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Implementing a key competency in Physician Assistant palliative care education: simulated pain assessment

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IMPLEMENTING A KEY COMPETENCY IN PHYSICIAN ASSISTANT
PALLIATIVE CARE EDUCATION: SIMULATED PAIN ASSESSMENT

by

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ABSTRACT

Palliative care has become an integral part of healthcare throughout the United States. The goals of this discipline are focused on improving patient quality of life during times of illness. These goals are universal throughout medicine and apply to all practicing providers. An interdisciplinary council developed core competencies for this discipline which includes pain assessment and management as a key component. Throughout healthcare, the assessment and management of pain continues to be a challenge for providers.

A review of the literature has demonstrated that untreated pain has become an increasing burden on the patient population. Many providers feel training during their medical education is insufficient and they entered the workforce unprepared. An evaluation of current standards put forth by educational governing bodies has shown the regulations regarding palliative care, pain assessment in particular, to be scattered and non-specific. It is apparent a more concise curriculum, dedicated to palliative care and pain assessment is needed for all future medical providers to hone the essential tools needed to properly evaluate and treat pain.

The proposed intervention consists of an educational module which combines a didactic session and student role playing module focused on pain assessment. This intervention will focus on Physician Assistant students in particular, as this profession
will continue to play a large role in healthcare. Didactic sessions focused on pain assessment, a core competency of palliative care, will be presented to the students. A role playing exercise following these didactics will allow students to practice such pain assessment skills and also explore what it may be like to be a patient in pain and provide them with insight on the importance of adequately assessing related symptoms.

The current model of education regarding palliative care has proven to be ineffective, especially regarding pain assessment. A more concise, dedicated module for this essential skill is needed for students to become more efficient, effective providers. With the ability to assess patients more effectively, providers will be able to manage patients’ pain and decrease the burden untreated pain has put on the population as a whole.
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LIST OF ABBREVIATIONS

ACGME.......................... Accreditation Council for Graduate Medical Education
BU ................................................................. Boston University
ISO ............................................................. International Standards Organization
LCME........................................... Liaison Committee on Medical Education
OSCEs.......................... Objective Structured Clinical Exams
PA......................................................... Physician Assistant
INTRODUCTION

Background

Throughout the medical field, the management of a patient’s symptoms is a major priority for both healthcare providers and patients alike. By controlling symptoms such as pain, there is noted improvement in patient quality of life, resulting in an increased satisfaction with their healthcare experience. Palliative care is a discipline that centers on the alleviation of such symptoms. Many people unfamiliar with the goals of palliative care often associate it solely with end of life care. While treating patients at the end of life is an important component of palliative care, the scope of this discipline is not limited by individual prognosis and rather focuses on the patient’s quality of life. ¹

To better characterize this field, in 2006 the Board of Hospice and Palliative Medicine Competencies work group devised core competencies to include an emphasis on patient and family communication regarding emotionally difficult information, pain and symptom management, quality of life importance, coordination of healthcare and an interdisciplinary team approach to medicine. The creation of these competencies was formed in conjunction with the recognition of the subspecialty of hospice and palliative care by the Accreditation Council for Graduate Medical Education (ACGME) as a new discipline. This council relied on the experience of providers in many different areas of medicine including emergency medicine, family medicine, anesthesiology, pediatrics and neurology. ² Although the recognition of such a subspecialty is new, the practice of palliative care is well established and continues to be integrated in all aspects of medicine.
Even with the acknowledgement of a new subspecialty, the Liaison Committee on Medical Education (LCME), a medical education accrediting authority, neglects to require medical schools to include palliative care competencies in their curriculum. The lack of requirements for palliative care instruction has resulted in a scattered curriculum throughout the didactic phase of medical school. In regards to Physician Assistant (PA) education, the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) requires PA programs to meet standards of palliative care and end of life care within preclinical instruction. For both PA and MD programs the addition of such a curriculum has proven to be difficult for an already burdened course load resulting in vast inconsistency between programs.

The treatment of pain is a very important aspect of palliative care and something a majority of patients rely on. One estimate is that over one third of American adults currently suffer from chronic pain. Unfortunately, it has been shown that medical providers’ ability to treat pain is inadequate and estimates have shown that half of cancer patients’ pain is undertreated. Research focused on pain management in the emergency room, a more acute setting, found under treatment of pain was prevalent and most likely due to the providers inability to accurately assess pain. A review of the literature is needed to evaluate the etiology of such a deficit and determine what is currently being taught in regards to pain management during medical education.

**Statement of the Problem**

It continues to be evident that palliative care education throughout PA curriculum is inadequate. Also, studies have failed to characterize the detail in which this information
is being presented. There is increasing emphasis on palliative care throughout medicine and PAs will play an integral role in implementing such care. As noted previously, pain management, a core competency of palliative care, is insufficient throughout healthcare as well. The focus of this literature review will be to assess the current state of palliative care education throughout medicine with a focus on PA palliative care education. A proposal for a module focused on pain assessment, a core competency of palliative care, will subsequently be developed to determine what approach may be most effective in delivering such information to PA students.

**Hypothesis**

The implementation of a simulated pain assessment curriculum during didactic year of PA school will enhance the clinical skills of PA students to more adequately assess pain.

**Objectives and specific aims**

A review of the literature has shown that palliative care education is inconsistent and lacking for both medical programs and PA programs alike. Previous research has failed to characterize the current state of palliative care within PA programs as well. To better understand what needs to be added to such programs’ curriculum it is important to understand what is already being presented to students and which method is most effective. A review of the literature will be performed to define palliative care, the current state of PA palliative care education and its relationship to other medical educations. The review will also seek to specifically define appropriate pain assessment competencies defined by experts in the field.
The proposed study will use a module focused around pain assessment, an important competency in palliative care. The pain assessment module will be based on student role playing which was determined to be an effective alternative to using standardized patients for formative objective structured clinical exams (OSCEs) when applied to medical students. This study will also determine whether such an approach is equally effective with PA students by assessing scores on pre and post tests performed by the subjects. A survey presented to the students will also be utilized to help characterize the depth in which palliative care is being presented to PA students as well as what approach is most effective.

**Specific Aims**

- To better characterize the depth in which palliative care is being presented to PA students by using pain assessment as a representative core competency of the field.
- To determine if a module based around student role playing is an effective method to present pain assessment information to PA students.
REVIEW OF THE LITERATURE

Overview of Palliative Care

The identification of palliative care as a specific discipline in medicine is still fairly new, however it has been a practice of healthcare providers for centuries. In fact, part of the very ideology of palliative care can be derived from the Hippocratic Oath. One particular excerpt from the oath often assigned to palliative care reads as, “Most especially must I tread with care in matters of life and death. If it is given to me to save a life, all thanks. But it may also be within my power to take a life; this awesome responsibility must be faced with great humbleness and awareness of my own frailty. Above all, I must not play at god”. The interpretation of this statement may certainly vary between readers and according to Horowitz et al., it appears to limit the scope of palliative care specifically to end of life care. Instead they believe the excerpt, “I will apply, for the benefit of the sick, all measures [that] are required, avoiding twin traps of over-treatment and therapeutic nihilism” is more inclusive. Here the provider pledges to take the necessary measures to benefit a patient while also avoiding the possibility of doing more harm secondary to unnecessary treatment. This excerpt also more closely reflects the definition used by the World Health Organization which is, “an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual”.
An alternate approach to defining palliative care may be to use the competencies developed by education boards, rather than summarizing the field in one broad statement. In this manner, the different aspects of the field may be more clearly defined while avoiding vague statements that were not initially intended to define the entire field of palliative care. As mentioned before, the competencies described by the Board of Hospice and Palliative Medicine Competencies work group are comprised of adequate communication regarding difficult information, pain management, focus on quality of life, care coordination and a team approach to medicine. These competencies clearly illustrate the broad goals of the field and how it pertains to a patient’s entire clinical picture. In order to appreciate palliative care as a whole, one must be aware of each competency and how it pertains to healthcare.

Over the past two decades, the specialty of palliative care has expanded exponentially. The need for such services is partially driven by an aging population. Within the next 25 years, the number of people older than 80 years old will triple. Advances in medicine will allow these people to live longer lives and tolerate more severe illness, requiring better symptom control and assistance with life changing decisions. A review by the Center to Advance Palliative Care has shown a 148% increase in the number of palliative care teams between 2000 and 2010. Teams are also available in over 85% of hospitals with a total capacity greater than 300 beds. The demand for such services is very apparent and will continue to grow with more advanced therapies for diseases that were once associated with poor prognosis.
To better define how palliative care is provided to patients, Wiencek et al., describe four major delivery models. These modules consist of ambulatory care, home care, dedicated inpatient palliative care and consult services. Ambulatory care clinics are a new model of palliative care that are rapidly growing. Such clinics employ a multidisciplinary approach and are deemed appropriate for patients with various cancers, heart failure and neurological disorders including dementia. This setting was found to be less intimidating for patients and patients attending such clinics regularly, were less likely to present to emergency departments for triage. A second model consists of home based palliative care. This type of service allows elderly, frail patients to avoid unnecessary travel while also remaining in the comfortable environment of their home. Patients involved in this module have experienced more satisfaction with care and more often fulfilled wishes of completing the dying process at home. Dedicated inpatient palliative care units are less common and are usually reserved for very complex patients requiring pain control, extensive wound management or inpatient dialysis.

The most established form of palliative care comes in the form of inpatient consultation services. This model is less resource dependent, allowing more patients to be seen and therefore more efficient and cost effective. These teams are often comprised of a physician, advanced care practitioner such as a nurse practitioner or PA, psychologist, social worker and chaplain. A retrospective telephone survey of veterans who received care at a Veteran’s Administration hospital found that patients reported better emotional and spiritual support, more care around the dying process and increased well being and dignity when under the care of a palliative care team. Consultations were more likely to
be completed during the last weeks of life and reasons for consultation included episodes of confusion, a diagnosis of cancer and recent hospitalizations. This mode of care continues to be a cornerstone for the field.

As mentioned previously, palliative care is often mistaken to be exclusively end of life care. Having this belief, many patients may actually avoid such care with thoughts that they would ultimately be giving in to their disease. However, a randomized control trial performed by Temel et al., demonstrated that patients with metastatic non small cell lung cancer who underwent an early palliative care intervention had a longer median survival of 11.6 months as compared to 8.9 months for patients without a consult. Additionally, these patients reported an improvement in quality of life with less depressive symptoms. These patients were also able to avoid more aggressive treatment with many side effects. This study also demonstrates that an early intervention is beneficial compared to waiting later in the disease course, indicating its efficacy regardless of prognosis or the time course of the illness. A study focused on a Nurse Practitioner directed intervention found that metastatic cancer patients’ quality of life improved with earlier intervention as well. The intervention included discussions on hospice and advanced directives which helped improve patients’ emotional and mental well being indicated by a statistically significant improvement in quality of life measured by assessment tools including the Functional Assessment of Cancer Therapy- General survey. Not only did this study show that discussions on difficult topics can be therapeutic for patients but that a module directed by a mid-level practitioner like a Nurse Practitioner was also effective.
Avoiding unnecessary treatment is a goal for all practitioners and palliative care assists in this area as well. There is a financial benefit to avoiding unnecessary treatment. This is especially true for cancer patients who may require expensive therapies. A study of colorectal cancer treatment showed no correlation between spending and patient outcomes. Interestingly, an increase in spending was shown to have an association with increased all-cause mortality and non-cancer mortality. The association indicates that higher rates of spending may be due to the treatment of patients with poor prognosis who will most likely not benefit from aggressive care. 18 A second study looking at differences in costs between patients receiving a palliative care consult to similar patients without consultation showed an adjusted net savings of $6896 per admission in the intervention group. The patients used in this study were a mean age of 68 with a length of hospital stay between 7 and 30 days. 19 By practicing the very essentials of the Hippocratic oath and “avoiding twin traps of over-treatment and therapeutic nihilism” 9 palliative care can relieve much of the financial burden patients with serious illness may otherwise face.

Another important aspect of the field to consider are the demographics of the clinicians in the work force. As this is a rapidly expanding field, such positions will be in great demand and palliative care will depend on the recruitment of such providers. An electronic survey of the members of the American Academy of Hospice and Palliative Medicine showed that of the 1365 respondents, 68% were either medical doctors or doctors of osteopathic medicine and 11.1% were either PAs or nurse practitioners. Other positions within the team include registered nurses, social workers and chaplains. 20 These results reflect the interdisciplinary nature of palliative care. With an increasing
population over the age of 65, demand for such positions to be filled will continue to increase.

**Palliative Care Education**

Palliative care education continues to develop as the field grows. The literature indicates there is much room for improvement throughout most medical training in regards to palliative therapy. One profession in general that appears to lack adequate training is that of PAs. The PA profession, like the subspecialty of palliative care is still relatively new considering its development following the Vietnam War. Similarly, the demand for PAs is also increasing for many of the same reasons palliative care continues to grow. PAs have the opportunity to fill the demand for care as discussed earlier. The core competencies are also very applicable in other areas of medicine adding importance to their addition in medical education. One study found that of hospitalist PAs working in the field who were asked what content areas would have been most helpful in preparing them to work with their patients, 85% strongly agreed palliative care training would have been beneficial. 21 The state of PA palliative care education and the depth in which it is taught is unclear, while there is a clear demand from PAs for a stronger curriculum. The remainder of the literature review will focus on education and specifically what research has been done on PA education in palliative care and what modes of curriculum may be most effective in delivering such material.

In order to characterize the current state of palliative care in PA education it is important to understand the current curriculum requirements established by the governing educational body. The Accreditation Review Commission on Education for the Physician
Assistant’s most recent standards for PA instruction states in section B2.06, “The program curriculum must include instruction in the provision of clinical medical care across the lifespan. ANNOTATION: Preclinical instruction prepares PAs to provide preventive, emergent, acute, chronic, rehabilitative, palliative and end-of-life care.”. It is up to individual programs to interpret this statement and implement such learning as they seem fit. Therefore, the information being taught may be drastically different throughout each program. As palliative care is an integral part of medicine it is important to understand what these differences may be and to determine if the information is being presented in a sufficient manner.

To better understand PA education, Prazak et al., surveyed PA students actively enrolled in a program. These students completed questions regarding seven palliative care skills which included pain assessment, dosing opioids and managing side effects, using adjuvant analgesics, managing delirium and assessing non-pain symptoms. They were then asked to complete a self assessment regarding their knowledge of these topics. The study found a significant difference between factual knowledge and self-assessment for students who had completed didactic year compared with students who had only partially completed didactic year. They found no difference in factual knowledge between students who completed didactic year and students who had also completed clinical year. Also, 75.56% of students reported having “none or too little palliative care lectures” during didactic year. This study was successful in determining that both didactic and clinical year of PA school is inadequate in reinforcing palliative care material presented in didactic year. The study is limited however as the population of PA students was vaguely
described and their inclusion criteria is very broad making it difficult to understand what a specific program may be lacking. A study that implements an intervention on a program with a known curriculum may be more beneficial in regards to understanding the depth in which information is being presented.

Lanning et al., were able to integrate a palliative care module into the Medical College of Georgia PA program and observe the effect on the students’ knowledge. To achieve this, the group used various strategies to modify the current curricula in order to make room for extra material. This included adapting current objectives to include a patient centered approach, establishing clinical rotations in palliative care and hospice as well as training students to work with palliative care providers. Instruction was integrated into the didactic phase as well as the clinical phase of the program with the extension of their adult medical clinical course from 4 weeks to 8 weeks. Feedback from students who were in the program was reviewed by instructors. The students found their time in the intensive care unit to be helpful in learning to care for patients in critical conditions and those close to the end of life. They also felt being a part of end of life discussions at the bedside was also helpful. The students felt they would have benefited from more case studies during didactics, a more extensive curriculum on treatment as well as palliative care role playing. This study provides an example of how palliative care can be integrated into established programs and may serve as a model for other programs to develop such objectives.

Over 90% of PA programs in the country offer a Master’s Degree with approximately 75% of these programs lasting between 24 to 29 months in duration. The
didactic phase lasts approximately 53 weeks and clinical phase lasts an average of 52 weeks. The scope of a PAs practice is often dictated by their supervising Physician as well as regulations defined by individual institutions. It is important for PAs to be trained to perform at the highest level and be available to practice any duty delegated to them.

Taking into account that PAs do not go through an internship or residency traditionally, it is of great importance that palliative skills are developed thoroughly during the aforementioned times regularly delegated to the didactic and clinical phase. Considering this, it is essential to determine what other health care providers including Medical Doctors and Nurse Practitioners may learn during their didactic training, internship or residency and what may be the best method to implement such knowledge during PA education.

A needs assessment regarding palliative care education in medical internship and residency was performed by Ury et al. Their assessment focused on determining the state of such education during residency, assessing the educational needs of learners as well as developing an understanding of what obstacles may be present in addressing such needs. By surveying interns, the group found that little palliative care instruction was provided during didactic year of medical school and they had a similar clinical experience. There was clear interest in learning about the subject and interns and residents rated pain management, giving bad news and advanced directives as the most important topics to learn. These providers also felt strongly that a large number of patients would benefit from a palliative consult. Residents felt that rotations in intensive care, geriatrics, and oncology were the most effective areas to learn the subject. Potential obstacles to
development of a curriculum were felt to be limited funds, an already full residency curriculum, resistance to change and greater time pressure on faculty. This article provides great insight into what rotations may benefit PA students the most in regards to palliative care. The obstacles discussed are also important to take into consideration when planning the installment of a new curricula. Another qualitative study surveying a group of Medical Doctors who had recently graduated found that the majority felt they had inadequate training during medical school and the majority of their palliative care knowledge came from trial-and-error experience in the field.  

Assessing the topic from a different angle, Shaheen et al., surveyed Internal medicine clerkship directors throughout the United States and Canada regarding the extent of palliative care and end of life care curriculum in their programs. Of the respondents, 43.6% reported a formal curriculum during their clerkships. The majority (85.4%) of these respondents stated they used multiple modalities to deliver the material including formal lectures and group discussions. The time spent on such curricula varied greatly from 1 hour of dedicated time to one full week. Reflective writing, direct observation and OSCEs were the most common forms of assessment. Inconsistency in medical school palliative care curricula continues to be prevalent in medical education including during the clinical experience.

It is clear that palliative medicine as a whole is lacking throughout medical professional education. Pain assessment and management is a core competency and medical professionals in the United States continue to struggle to adequately treat pain. In fact, pain management was considered to be so important it was concluded by the Joint
Commission in 2000 that pain would be considered the fifth vital sign.  

examined the curricula of LCME accredited medical schools based around pain management. They found the total number of pain sessions taught ranged from 1 to 28 with a mean of 9 and median of 7 total sessions. These sessions were more often taught in the context of more generalized required courses with only 3.8% of schools having a required pain course. A survey of various primary care providers including Attending Medical Doctors, Nurse Practitioners and PAs found that pain management continues to be difficult to master even with varying degrees of clinical experience. Problems described included prescribing opioids, dealing with potential opioid abuse and patient psychological factors. Inadequate training was felt to be the primary reason for the continued lacking skillset.

The lack of consistency and dedication to pain assessment and management education is surprising considering close to 100 million people experience chronic pain in the United States, accounting for nearly $600 billion dollars in annual cost.  

Strong correlations between poor socioeconomic status and chronic pain continue to be shown with large scale surveys contributing to this dramatic economic burden. Low back pain is a major cause of disability and something a majority of adults will suffer from at some point in their lives. Imaging studies continue to be ineffective at linking the symptoms of low back pain to an anatomical correlate and many patients will be given a vague diagnosis of idiopathic back pain. Such deficits in diagnostics place a huge importance on training medical professionals to adequately assess and manage pain. This will continue to be a key to addressing this healthcare epidemic.
In order to face the challenge of improving such an important aspect of medical education, an inter-professional consensus executive committee was formed to develop core competencies of pain management. The committee was made up of a diverse group including experts in pain management, research, curriculum development, education science and inter-professional education. The competencies developed are shown in Table 1.

**Table 1. Core Competencies of Pain Management**

<table>
<thead>
<tr>
<th>Competency 1: Multidimensional Nature of Pain</th>
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<tbody>
<tr>
<td>1. Describe the multifaceted nature of pain.</td>
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<td>2. Use appropriate terminology to describe pain.</td>
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<td>3. Describe the cultural impact of pain.</td>
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<td>4. Understand the scientific theories of pain.</td>
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<th>Competency 2: Pain Assessment and Measurement</th>
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<tr>
<td>1. Use appropriate tools for pain measurement and consider related outcomes.</td>
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<td>2. Describe the various dynamics that can facilitate or interfere with effective pain assessment and management.</td>
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<tr>
<td>3. Understand the importance of setting goals for pain management.</td>
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<td>4. Demonstrate effective and empathic communication during pain assessment.</td>
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<tr>
<th>Competency 3: Pain Management</th>
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<tr>
<td>1. Demonstrate the ability to include the patient and family in teaching and decision making process for pain care.</td>
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<td>2. Recognize ideal treatment options that can be observed in a complete pain management plan.</td>
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<tr>
<td>3. Describe how self-management is vital to pain management.</td>
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<tr>
<td>4. Develop a treatment plan based on the various benefits and risks of such management.</td>
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<tr>
<td>5. Monitor effects of pain management and adjust the plan as needed.</td>
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<tr>
<td>6. Delineate physical dependence from substance use disorder, tolerance, addiction, and non-adherence.</td>
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<tr>
<td>7. Develop a treatment plan that accounts for variations between acute pain, acute-on-chronic pain, chronic/persistent pain, and pain at the end of life.</td>
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<th>Competency 4: Clinical Correlates</th>
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<tr>
<td>1. Understand the distinctive needs of special populations that pertain to pain management.</td>
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<td>2. Explain how changes in settings of care will affect management.</td>
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<td>3. Describe the various roles of providers within a pain management medical team.</td>
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<tr>
<td>4. Develop an individualized pain management plan for patients using available resources.</td>
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<td>5. Describe the role of advocacy in assisting patients with pain management.</td>
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Adapted from Fishman et al., 2013

The formation of such competencies was inspired by a study which involved the integration of an undergraduate pain curriculum into six Canadian undergraduate health
science programs. Competencies for this curriculum were based off of objectives defined by the International Association for the Study of Pain curricula. The focus of this module was similar to the domains listed in Table 1 as they include general topics on the pathophysiology of pain, the consequences of untreated pain, pain assessment and management. The five-day long module was found to be effective as the results on students’ pre and post testing were statistically significant with a change of scores from 66 to 83%. The module was also successful in its ability to be effective with learners from a variety of disciplines. This study also shows the significant effect of a module specifically dedicated to pain assessment and management and may be a more effective strategy when compared to scattering the learning objectives throughout other dedicated modules.

An alternate approach is to implement pain assessment and management into a pre-existing module like neuroscience. This method was studied by Stevens et al., as they developed a quasi-experimental design comparing a control group consisting of the medical student class of 2006 to the experimental class of 2007 who had an additional pain assessment and management module added to their neuroscience block. The intervention consisted of lectures on pathophysiology, pain assessment and pharmacotherapy as well as small group case based seminars. The neuroscience block concluded for both groups with a formative OSCE using standardized patients portrayed by trained actors. Results from the OSCE demonstrated students from both groups performed similarly on the exam but the intervention group significantly outperformed the control group in acute basic pain and advanced terminal pain management skills.
Limitations to this study include the comparison of an interventional group to a historical cohort as well as students were only rated on OSCE performance and therefore clinical practice was not observed. The use of a formative OSCE in this study introduces an important aspect of medical education allowing students to practice their skills outside of a real clinical encounter. Such practice is vital for students to appropriately prepare for interactions with real patients.

An alternative to using trained actors as standardized patients during OSCEs is to train students themselves to portray patients. This practice was shown to be effective in a study that had medical students act as standardized patients during a pain evaluation interview. The study involved training groups of students during a 30-minute period to portray a patient with a specific type of pain. The students were then paired with the other group who learned a different patient presentation. Students portraying the provider had 15 minutes to interview the standardized patient. These interactions were observed by an independently trained rater. The study was able to show that medical students are a reasonable alternative to trained actors. The discrepancy found was between student standardized patients and the trained raters in regards to objectively grading the student provider. Students were more likely to give credit than the trained rater. Spending time training students how to objectively rate another student is outside the goals of medical student education. One potential method to bypass such a discrepancy is to have a trained rater observe each student interaction and give feedback themselves. Training students is a more cost-effective approach to an OSCE even with a trained rater observing the interaction either in real time or afterwards on video.
Considering the findings of the previous literature review, it is apparent that palliative care education is lacking. A common theme noted is that learning objectives that apply to such a topic are usually scattered throughout the course of a program’s didactics with no clear consistency. There is a clear demand from students and current practitioners of all levels for more training in palliative care. To better illustrate an effective approach, the proposed study will employ a module focused on pain assessment, a core competency of palliative care, into a PA program. As pain management is an important aspect of healthcare for all providers it will apply to all students. It is important for students to be competent in pain management and the research shows providers continue to struggle treating pain on a consistent basis. The module will use methods deemed by students to be effective, including didactic sessions and student role playing to reinforce key learning objectives and assess the feasibility and efficacy of a compact, dedicated module on a key competency in palliative care.
METHODS

Study design

The proposed study will follow a one group pretest, post-test design. This type of analysis continues to be an effective approach to studying novel educational modules. A pretest will be completed by first year PA students prior to the module during didactic year. The post-test will be administered approximately two weeks following the module. Between testing, a module focused on pain assessment will be implemented into the current curriculum of that program. A survey presented to the students following the post-test will also be used to gather subjective information from the students on the proposed module.

Study population and sampling

The study population will consist of first year PA students enrolled in the same ARC-PA accredited program. The students will be observed during the didactic phase of their education. The duration of their didactics is determined by the program. Sample size will depend on the program as well. According to the Physician Assistant Education Association’s latest report, the average PA class size in the United states is 45 students. All students who give consent to participate in the study will be included. Students who fail to meet the requirements of the specific program to advance with their degree during this intervention will be excluded from the study.

Intervention

Investigators will implement a module focused on pain assessment during the program’s didactic year. Ideally, the module will occur during the program’s neurology block or an
alternate block in which the program feels the most learning objectives focused on pain are covered. In this manner the intervention will be complementary to the already established curriculum of the program. This module will combine a didactic session and a student role playing exercise in pain assessment.

The pain assessment module will be developed using the 6 steps to curriculum development described by Kern et al. \(^\text{37}\) This approach allows for educators to identify the needs of learners and appropriately address these needs by developing specific aims. Additionally, logistics regarding implementation are also recognized to ensure such a curriculum is feasible. An outline of the steps to curriculum development can be seen in Table 2 with the corresponding description for this proposed module.

**Table 2. Curriculum Development**

<table>
<thead>
<tr>
<th>6 Steps to Curriculum Development</th>
<th>Pain Assessment Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Problem Identification and General Needs Assessment</td>
<td>A review of the literature indicates that palliative care education is lacking and there is a clear demand from the PA profession for a stronger palliative care curriculum during PA education.</td>
</tr>
<tr>
<td>2. Targeted Needs Assessment</td>
<td>Currently, palliative care is being presented to students during medical training in a scattered, inconsistent manner. A module focused on the core competencies of palliative care will provide students with a more cohesive learning experience.</td>
</tr>
<tr>
<td>3. Goals and Objectives</td>
<td>The goal of the proposed module will be to effectively teach pain assessment competencies defined by an expert counsel. Specific objectives will be derived from the core competencies of pain assessment defined by the expert council.</td>
</tr>
<tr>
<td>4. Educational Strategies</td>
<td>The module will consist of didactics and a student role playing exercise.</td>
</tr>
<tr>
<td>5. Implementation</td>
<td>This module will be appealing to educators as it allows for students to learn and practice skills of an important discipline. It is also cost effective in using an OSCE based around student role playing.</td>
</tr>
<tr>
<td>6. Evaluation and Feedback</td>
<td>Students will objectively see their improvement in pre and post-test scores. Students will be given the opportunity to rate the experience through a survey. Feedback will be given to students by faculty observers and fellow students.</td>
</tr>
</tbody>
</table>
The module will consist of both didactics and a role playing exercise. Initially the entire class will attend a single lecture focused on the defined learning objectives of the module. Following this lecture, the class will be divided in two. Each group will be trained on how to present as a patient with a specific complaint similar to how trained actors present as standardized patients during traditional OSCEs. One group of students will learn how to present as a patient with chronic, neuropathic pain secondary to long standing, uncontrolled diabetes mellitus. The other group will learn how to present as a patient with acute abdominal pain secondary to cholecystitis. The OSCE will occur the following day, allowing students time to prepare for their role as both interviewer and patient. It will be required of students from each group to refrain from releasing information about their determined patient presentation to students of the opposite group. For the OSCE, each student will be paired with a student from the other group.

The students will be involved in two separate OSCEs, once as the interviewer and once as the patient. Each OSCE will be observed by an observer not affiliated with the institution who is trained to rate the performance of the student interviewers. Ideally, observation of the students will be done through video monitoring to reduce the number of raters being present, as well as allowing for multiple OSCEs to occur at the same time. Each student will be given 15 minutes to perform the interview. Following the interview, 15 minutes will be allocated for students portraying the patient to give feedback to the interviewer. The faculty rater will also give feedback to the students portraying the interviewer. Feedback will be focused on the student’s ability to acquire a thorough history, assess the patient’s pain and communicate effectively. A modified version of the
Master Interview Rating Scale will be used as a tool to provide such feedback.

Modifications to the Master Interview Rating Scale were made to incorporate more pain assessment skills as well as remove objectives deemed unnecessary for this focused assessment. The modified version can be seen in Table 3.

**Table 3. Modified Master Interview Rating Scale**

<table>
<thead>
<tr>
<th>Opening</th>
<th>Elicits Spectrum of Concerns</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] There is no introduction.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elicits Spectrum of Concerns</th>
<th>Timeline</th>
<th>Impact of Illness on Patient</th>
<th>Facilitation Skills and Empathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>[5] The Learner elicited the patient’s full spectrum of concerns within the first few minutes of the interview.</td>
<td>[5] The Learner obtained sufficient information so that a chronology of the chief complaint and history of the present illness could be established. The chronology of any associated symptoms was also established.</td>
<td>[5] The Learner inquired about the patient’s feelings about her or his illness and if/how it has changed the patient’s life. The learner explored these issues. The Learner used an appropriate scale to rate the patient’s pain.</td>
<td>[5] The Learner used verbal facilitation skills including reflection and echoing. The Learner put the patient at ease and expressed empathy throughout the interview.</td>
</tr>
</tbody>
</table>
Educational Objectives

The learning objectives for this module discussed in Table 2 will be derived from the core competencies of pain management developed by an inter-professional consensus executive committee. The following statements include the proposed learning objectives.

After completion of the proposed module students will be able to:

1. Discuss the importance of adequately assessing and treating a patient’s pain.
2. Delineate the pathophysiology of pain and describe different types of pain including cutaneous, somatic, neuropathic and visceral.
3. Assess a patient’s pain using various pain assessment scales and understand the appropriate utilization of such scales.
4. Gather a complete history of present illness including the seven cardinal features of symptom characterization.
5. Demonstrate compassionate and effective communication when interviewing a patient in pain.

Study variables and measures

Students will take both a pre and post test as part of this study. These will be identical, non-parametric multiple choice tests, 10 questions in total. The test will be completed online using ExamSoft® software. Each question will contain 5 options with one being the correct answer. Students will have one minute to complete each question. Questions
will be derived from the core competences of pain assessment including pain
pathophysiology, utility of pain scales, history taking and the epidemiology of pain.
These questions will align with the proposed learning objectives.

A survey in the form of a questionnaire will be presented to students following the
module. Students will be asked to rate statements on a 5 point Likert scale. The central
aim of the survey will be to obtain a detailed description of students’ reactions to the
module. Specifically, students will report their perception on the effectiveness of student
role playing, the need for such additional training and their overall improvement in
adequately assessing pain. Students will also assess the utility of learning how a patient
may present with a specific type of pain.

Recruitment
Recruitment of a program will be undertaken by contacting all ARC-PA accredited
programs within Massachusetts by mail initially. The search will begin in Massachusetts
for geographical convenience. Once selected, students of the program will be given
consent forms regarding their participation. Participation will not be required for
graduation from the program but will be strongly suggested. The proposed module will
occur at Boston University. The Boston University patient simulation center will be
reserved for the OSCE sessions. An educator not affiliated with the selected program will
be hired and trained to objectively rate the student interviewers to prevent bias.

Data collection
Data from the pre and post tests as well as post module survey will be uploaded using
ExamSoft® software. The trained OSCE observer will complete the modified Master

25
Interview Rating Scale for each student on an excel spreadsheet. Observation of student learners will be done using video technology in the Boston University simulation center.

**Data analysis**

Student demographics will be assessed using descriptive statistics. This analysis will take into account the student’s previous educational and clinical experience. It is important to understand PA student backgrounds when assessing skills at this level considering the vast difference in experience students have when entering PA school. Correlations between these demographics and test scores will be assessed using Pearson’s and Spearman’s correlation coefficients.

The results of the pre and post tests will be reviewed using appropriate statistical methods. Mean, median, range and standard deviation will be calculated. The means of each test will be compared using a paired t-test. Change in scores will be assessed retrospectively as this is a pilot study of a novel educational intervention.

The assessment of OSCE performance will be completed by the trained observer using global rating scores based on the observer’s completion of the modified Master Interview Rating Scale shown in Table 3. Mean, median and mode of the OSCE results will be assessed.

Results of the survey will be checked for completeness, accuracy and uniformity using SphinxSurvey™ software.

**Timeline and resources**

A timeline of the proposed module is seen in Table 4.
Table 4 Timeline

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2017</td>
<td>- Program Recruitment</td>
</tr>
<tr>
<td>Two Weeks Prior to the Module</td>
<td>- Pretest</td>
</tr>
<tr>
<td>Pain Assessment Module Day 1</td>
<td>- 60 Minute lecture on pain assessment given to entire class</td>
</tr>
<tr>
<td></td>
<td>- 30 Minute training session on how to present as a patient in pain given to two separate groups.</td>
</tr>
<tr>
<td>Pain Assessment Module : Day 2</td>
<td>- Morning: 1st half of OSCEs</td>
</tr>
<tr>
<td></td>
<td>- Afternoon: 2nd half of OSCEs</td>
</tr>
<tr>
<td>Two Weeks Following the Module</td>
<td>- Post-Test</td>
</tr>
<tr>
<td></td>
<td>- Survey</td>
</tr>
<tr>
<td>Spring 2018</td>
<td>- Data and Intervention Analysis</td>
</tr>
</tbody>
</table>

The implementation of this module will require one educator with clinical experience to give the lecture on pain assessment. The following training sessions will be given by an educator trained to teach standardized patients. OSCEs will occur in the Boston University patient simulation center. An outside educator trained to rate student performances will observe the students using the video monitoring. Oversight of this module will be performed by the primary investigator. The study coordinator will be responsible for outreach and scheduling. A statistician will be recruited for data analysis following the intervention. Funding for this module will need to cover the cost of time spent by the research team and educators on this module. Funding for access to ExamSoft® and the SphinxSurvey™ software will also be required. Reservation of the patient simulation center will be completed following the protocol of Boston University.

**Institutional Review Board**

This study proposal will be submitted to be granted educational exemption from the Institutional Review Board of the Boston University Medical Campus under 45 CFR 46. 101 (b) criteria. In the instance the board denies exemption, a full IRB protocol will be submitted for review.
CONCLUSION

Discussion

The proposed research study utilizes a common approach to educational research. The one group pre-test, post-test design continues to be effective when determining the utility of a novel educational curriculum. The lack of a control group however remains the one detriment to such a study. This has long been a difficulty in educational research, as controlling for variables is very problematic considering students in the same program may come away with very different experiences due to differences in learning style and approach. With such a small scale study as the one proposed here, a more complex design may be impractical however.

A common theme noted throughout the literature review on medical education is the overburdened medical curriculum. With vast advancements in medicine, more information is added to a fixed time period resulting in additional stress to educators and learners alike. The addition of an educational module, regardless of how short it is, may be faced with great opposition from institutions for this reason. It is clear that pain assessment and management by providers continues to be inadequate and further educational instruction is necessary. The demand for a more in depth pain assessment curriculum certainly favors the acceptance of an additional module. The proposed module is not only short, but requires minimal faculty recourses and utilizes student involvement to eliminate expenses normally required for a traditional OSCE using actors. These qualities will certainly make the module more appealing to PA programs.
Summary

Palliative care continues to emerge as a valued discipline in healthcare. With a constant evolution in medical technology, patients are living longer and tolerating diseases that were once associated with high mortality rates and short prognoses. These patients rely on the proper symptom management to achieve the best possible quality of life. Of the core competencies of palliative care, pain assessment appears throughout the literature as a skill that many providers feel incompetent with. Their incompetency derives from a scattered curriculum during medical and PA education. This deficiency is multifactorial in etiology. An overburdened medical curriculum, lack of specific guidelines by educational governing bodies and a traditionally curative approach to medical education are all factors in this deficit.

As a result of this, pain continues to put a major burden on the general population. The PA profession will play a large role in addressing this matter. In order to prepare these providers to adequately treat pain, they must be comfortable in assessing it. A concise curriculum on pain assessment is necessary for this to be possible. The proposed module consists of a short, cost effective intervention for an established PA curriculum. The module addresses the need for further training in an important component of healthcare and a core competency in palliative care. A novel approach to pain assessment education is utilized by using PA students as the actors during an OSCE. Not only does this make an OSCE more feasible for programs but it also provides the students with a unique experience to understand what it may be like to be a patient in pain.
Clinical and/or public health significance

Medical providers, including PAs, will be addressing pain no matter what discipline they practice in. Learning the clinical skills required to assess and manage pain continues to be a challenging aspect of medical education. Novel approaches like the proposed module will help to improve students’ understanding of how to practice efficiently while also addressing a patient’s pain, which is now considered a 5th vital sign. This knowledge and acquired skill will help providers address the huge burden pain causes on our society and advance healthcare as a whole. A better understanding of palliative care will help prevent unnecessary treatment further reducing the financial burden. As medical education becomes more rigorous with more information being presented to students, small changes in the approach educators take to present information to students may allow them to learn more efficiently and enter the workforce better prepared. The proposed module is an example of a novel approach to address the problems current students have when learning a core competency of palliative care.
### LIST OF JOURNAL ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acad Med J</td>
<td>Academic Medicine</td>
</tr>
<tr>
<td>Arch Internal Med</td>
<td>Archives of Internal Medicine</td>
</tr>
<tr>
<td>Health Aff</td>
<td>Health Affairs</td>
</tr>
<tr>
<td>Int J Qual Health Care</td>
<td>International Journal for Quality in Health Care</td>
</tr>
<tr>
<td>J Allied Health</td>
<td>Journal of Allied Health</td>
</tr>
<tr>
<td>J Am Geriatr Soc.</td>
<td>Journal of the American Geriatrics Society</td>
</tr>
<tr>
<td>J Gen Intern Med</td>
<td>Journal of General Internal Medicine</td>
</tr>
<tr>
<td>J Hosp Med</td>
<td>Journal of Hospital Medicine</td>
</tr>
<tr>
<td>J Pain</td>
<td>The Journal of Pain</td>
</tr>
<tr>
<td>J Pain Symptom</td>
<td>Journal of Pain and Symptom Management</td>
</tr>
<tr>
<td>J Palliat Med</td>
<td>Journal of Palliative Medicine</td>
</tr>
<tr>
<td>J Physician Assist Educ</td>
<td>The Journal of Physician Assistant Education</td>
</tr>
<tr>
<td>Med Educ</td>
<td>Medical Education</td>
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<td>Minn Med</td>
<td>Minnesota Medicine</td>
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<td>NEJM</td>
<td>New England Journal of Medicine</td>
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<td>Pain</td>
<td>Pain</td>
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<tr>
<td>Pain Med</td>
<td>Pain Medicine</td>
</tr>
<tr>
<td>Semin Oncol Nurs</td>
<td>Seminars in Oncology Nursing</td>
</tr>
</tbody>
</table>
REFERENCES


CURRICULUM VITAE

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