patients.^{17, 18} Reviews of studies on the use of music for pain relief have found a small benefit for reducing pain^{19, 20} and opioid requirement.²⁰ These studies provide a detailed analysis of some interventional techniques that have been used by music therapists for pain management, supported by general competencies for music-based intervention established by the American Music Therapy Association.

Because the core competencies are intended to allow enough flexibility to be applicable to each healthcare profession and have been previously demonstrated within a prelicensure curriculum and professional physical therapy clinical practice, they may be used as a guide for music therapy educators and professionals to evaluate and advance pain education and further establish their role within an interdisciplinary healthcare team.

Domain 1 – Multidimensional Nature of Pain: What is Pain?

The International Association for the Study of Pain defines pain as: an unpleasant sensory and emotional experience associated with actual or potential tissue damage.

Because pain can affect both biological and psychosocial processes it is necessary to develop an understanding of how these processes interact. In music therapy, this knowledge would relate to understanding the basic science of pain and psychological processes involved related to changes in mood, affect, and activity. The biological science for a music therapist includes studies in anatomy, neuroscience, and pathology. The psychological components include development, social and behavioral sciences, disabilities, and general studies. This current study demonstrated that although music therapy clinicians do receive some background in pain management as part of their pre-board certification education, 72% of music therapy clinicians reported having 0-10 hours of continued education specific pain management.

Domain 2 – Pain Assessment and Measurement: How is Pain Recognized?

This domain includes the use of valid and reliable assessment tools to investigate the presence of pain in addition to the limitations that come as a result of pain. Given the multidimensional nature of pain, it is important that we continue to study pain comprehensively. Music therapists are trained to provide assessment pre and post intervention, which can contribute to the overall objective data available to the healthcare team. Like physical therapists, music therapists work alongside the patient to establish meaningful goals in addition to providing an outlet for pain relief.

Domain 3 – Management of Pain: How is Pain Relieved?

Because of the nature of pain this domain provides flexibility to collaborative approaches to pain management and decision-making. “Management of pain refers to interventions that aim to reduce pain, as well as interventions that aim to improve coping, function, and quality of life. Improvements in coping, function, and quality of life can

occur with or without reductions in pain.⁴ Music therapy can provide a unique role in pain management, as music is a form of sensory stimulation, which provokes responses due to the familiarity, predictability, and feelings of security associated with it. These responses may be provoked through both instrumental and vocal music activities, designed to facilitate changes that are non-musical in nature. In contrast, brain scans have revealed that listening to music increases activity in parts of the brain's reward center, other studies have looked at changes in the concentrations of different chemicals found in the brain, and have noted increases in the amount of dopamine released when a patient listens to pleasing music. "Although musical taste is subjective, there are common features of music that evoke fairly universal responses. For instance, most people find musical consonance (harmonies or chords) to be pleasant and dissonance (clashing notes) to be unpleasant."¹⁹

Although neither the mechanisms by which music can affect humans nor the most effective applications of music are well documented, a few studies have begun investigating a few common trends emerging from the research that has been done. "Human problems that are heavily influenced by the auditory environment (e.g., autism), and those experiences in which feelings of suffering play a significant role (e.g., anxiety and chronic pain)."²¹ During hospitalization people often experience increased anxiety because they may have feelings of isolation from their normal social and material environments. (Phipps, Marion A. 2010) Music can decrease this burden as demonstrated by Phipps et al (2010). Music significantly attenuated stress effects on physiological parameters, as well as pain and mood states in hospitalized patients.²² Specifically, there were significant reductions in heart and respiration rates, perceived

anxiety, depression, and total mood score in subjects who received music intervention compared to subjects who did not. ²¹ Another meta-analysis of pain intervention methods determined that music therapy appears to specifically target pain and fatigue. ²³ As can be seen music therapy offers a unique role in pain management through education, intrapersonal and interpersonal communication, active movement, decision-making, improvisation, and relaxation.

Domain 4-Clinical Conditions: How Does Context Influence Pain Management?

This domain addresses the role of the clinician in the application of the competencies developed in domains 1 through 3 and in the context of varied patient populations, settings, and care teams. This domain is a continued discussion for most healthcare professionals as it addresses the issue of how pain is reported. Meaning clinicians must have an understanding of which assessment tools are appropriate for the patient population they are working with. With the gradual changes in healthcare both the physical therapist and the music therapist are becoming more accessible for the public as a result of increasing opportunities for direct access or as part of a larger institutions complementary care team.

Conclusion

Many competencies that could be classified under pain management are already integrated within the current educational curriculum or continued education courses for both music and physical therapy. Music and physical therapists are both taught to include both the patient and their social support system in the goal setting and decision making processes. We know that physical therapists are highly educated on mobility and

health promotion, while music therapists are educated in how to provide a supportive environment as well as motivation for physical activity through the use of musical stimuli. The interaction of these two professions can promote not only better outcomes, but also a highly supportive environment for improvements in wellness and tolerance to activity for the patient. Although physical therapists may be better positioned to monitor progress from a pain management standpoint through their vast understanding of the healing process, music therapists possess a great foundation in addressing socio-emotional outcomes, which is important as we know that pain is both a sensory process and an “affective subjective phenomenon that is influenced by physiological processes and by diverse psychological and emotional process.”⁵ Music therapy has the ability to augment the patient’s perception of pain much like a physical therapists ability to address the mechanical and chemical deficits.

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