American Journal of Hospice & Palliative Medicine®
Volume 26 Number 1
February/March 2009 18-23

10.1177/1049909108325437
http://ajhpm.sagepub.com
hosted at
http://online.sagepub.com

Effectiveness of an Integrated Ward-based Program in Preparing Medical Students to Care for Patients at the End of Life

Matthew S. Ellman, MD, Julie R. Rosenbaum, MD, Emily Cherlin, MSW, and Margaret Bia, MD

Integrating end-of-life care training into the clinical years of medical school has been promoted to enhance education in this area. To assess the effectiveness of an end-of-life care exercise integrated into clinical clerkships, we compared the level of preparedness in end-of-life care reported by students who did or did not complete the exercise. A greater proportion of students who completed the exercise compared with those who did not felt prepared in end-of-life care [50.7% (39/77) vs 35.6% (64/180); $P = .02$]. Among 5 domains of skills examined, significant differences were seen in interviewing/communicating (3.7 vs 3.5; $P = .05$) and management of common symptoms (3.3 vs 3.0; $P < .01$). We conclude that a ward-based integrated end-of-life care exercise may improve graduating students' self-reported preparedness to care for patients at the end of life.

Keywords: curriculum; terminal care; students; medical

Introduction

Deficiencies in the care of patients at the end of life result in unmet needs of dying patients and their families.[1] A critical aspect of these deficiencies are practitioners who lacked adequate education and training in high-quality end-of-life care that enables them to feel comfortable and confident providing this care.[1,2] Although basic education in end-of-life care is mandated by medical school licensing organizations,[3] graduating medical students often do not feel adequately prepared in many aspects of end-of-life care.[4,5]

Diverse undergraduate approaches to teach end-of-life care in the preclinical years have been reported.[6] However, reports of educational activities during the clinical years are more limited, and often involve brief assignment of students to a hospice or palliative care site.[7] In addition to these approaches, educators have recommended integration of end-of-life educational experiences into core clinical activities.[8-11]

To address the need for an integrated educational approach at our institution, we developed and implemented a program to help medical students acquire end-of-life care experience while on core ward-based clinical clerkships.[12] Our primary objectives for this exercise were to improve students' comfort and skills in communicating with and assessing patients facing the end of life and to reflect on the experience. By piloting the program in 2004 and enhancing it in subsequent years, we learned that it is feasible, with modest faculty resources, to implement an experiential end-of-life exercise in the inpatient setting. The effectiveness of this exercise to improve graduating students' sense of self-preparedness in caring for patients at the end of life forms the basis of this report. Our hypothesis is that by enabling students to improve their communicating

From the Yale University School of Medicine, New Haven (MSE, JRR, EC, MB); and Waterbury Hospital Health Center, Waterbury (JRR), Connecticut.

Address correspondence to: Matthew S. Ellman, Yale University School of Medicine, Yale Internal Medicine Associates, DCB 3, 789 Howard Ave, New Haven, CT 06510; e-mail: matthew.ellman@yale.edu.

and assessment skills, the exercise will improve participating students' own sense of self-preparedness in end-of-life care.

Methods

Educational intervention

We have previously reported the full details of the development and implementation of the end-of-life exercise, as well as a qualitative assessment of the student impressions of the experience.[12] In summary, the exercise had the following educational objectives:

1. To increase awareness of end-of-life issues faced by patients in the acute care setting.
2. To understand the elements of a comprehensive end-of-life care assessment.
3. To gain more comfort and ability to communicate effectively with patients at end of life.
4. To appreciate the importance of reflection on the experience of caring for patients at end of life.

To meet these objectives, students completed a comprehensive end-of-life evaluation of a patient on the wards, including a personal interview of the patient, self-reflection on the experience, a written summary, and a presentation at a case conference. The case conferences took place 8 times per year, were 1½ hours long, and were typically comprised of 2 groups of 5 to 7 students each with 1 to 2 faculty facilitators.

In a qualitative analysis of the students' written reports, we observed 6 themes which characterized the personal impact of the exercise on the students: (1) recognition of the complexity of patients' reaction to dying; (2) importance of and challenges in communication; (3) appreciation of the value of the clinician's presence; (4) recognition of the impact of interpersonal dynamics; (5) range of students' personal reflections on the assignment; and (6) perception of the assignment itself.[12]

The exercise continues to be well received by students. After the pilot in 2004 in a cohort of volunteer students, we introduced in 2005 a 30-minute preparatory session in which all students embarking on clinical clerkships received a description of the exercise and supportive materials. In 2006, the exercise became a mandatory component for all third-year students. Details of faculty recruitment, effort, and costs did not change from what we described in detail previously.[12] Faculty support was required only for the program director [10% full-time equivalent (FTE)] to coordinate the program.

Medical Student Survey

Since 2004, we have surveyed the graduating class regarding end-of-life care using questions adapted from validated published instruments for medical students to self-administer.[4,5] Permission was obtained from the authors of the instruments. Questions were selected initially because of relevance to our needs assessment for designing the educational intervention. Subsequently, in 2005-2007, we added questions regarding participation in the end-of-life care exercise to facilitate evaluation of the intervention. The 2005-2007 survey was comprised of 53 questions and assessed student self-perceived preparedness in end-of-life care, clinical experiences with patients at the end of life, preferences for end-of-life care education, and experience with the end-of-life care exercise. Questions addressing preparedness for end-of-life care were asked with a 5-point Likert scale ranging from "not at all prepared" to "completely prepared." An exemption was obtained from the Yale University School of Medicine Human Investigation Committee.

The survey was administered in March of each year when the graduating class was gathered for internship preparation lectures. As some students at our institution take a fifth year prior to graduating, students typically would have completed the survey in 1 or 2 years after participation in the exercise. For graduating students who did not attend the lecture when the survey was administered, requests were sent out via e-mail to complete the survey. In 2007, we attempted to increase survey participation with raffle prizes (gift certificates) for those students who completed a survey.

Data Analysis

We obtained descriptive statistics regarding the demographic characteristics of the medical students from the Office of Student Affairs. Using the surveys, we collected descriptive data regarding whether the students participated in the end-of-life care exercise during their clinical clerkships. Of the questions that addressed self-reported preparedness to care for patients at the end of life, we organized the content

of the responses according to the 5 domains of end-of-life care competency described by the Working Group of the Pre-clinical Years of the National Consensus Conference on Medical Education for Care Near the End of Life.[13] These domains included: (1) psychological, sociological, cultural, and spiritual issues, (2) interviewing and communication skills, (3) management of common symptoms, (4) ethical issues, and (5) self-knowledge and self-reflection.

Responses on the 5-point Likert scale (ranging from 1 = not at all prepared to 5 = completely prepared) were consolidated based on our view of a reasonable educational expectation, such that responses of either 4 or 5 were considered adequately prepared and 1, 2, or 3 considered not adequately prepared. For the composite domain analysis, responses to each domain were normalized, such that the sum of the responses to each question that was relevant to each respective domain was tabulated and then divided by the number of questions for the particular domain. For example, there were 4 specific questions on the survey that addressed the communication domain for end-of-life care. The maximal score was 20. The sum of each response for each individual was tabulated, and then divided by 4. Comparisons regarding levels of preparedness between students who completed the assignment and those who did not were performed by χ^2. Comparisons between the composite domain responses and participation in the exercise were made using *t* tests. All analyses were made using SAS version X. (SAS Institute Inc, Cary, NC).

Results

Characteristics of all the students in the graduating classes of 2004 to 2007, exercise participants, and surveyed students are shown in Table 1. Of the 77 students that completed both the exercise and subsequent survey assessment, 15 were in the class of 2005, 15 in the class of 2006, and 46 in the class of 2007. By the last survey year, 64% (46/72) of students who completed the survey participated in the exercise. Many of the students (66%) completed the exercise with a patient seen on the inpatient psychiatry consult service, and the majority (54%) reported conversations with both the patient and his family.

Graduating students who completed the end-of-life exercise did not differ from those who did not complete the end-of-life exercise in the number of cases of patients at end of life they encountered during medical school (data not shown). Despite this exposure to comparable numbers of patients at end of life, a greater proportion of students who completed the exercise [50.7 (39/77)] compared with those who did not [35.6% (64/180)] believed they were currently prepared to care for patients at end of life (Table 2).

Table 1. Characteristics of Medical Students Graduating in 2004 to 2007 (n = 395), Participants in End-of-life Exercise and End-of-life Survey

Characteristic	Number (%)
Medical student graduates (mean age = 29 years)	395 (100)
Female	200 (50.6)
MD/PhD recipients	41 (10.4)
Students who completed end-of-life exercise	121 (30.6)
Students who completed end-of-life survey	258 (65.3)
Completed exercise	77 (29.8)
Did not complete exercise	181 (70.2)

No significant differences were seen in the effect of the exercise based on year of participation: among students who participated in the exercise and completed the survey in 2005, 53% and in 2006 and 2007, 50% reported adequate preparedness. Similarly, in the 2004 survey year (prior to introduction of the exercise), 32.8% reported adequate preparedness and in the last survey year (2007) 30.8% of those who did not participate in the exercise reported adequate preparedness.

Compared with students who did not complete the exercise, students who did reported significantly better preparation in the end-of-life care domains of interviewing/communicating and management of common symptoms (Table 3). Of the 4 common symptoms queried (depression, delirium, pain, and shortness of breath), the largest difference between the 2 groups of students was seen for depression and delirium (data not shown). There was a trend favoring better self-reported preparation among the students who participated in the exercise in the domains of psychosocial and ethical/legal aspects of end-of-life care, but no difference in the domain of self-reflection. Internal consistency among the question components of the 5 domains was good (Cronbach's alpha $\geq$ .8) for 3 domains (interviewing/communicating; management common symptoms; psychosocial), acceptable (Cronbach's alpha = .73) for ethical/legal, and fair (Cronbach's alpha + .66) for self-reflection (Table 3).[14]

Table 2. Relationship Between Medical Students' Self-reported Level of Preparedness to Care for Patients at the End of Life and Participation in the End-of-life Exercise (n = 259)

	Participated in End-of-life Exercise	Did Not Participate in End-of-life Exercise	
Level of Preparedness	Number (%)	Number (%)	*P*-value
Prepared	39/77 (50.7)	64/180 (35.6)	.02
Not enough prepared	38/77 (49.3)	116/180 (64.4)	
Missing	0	1	

Table 3. Student Composite Likert Scores of Level of Preparedness in Domains of End-of-life Care and Participation in the End-of-life Exercise

Domain[a]	Mean (SD)	*P*-value
Management of common symptoms[b]		
Participated in end-of-life exercise	3.3 (0.7)	<.01
Did not participate in end-of-life exercise	3.0 (2.6)	
Interviewing/communicating[c]		
Participated in end-of-life exercise	3.7 (0.9)	.05
Did not participate in end-of-life exercise	3.5 (3.0)	
Ethical/legal[d]		
Participated in end-of-life exercise	2.2 (0.6)	.25
Did not participate in end-of-life exercise	2.1 (0.6)	
Psychosocial[e]		
Participated in end-of-life exercise	3.8 (0.8)	.37
Did not participate in end-of-life exercise	3.7 (0.9)	
Self-reflection[f]		
Participated in end-of-life exercise	3.7 (0.9)	.87
Did not participate in end-of-life exercise	3.7 (0.9)	

[a] Domain score ranges from 1 to 5, with higher score indicating greater level of preparedness.
[b] Cronbach's alpha = .80.
[c] Cronbach's alpha = .85.
[d] Cronbach's alpha = .73.
[e] Cronbach's alpha = .83.
[f] Cronbach's alpha = .66.

In comparing the self-reported preparedness for end-of-life care to other clinical skills assessed on the surveys, for the overall cohort (using the same consolidated Likert responses), 58% believed they were prepared to perform phlebotomy, 53% to treat major depression, 41% to care for a patient in hypovolumic shock, and 39% to perform a lumbar puncture.

Discussion

This study suggests that an end-of-life care educational exercise, integrated into ward-based clerkships, improves graduating medical students self-reported level of preparedness to care for patients at the end of life. We believe that the integration of the exercise into core clinical activities on the wards contributed to its effectiveness—when engaged in the care of a patient at the end of life as part of their ward activities, students readily recognize the relevance and use of improving their knowledge and skills in end-of-life care. Our previous qualitative analysis of students' written reports showed that students were often surprised by how much they discovered from completing the assignment and that much of this would have been missed even when they were already involved in the care of the patient. The exercise may fill in educational components missing during usual ward activities by providing dedicated faculty guidance and structured objectives for students. In this way, the exercise may lessen the discordance that students perceive between preclinical and clinical end-of-life care practices and goals described by others as the "the hidden curriculum."[15,16]

There are limitations to what a single exercise might accomplish. Nearly 50% of students who completed the exercise do not feel prepared in end-of-life care (a level comparable to other clinical skills). More work in the curriculum is needed. Nonetheless, as students usually feel less prepared in end-of-life care skills compared with other skills (eg, phlebotomy or managing depression), we believe that the overall improvement in the rate of preparedness from 35.6% to 50.7% may be important.

The exercise provides, in several ways, the tools and support for students to gain comfort and skills with an end-of-life assessment. We cannot separate out the relative effectiveness of each of the 3 major components of the exercise (patient/family interview, write-up after reflection, group discussion facilitated by dedicated faculty), but we believe that each component contributed educational value.

When examined by domains of end-of-life care, the exercise showed the largest impact on level of preparedness in the areas of interviewing/communicating and management of common symptoms. Gaining comfort in communicating effectively with

patients at the end of life was promoted in several ways: the preparatory session before students began on the wards emphasized communication; faculty at the case conference consistently commented on the benefit of spending time listening to their patients; and locating the case conference on the psychiatry clerkship capitalized on the focus and expertise in communication in psychiatry.

Management of common symptoms at the end of life was emphasized through specific instructions for students to assess in detail patient symptoms, sources of suffering, clinical management, and the barriers to symptom control. Of the 4 symptoms considered, impact of the exercise was seen in level of preparedness to manage depression and confusion/delirium, while a trend was seen in managing pain and shortness of breath (data not shown). As many students completed the exercise while on the psychiatry consult service, they were likely exposed to patients with depression and delirium, common triggers for a consultation.

A ceiling effect may explain why no difference was found in the self-reflection and psychosocial domains where the composite Likert scores for students who did not complete the exercise were already relatively high (Table 3). Preparedness in ethical and legal aspects showed the lowest scores (Table 3) and was not a main objective of the exercise.

A limitation of this study is that our measure of effectiveness was limited to students' self-reported level of preparedness. Although we recognize that self-evaluation is complex, not necessarily objective, and may not correlate with other measures of competency,[17] the availability of the comparison group of students who did not participate in the exercise mitigates this issue to some extent. Furthermore, the self-perception of a higher level of preparedness itself may give students the willingness and confidence to remain engaged in the care of patients at the end of life as they advance in their training. Attitudinal changes, including less concern about working with dying patients, have been reported among students participating in elective end-of-life curricula[18] and self-rated knowledge and attitudes about end-of-life care may influence a physician's likelihood to refer to hospice.[19]

A second potential limitation is that about 35% of graduating students did not complete the survey. However, as nearly equal proportions of the students who did the exercise, 64% (77/121) and did not do the exercise, 66% (181/274) completed the survey (Table 1), inclusion bias is unlikely to account for differences observed. In addition, as many of our students do not graduate after 4 consecutive years, observed rates of participation in the exercise among students completing the survey lagged behind: for example, according to the responses on the survey administered to the 2007 graduating class, 64% reported participating in the exercise, however based on completion of end-of-life case reports, 86% (77/90) of students in the corresponding third-year class (assuming 4 years until graduation) actually participated in the exercise.

As the exercise was introduced as a pilot and later extended to the entire third-year class, students who participated may have been more interested in end-of-life education to begin with compared to those who did not. The impact of this on our comparison groups is minimized over successive years as participation of all students was expected. Furthermore, there was no significant difference in the number of patients at end of life encountered during medical school among students who did and did not complete the exercise (data not shown). Finally, while it is possible that end-of-life educational exposures other than the exercise accounted for the differences we observed, no significant differences were seen in the effect of participation in the exercise according to survey year.

We believe this educational exercise would be adaptable to diverse medical school settings. Access to a specialized hospice setting is not required as the exercise is integrated into hospital ward clerkships. Additional faculty commitment in the curriculum is modest.[12]School-specific data from Association of American Medical Colleges (AAMC) surveys could be used to demonstrate need and rally support for improvements in end-of-life curriculum. A school's office of education could provide support to develop and promote an integrated exercise.

In summary, an educational exercise integrated into hospital ward-based clerkships may improve students' self-reported preparedness in the care of patients at the end of life. We would argue that graduating medical students who believe they are more prepared to care for patients at end of life may take more interest in providing this care and improving their skills during residency training. Our hope is that, ultimately, with further enhancements in curricula, better trained students will become physicians who will not shy away or abandon patients at the end of life, but rather have the interest and skills to

provide high-quality care and serve as teachers and role models for new generations of students.

Acknowledgments

We gratefully acknowledge the important contributions of the Core Program Faculty: Michael Berman, MD, Grace Jeng, MD, Gary Kopf, MD, Melissa Perkal, MD, Mark Siegel, MD, Lilliana Simon, MD, Kristin Wilkins, MD, and Steve Wolfson, MD; Robert Rorhbaugh, MD; and Yale Medical Students and patients of Yale-New Haven Hospital.

References

1. Field MJ, Cassel CK. Approaching Death: Improving Care at the End of Life. Washington, DC: Institute of Medicine, National Academy Press; 1997.
2. Meier DE, Morrison RS, Cassel CK. Improving palliative care. *Ann Intern Med*. 1997;127:225-230.
3. Association of American Medical Colleges. Contemporary Issues in Medicine: Communication in Medicine, Medical School Objectives Project, October 1999 (MSOP III). Washington, DC: Association of American Medical Colleges; 1999.
4. Fraser HC, Kutner JS, Pfeifer MP. Senior medical students' perceptions of the adequacy of education on end-of-life issues. *J Palliat Med*. 2001;4:337-343.
5. Sullivan AM, Lakoma MD, Block SD. The status of medical education in end-of-life care: a national report. *J Gen Intern Med*. 2002;18:685-695.
6. Dickinson GE. Teaching end-of-life issues in US medical schools: 1975-2005. *Am J Hospice Pall Med*. 2006;23: 197-204.
7. Porter-Williamson K, von Guten CF, Garman K, Herbst L, Bluestein HG, Evans W. Improving knowledge in palliative medicine with a required hospice rotation for third-year medical students. *Acad Med*. 2004;79: 777-782.
8. National Consensus Conference on Medical Education for Care at the End of Life: Executive Summary. *J Palliat Med*. 2000;3:87-91.
9. Billings JA, Block SD. Palliative care in undergraduate medical education: a status report and future directions. *JAMA*. 1997;278:733-738.
10. Weissman DE, Block SD, Blank L, et al. Recommendations for incorporating palliative care education into the acute care hospital setting. *Acad Med*. 1999;74:871-877.
11. Sullivan AM, Warren AG, Lakoma MD, Liam KR, Hwang D, Block SD. End-of-life care in the curriculum: a national study of medical education deans. *Acad Med*. 2004;8:760-768.
12. Ellman MS, Rosenbaum JR, Bia M. Development and implementation of an innovative ward-based program to help medical students acquire end-of-life care experience. *Acad Med*. 2007;82:723-727.
13. Barnard D, Quill T, Jafferty FW, et al. Preparing the ground: contribution of the preclinical years to medical education for care near the end of life. *Acad Med*. 1999;74:499-504.
14. Cortina JM. What is coefficient alpha? An examination of theory and applications. *J Appl Psychol*. 1993;78: 98-104.
15. Hafferty FW, Franks R. The hidden curriculum, ethics teaching and the structure of medical education. *Acad Med*. 1994;69:862-871.
16. Ratanawongsa N, Teherani A, Hauer KE. Third-year medical students' experiences with dying patients during internal medicine clerkship: a qualitative study of the informal curriculum. *Acad Med*. 2005;80:641-647.
17. Woolliscroft JO, TenHaken J, Smith J, Calhoun JG. Medical students' clinical self-assessments: comparisons with external measures of performance and the students' self-assessments of overall performance and effort. *Acad Med*. 1993;68:285-294.
18. Schwartz CE, Clive DM, Mazor KM, Ma Y, Reed G, Clay M. Detecting attitudinal changes about death and dying as result of end-of-life care curricula for medical undergraduates. *J Palliat Med*. 2005;8:975-985.
19. Bradley EH, Cramer LD, Bogardus ST, Kasl SV, Johnson-Hurzeler R, Horwitz SM. Physicians' ratings of their knowledge, attitudes, and end-of-life care practices. *Acad Med*. 2002;77:305-311.