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Short Report

Integrating Palliative Medicine into Medical Education: Creating a More Compassionate Generation of Physicians

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Abstract

How should Palliative Medicine competencies be taught to medical students? In the United States and other countries, there is a consensus that teaching Palliative Medicine competencies to medical students is essential. Health agencies have also identified teaching Palliative Medicine competencies as crucial. According to Sanchez-Reilly and Ross, medical students reported that they feel better prepared to care for the elderly, patients with severe illness, and dying patients after completing formal training. The authors hypothesized that a one-week rotation with Palliative Medicine during the Medicine Clerkship would improve the medical students' skills to care for these populations of patients. The one-week inpatient rotation was designed to equip all fifty medical students at Mayo Medical School with a knowledge base of Palliative Care, communication skills, care for elderly frail and dying patients, and basic pain management for patients with severe illness. Each of the fifty students rotated with a Palliative Care consulting team with patient interaction, lectures, online

teaching, and interdisciplinary team activities. Hands-on learning proved more effective than using just the classroom teaching classical model, with 70% of students responding positively to the hands-on approach. Learning how to apply Palliative Care skills while visiting patients with complex diseases, showed to be better received as an education module. Out of the fifty medical students surveyed, thirty-five responded (70%), and all responses were positive. This method of teaching could be expanded to teach other advanced hospice and palliative care skills.

Keywords
Palliative; medicine; clerkship; school; mayo; competencies; interdisciplinary; pain; management

1. Introduction

In the US, medical students get a broad education that allows for generalist training and lets them descend deep into specialties such as pediatrics, geriatrics, or oncology. However, there is a noticeable gap when it comes to learning about caring for the elderly, end-of-life care, and managing patients with severe illnesses like cancer, cardiac heart failure, and chronic obstructive pulmonary disease [1, 2]. It is essential that medical students are educated and trained to develop knowledge, skills, and attitudes to care for patients who have advanced and/or incurable diseases. Research shows that teaching Palliative Care (PC) to medical students boosts their confidence, knowledge, and clinical skills [3]. Systematic reviews support the integration of palliative care into medical education, highlighting the positive impact on students' preparedness to manage end-of-life care [4, 5]. Despite this, methods used to teach palliative care remain heterogeneous, and many medical schools lack standardized curricula [1, 2, 6].

Palliative Medicine emphasizes an interdisciplinary approach to symptom management, relieving psychosocial and spiritual distress, providing family support, and facilitating communications and transitions of care [7]. All clinicians should be familiar with palliative care principles. However, a review of current teaching models reveals inconsistencies in palliative care education at the medical school level. Limited time is allocated to this essential topic, prompting questions about the effectiveness of current palliative care teaching methods [2, 8]. Interdisciplinary education is becoming more popular in medicine generating several reports and recommendations from the Institute of Medicine [9]. This type of education prepares the students for a team-based approach and patient-centered care. The World Health Organization recommends that medical training should embrace interdisciplinary education to enhance health professional skills and patient's experience [9, 10].

In the past, teaching in this area focused on death and dying. However, with a growth in the diversity of palliative treatment options and the aging population, there is a growing realization of the importance of palliative care [11, 12]. We hypothesized that a one-week rotation with Palliative Medicine with interprofessional team experience during the Medicine Clerkship would improve the medical students' skills to care for these populations of patients. This paper not only explores the compelling reasons for integrating palliative care into the core medical school curriculum but also

describes an approach of adding a one-week rotation with Palliative Medicine during the Medicine clerkship, where the students will experience the Interdisciplinary Team approach [11].

Although medical students are exposed to several teams during their rotation with all disciplines, they rarely have the opportunity to participate in the interprofessional teams as a member. Interprofessional education also prepares the workforce for team-based and patient-centered care. Teamwork is not a result of putting people to work together in the same situation. The majority of the teamwork situations we train our medical students in are focused on crises like code blue and trauma care [10]. Exposure to working as a team situation where each element of the team has a role, and their opinion is taken into consideration, prepares the students for practice. Driven by the need for a more robust Palliative Care education with attention to the interprofessional experience and positive feedback from students recognizing its importance, we developed our enhanced rotation with the Palliative Care team as part of the Medicine clerkship for third-year medical students, with an Interdisciplinary hands-on approach.

2. Methods

All fifty third-year medical students at Mayo Clinic Alix School of Medicine participated in the study. These students were assigned to the Inpatient Palliative Care team for a one-week rotation during their Medicine clerkship. The rotation included participation in daily team rounds, patient consultations, interdisciplinary team interactions, and structured lectures.

The curriculum was based on guidelines from the American Academy of Hospice and Palliative Medicine (AAHPM). It covered essential topics such as symptom management, patient-centered communication, end-of-life care, hospice referrals and qualifications, and palliative care approaches for seriously ill patients. Each student was assigned to a palliative care provider and followed this provider on patient visits. They completed initial consults and follow-up visits, discussing assessments and management plans under supervision.

The interdisciplinary team, a cornerstone of the palliative care approach, included physicians, advanced care providers, nurses, chaplains, social workers, psychologists, and therapists specializing in physical, occupational, massage, and music therapy. This exposure allowed students to learn from different professionals like social workers on psychosocial support, music therapy for support and coping, and chaplains on spiritual assessment and support, enhancing their understanding of holistic patient care [13]. Students were required to focus on 1 or 2 patients during the week, addressing the curriculum's goals and objectives (Table 1).

Table 1 Comprehensive Palliative Care Competencies for Medical Students Caring for Seriously Ill Patients.

Seq #	Pain and symptom management
A1	Assesses pain systematically and distinguishes nociceptive from neuropathic pain syndromes.
A2	Describes key issues and principles of pain management with opioids, including equianalgesic dosing, common side effects, addiction, tolerance, and dependence.
A3	Assesses non-pain symptoms and outlines a differential diagnosis, initial work-up, and treatment plan.
A4	Describes an approach to the diagnosis of anxiety, depression, and delirium.

Seq #	Terminal care and bereavement
B1	Identifies common signs of the dying process and describes treatments for common symptoms at the end of life.
B2	Describes the communication tasks of a physician when a patient dies, such as a pronouncement, family notification and support, and request for an autopsy.
B3	Describes normal grief and bereavement, and risk factors for prolonged grief disorder.
B4	Describes ethical principles that inform decision-making in serious illness, including the right to forgo or withdraw life-sustaining treatment and the rationale for obtaining a surrogate decision-maker.
Seq #	Communication
C1	Explores patient and family understanding of illness, concerns, goals, and values that inform the plan of care.
C2	Demonstrates patient-centered communication techniques when giving bad news and discussing resuscitation preferences.
C3	Demonstrates basic approaches to handling emotion in patients and families facing serious illness.
Seq #	Palliative care principles and practice
D1	Defines the philosophy and role of palliative care across the life cycle and differentiates hospice from palliative care.
D2	Describes disease trajectories for common serious illnesses in adult and pediatric patients.
D3	Describes the roles of members of an interdisciplinary palliative care team, including nurses, social workers, case managers, chaplains, and pharmacists.
D4	Reflects on personal emotional reactions to patients' dying and deaths.
Seq #	Psychosocial, spiritual, and cultural aspects of care
E1	Identifies psychosocial distress in individual patients and families.
E2	Identifies spiritual and existential suffering in patients and families.
E3	Identifies patients' and families' cultural values, beliefs, and practices related to serious illness and end-of-life care.

Each morning, a 30–40-minute lecture was delivered via a video conference platform to the group of learners, including internal medicine residents, medical students, and subspecialty fellows. These sessions covered conversation skills, symptom management, and illustrative clinical cases, followed by evidenced-based assessments and management approaches. Students also completed 2-3 online modules either before or immediately after the rotation.

In the first year of the program implementation, we gathered feedback through an anonymous survey at the end of the rotation. The survey consisted of open-ended questions inviting students to share their feedback and reflections on their experiences. Participation in the survey was entirely voluntary. Students who chose to complete the survey effectively provided their consent to participate in the survey study. Responses were reviewed, and key themes were identified to summarize the feedback. The Mayo Clinic Institutional Review Board (IRB) deemed the survey study exempt from IRB review.

Table 2 summarizes the curriculum content, strategies, goals, and evaluation methods used in this study.

Table 2 Summary of Learning Content, Strategies, Goals, and Evaluation.

Category	Description
Learning Content	Symptom management, patient-centered communication, end-of-life care, hospice referrals and qualifications, and palliative care approaches for seriously ill patients.
Strategies	Daily team rounds, patient consultations, interdisciplinary team interactions, lectures, and online modules.
Goals	Enhance knowledge and skills in palliative care, improve communication techniques, and foster empathy and compassion.
Evaluation Methods	Post-rotation surveys, narrative feedback, and analysis of key themes in the reflections.

3. Results

We received a response rate of 70 percent (35 out of 50 students). While we did not collect specific demographic data, the participants included third-year medical students who had varied levels of prior exposure to palliative care. A review of the open-ended survey responses identified several key themes, including the multifaceted nature of palliative care, the importance of interdisciplinary teamwork, and the personal impact of the rotation. Table 3 provides a summary of the qualitative feedback from the students, categorized by key reflection points, and supplemented with select verbatim comments to illustrate these themes.

Table 3 Medical Student Reflections after Completing the Rotation.

	Key Reflection Points	Select Verbatim Comments
1	Recognition of the multifaceted nature of palliative care, beyond just physical pain relief.	"I now realize that palliative care is much more multifaceted... it not only addresses the physical but the emotional, spiritual, mental, existential, social, etc."
2	Appreciation of the interdisciplinary team's role in supporting both patients and their families, extending beyond hospital walls.	"I learned the role of the interdisciplinary team is as much to support the social unit of the patient as it is to support the patient herself."
3	Enhanced understanding of the patient's broader life context, emphasizing the impact on family and social relationships.	"This week has allowed me to broaden the scope of what it means to care for a patient... events in the hospital echo across family bonds and social relationships."
4	Observations on the effective functioning of the interdisciplinary team, particularly the roles of chaplains and social workers.	"I have never been on a service with such an involved chaplain and social worker who rounded with the team and was prepared to support patients through non-pharmacological ways."
5	Fulfillment in learning both pharmacological and non-pharmacological support methods for patients.	"This week has been fulfilling because despite these inevitable changes and events in patients' lives, there are resources to support

		patients both pharmacologically and non-pharmacologically."
6	Realization that palliative care focuses more on improving life quality than solely on end-of-life care.	"My experience in palliative care has made me realize that the specialty is more about life than death."
7	Personal reflections on dying and the desire for peaceful, comfortable end-of-life care.	"I am not sure what I would want, but what I do know is that I would want to die peacefully and comfortably."
8	Unique patient-centered approach of palliative care, focusing on understanding patient goals and values.	"It is about understanding the patient's goals, their values and helping them navigate through medically complex situations."

3.1 Evidence of Learning Outcomes

To evaluate whether students achieved the learning outcomes, we analyzed the feedback provided through open-ended questions in the survey. The students' reflections were assessed against the predefined learning goals (See Table 1 for competencies).

3.1.1 Patient-Centered Communication

Students highlighted their improved skills in having difficult conversations with patients and their families about end-of-life care. Example reflection: "*Although palliative does have a bit of an agenda of understanding the patient's goals, it is primarily through knowing the patient, and I have found this to be a wonderful experience where you get to meet the person and really be able to dig deep into their lives and not have to worry so much about having a differential or knowing a protocol*."

3.1.2 Interdisciplinary Teamwork

Reflections frequently mentioned the value of working with an interdisciplinary team, demonstrating a deeper appreciation of holistic patient care. Example reflection: "*With music therapy, inquiry into the songs that a father loved planted the idea for a family to play Jonny Cash while their dad experienced his final days. With social work, a printed and laminated poster with his mother's address and medical details will hopefully allow for a 12-year-old boy to have less debilitating stress when calling EMS. With the nurse practitioner, we called the daughter of a patient in the ICU and explored the wishes of her mother should her decompensating COPD require yet another intubation with the understanding that there would be likely challenges to removing that level of respiratory support*."

3.1.3 End-of-Life Care

Students expressed a better understanding of end-of-life care principles. Example reflection: "*I realized that palliative care is not meant as an alternative to medical treatment for disease, but as a supplement. I realized that palliative care could help people cope, and endure, their medical conditions so they can be healthier overall*." "*Coming into the rotation, my perception of palliative care was that it was all about helping people die. While in many circumstances that is true, my experience in palliative care has made me realize that the specialty is more about life than death*."

4. Discussion

Palliative care stands as a cornerstone of holistic medical care, addressing not only physical but also emotional, psychological, spiritual, and social needs of patients and their families. As treatments for severe illnesses like cancer evolve, the range of patients benefiting from palliative care is expanding. This care continuum spans from newly diagnosed patients with cancer who require supportive care alongside disease-specific treatments, to those with terminal diagnoses, and those nearing end-of-life. The aging population is expanding, and Palliative Care is also important to provide patient-centered care to the elderly and frail.

While medical education offers various methodologies to approach this specialized field, it is vital to acknowledge that there is no singular approach that is considered the 'best' or most effective way to learn about palliative care. Our rotation has the innovation of offering the opportunity to work with all members of the interdisciplinary team. Each student would spend four half days with each of the members of the Interdisciplinary Palliative Care team and be exposed to the team member's approach to the patient's care. They learn how to do a spiritual assessment and how to manage the findings. They learn that music therapy is more than playing music but using music to help the patient cope and express their feelings. Students can experience how music therapy also helps with symptoms such as anxiety, insomnia, depression, and delirium.

Our findings suggest that the one-week palliative care rotation was effective in helping students achieve predefined learning outcomes. The qualitative feedback from students indicated improvements in their knowledge, skills, and attitudes toward palliative care.

Symptom Management: Students reported a better understanding and increased confidence in managing symptoms, such as pain and non-pain-related issues. This aligns with our competency goals (A1, A2, A3).

Patient-Centered Communication: The rotation helped students improve their ability to communicate effectively with patients and their families, particularly in challenging end-of-life situations, meeting our communication goals (C1, C2, C3).

Interdisciplinary Teamwork: Exposure to an interdisciplinary team gave students a better appreciation of the holistic approach to patient care, addressing our goals related to understanding the roles of different team members and the importance of comprehensive care (D3).

End-of-Life Care and Hospice Referrals: Students gained a clearer understanding of the principles of end-of-life care and the process of making hospice referrals, which are crucial aspects of palliative care (B1, B2, B3, B4).

While our evaluation primarily relied on qualitative feedback, the consistency and depth of the reflections provide evidence that the rotation was successful in achieving the desired learning outcomes. Future studies could benefit from incorporating quantitative assessments and a larger sample size to further validate the results.

4.1 Strengths and Limitations

This study provides an innovative approach to palliative care education by integrating interdisciplinary team interactions, which are often missing in traditional medical education. The qualitative feedback highlights the profound impact on students' understanding and empathy. However, this study is based on qualitative feedback from a single institution and may not be generalizable to other settings. Additionally, while the reflections provide valuable insights, a more

rigorous qualitative analysis such as thematic analysis or grounded theory could have strengthened the findings. Future research should include quantitative measures and a larger sample size to validate the results.

4.2 Implications

The results suggest that immersive palliative care teaching interventions, such as this one-week rotation, can be effective in improving medical students' competencies in palliative care. These findings can inform curriculum development in other medical schools and highlight the importance of interdisciplinary learning in medical education.

Our focus in introducing the one-week rotation in Palliative care goes beyond the mere transfer of knowledge; it aims to shape compassionate, knowledgeable, and effective physicians. Primary palliative care equips medical students with an arsenal of skills indispensable to all doctors [14]. These encompass robust communication skills, fostering empathy, grounding in ethics, and a genuine concern for both the patient and families. They also gain knowledge in nuanced areas like symptom assessment and management, addressing pain, and alleviating suffering. These competencies not only mold exemplary physicians but also respond to society's growing demand for more compassionate and comprehensive medical care throughout life's various stages.

5. Conclusion

Our findings suggest that the one-week palliative care rotation is effective in improving medical students' competencies in several key areas of palliative care. The qualitative feedback indicated that students gained a better understanding of symptom management, enhanced their patient-centered communication skills, and appreciated the value of interdisciplinary teamwork. These outcomes align with the predefined learning goals and competencies outlined in our curriculum.

The students' reflections demonstrated increased confidence in managing pain and other symptoms, improved skills in having difficult conversations about end-of-life care, and a deeper understanding of the roles of various team members in providing holistic patient care. This suggests that the immersive, hands-on approach used in the rotation is beneficial for medical education in palliative care.

Future research should aim to incorporate quantitative measures to validate these findings further and explore the long-term impact of such training on clinical practice. Additionally, expanding the study to include multiple institutions could help generalize the results.

In summary, the one-week palliative care rotation at Mayo Clinic Alix School of Medicine successfully enhanced medical students' palliative care competencies, demonstrating the value of integrating such experiences into medical education.

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Author Contributions

All authors contributed equally to planning and executing the rotation. They also contributed to writing parts of the manuscript, reviewing, and editing.

Competing Interests

The authors declare that they have no conflict of interest. The current manuscript we are submitting has not been previously published and is not under consideration for publication elsewhere. All authors have made substantial contributions to the manuscript preparation and revision of the article. All authors have provided approval of the final manuscript for publication.

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