

Determinants of Medical Students' Perceived Preparation To Perform End-of-Life Care, Quality of End-of-Life Care Education, and Attitudes Toward End-of-Life Care

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Abstract

Background: Medical students' learning about end-of-life care can be categorized into three learning modalities: formal curriculum, taught in lectures; informal curriculum, conveyed through clinical experiences; and "hidden curriculum," inferred from behaviors and implicit in medical culture. In this study, we evaluated associations between survey items assessing these learning modalities and students' perceptions of their preparation, quality of education, and attitudes toward end-of-life care.

Methods: Data were collected from a national survey of fourth-year medical students ($n = 1455$) at 62 medical schools in 2001. Linear regression analyses were performed to assess associations between formal, informal and hidden end-of-life care curricula and students' perceived preparedness to provide end-of-life care, quality of end-of-life care education and attitudes toward end-of-life, controlling for students' demographics and clustered by school.

Results: Students reporting more exposure to formal and informal curricula felt more prepared and rated their end-of-life care education higher. Students with more exposure to a hidden curriculum that devalued end-of-life care perceived their preparation as poorer and had poorer attitudes toward end-of-life care. Minority students had slightly more negative attitudes but no differences in perceived end-of-life care preparation.

Conclusions: Medical students' sense of preparedness for end-of-life care and perceptions of educational quality are greater with more coursework and bedside teaching. By contrast, the hidden curriculum conveying negative messages may impair learning. Our findings suggest that implicit messages as well as intentional teaching have a significant impact on students' professional development. This has implications for designing interventions to train physicians to provide outstanding end-of-life care.

Introduction

WITH THE INCREASING professional and public awareness of the need for humanistic care at the end of life, palliative care has emerged as a priority in medical education. A third-year student remarked, "as physicians-in-training, we require more than just on-the-job training to deal with death."¹ End-of-life care education is a requirement of the Liaison Committee for Medical Education (LCME),² yet it remains inadequate.³ Half of graduating seniors feel unprepared for end-of-life issues⁴; 19%–33% feel that inadequate time was devoted to instruction^{5,6} and 67% of deans agree.⁷ Faculty lack confidence in their skills and ability to teach palliative care.⁸ Less than 50% of residency programs have faculty expertise in end-of-life care.⁹ Thus, institutional support may be lacking.

Medical students' training in end-of-life care involves a variety of educational modalities including "formal" and "informal" curricula. The "formal curriculum" is often presented through didactics and assigned readings; the "informal curriculum" imparts end-of-life care education through experience as trainees observe or perform care for dying patients. The extent of each curricula varies dramatically among medical schools.¹⁰ Most schools do not offer electives in end-of-life care,¹¹ despite data suggesting that such electives are beneficial.^{10,12} Medical students report having limited exposure to dying patients.¹³ One survey reported 35% of students never observed a patient being told about a terminal prognosis.⁴ Only 38% of interns at one hospital had observed advance directive discussions during medical school.¹⁴ Recalling their first experience giving bad news, trainees reported faculty supervision only 5% of the time.¹⁵ Thus,

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students may have haphazard and unsupervised clinical experiences caring for the dying.

Medical students also learn about end-of-life care from unintended messages conveyed from hospital culture. The "hidden curriculum," the implicit learning relayed through faculty and residents' behaviors and institutional constructs,¹⁶ is absorbed as students undergo socialization into physicianship.¹⁷ These unintended lessons often conflict with the formal teaching of palliative medicine that affirms the values of humanism, communication, compassion and self-reflection.¹⁸

Negative attitudes or poorly modeled behaviors may have detrimental effects on trainees' appreciation and delivery of care to dying patients.^{8,19} Furthermore, acceptance of hidden curriculum ideas may lead to "ethical erosion," or an undermining of students' idealized values.²⁰ Conversely, education in a setting valuing palliative medicine can lead to improved attitudes toward end-of-life care.²¹

We were interested in how these conceptual modalities of learning ascribed to medical school (formal, informal, and hidden curricula) contributed to medical students' perceived preparation to perform end-of-life care, their assessment of the quality of end-of-life care education, and their attitudes toward end-of-life care. Understanding how medical students integrate formal, informal or hidden teachings is a key step in guiding educational reforms to produce physicians who can provide high quality and compassionate end-of-life care.

Methods

This study reports an analysis of survey data obtained from a sample of fourth-year medical students. The sample, recruitment, survey development and administration have been previously described.⁸ In brief, equal allocations of fourth-year students were randomly sampled from 62 randomly selected U.S. medical schools representing all regions of the United States, ranging in class size from 41 to 281 students. Between February and August 2001, respondents completed a telephone survey. Survey content was derived from student focus groups, literature reviews, and recommendations from the National Consensus Conference for Medical Education in End-of-Life Care.²² Surveys were pilot-tested, finalized, and administered in collaboration with the University of Massachusetts-Boston Center for Survey Research. The questions assessed the quantity and quality of palliative care education, training in specific end-of-life care topics, preparation to provide end-of-life care, attitudes, and perceptions of the hidden curriculum.

This report using deidentified data was exempted from review by the Institutional Review Board (IRB) at the University of Washington and Virginia Commonwealth University. The initial research study was also exempted from IRB review by the Dana-Farber Cancer Institute Office for the Protection of Human Subjects.

Overview of scale development

We created scales for both predictors and outcomes using reliability analyses to identify internally consistent scales. We developed three scales assessing end-of-life care curricula (formal, informal, and hidden), which summarized the reported amount of experience or exposure to end-of-life care education for each learning modality. We created scales as-

sessing perceived preparedness to perform end-of-life care and attitudes toward end-of-life care as outcomes. We assessed reliability by calculating Cronbach α and inter-item and item-total correlations.²³

Predictors

Curricular scales

The formal curriculum was measured using nine items assessing if an aspect of end-of-life care was "explicitly" taught; respondents endorsed either "yes" or "no." In addition, respondents were asked to indicate the number of dedicated courses or clerkships in which they participated. All of these responses were summed to provide a total "formal curriculum" scale score. The scale had a Cronbach α of 0.66. Inter-item correlations ranged from 0.05 to 0.30; item-total correlations ranged from 0.22 to 0.40.

The informal curriculum was operationalized as respondents' perceived exposure to and experience with care for the dying. Eight items, adapted from a prior study²⁴ with a four-point scale (0 = never to 3 = 6 or more times) were summed. The questions included: (1) how many times the student observed end-of-life care; (2) how often he/she participated in end-of-life care; (3) if and how often he/she was given feedback about specific end-of-life care tasks; and (4) how often observed end-of-life care by a supervisor was provided well. Endorsements were tallied; the scale had a Cronbach α of 0.85. Inter-item correlations ranged from 0.24 to 0.95; item-total correlation ranged from 0.47 to 0.68.

The hidden curriculum exposure was assessed through questions investigating the extent to which specific end-of-life care values were reportedly conveyed by attendings and residents to students. A total score was created by summing 6 items using a four-point Likert-like scale (1 = not at all to 4 = a lot). The Cronbach α was 0.57. Items were summed so that higher scores reflected more negative messages regarding end-of-life care. Inter-item correlations ranged from 0.05 to 0.35; item-total correlation ranged from 0.17 to 0.42.

Demographics

Respondents reported race and ethnicity, gender, age, anticipated medical specialty, personal experience with death of a loved one, religion and the importance of religious beliefs on their actions. We dichotomized intended medical specialty into primary care (general internal medicine, pediatrics and family medicine) vs. other specialties and subspecialties. School indicators were also used in analyses.

Outcomes

Preparedness scale

The perceived preparedness to perform end-of-life care scale consisted of 7 questions scored on a four-point Likert-like scale (1 = not very well prepared; 4 = very well prepared) assessing perceived preparation for: (1) communication with patients and families; (2) pain management; and (3) comfort with patient and family emotions and spiritual issues. The scale had a Cronbach α of 0.84. Inter-item correlations ranged from 0.28 to 0.59; item-total correlations ranged from 0.43 to 0.66.

Quality of end-of-life education

A single item: "How would you rate the quality of teaching you've had about end-of-life care from medical school faculty, residents and attendings?" was used with a 5-point Likert scale, (1 = poor to 5 = excellent).

Attitudes toward end-of-life care scale

The survey included eight statements concerning attitudes toward end-of-life care with low internal consistency in scale analysis. Prior studies using this same attitude instrument showed low reliability²⁵ and no coherent grouping in factor analysis.²¹ We chose two of these items (i.e., "dread dealing with emotional distress of family members," "caring for dying patients is depressing") that were conceptually similar, with face validity and response variability. The two items were correlated ($r=0.37$) and had fair reliability ($\alpha=0.54$). The items were scored on a 4-point Likert-like scale (1 = strongly disagree; 4 = strongly agree) and scores were summed.

Analysis

We used multivariate regression analysis to investigate the association between each of the outcome variables (i.e., preparedness, quality of education, and attitudes) and the various learning modalities represented by our curricular scales (i.e., formal, informal, hidden). We controlled for gender, age, race/ethnicity (dichotomized as white, non-Hispanic versus non-white or Hispanic as well as by individual racial and ethnic groups) and dichotomized intended specialty. To account for the effect of potentially correlated data within each school, we used clustering with robust standard errors. The level of significance was set at 0.05 for all analyses.

Results

One thousand four hundred fifty-five students participated for a response rate of 62%. The refusal rate was 8% and the remaining students agreed to participate but were not able to be reached. The students were 28 years old on average, 57% were men, 70% were white, non-Hispanic and 17% were Asian (Table 1A). Most (83%) had experienced the death of a loved one. Two thirds were Christian; one third believed religion strongly influenced their actions. One third intended to pursue a primary care specialty (family medicine, internal medicine, or pediatrics). Nearly two thirds of the students were from medical schools in the eastern United States, but all regions were represented. Asian students were less likely to be Christian and had fewer experiences with death of a loved one (Table 1B).

Predictors: Curricular scales

The majority of students said they had been explicitly taught most aspects of end-of-life care in the formal curriculum; they had more teaching about symptom relief than about psychosocial needs (Table 2A). The mean summed formal curricular score was 5.2 (standard deviation [SD] 2.4; scale range, 0-12).

Of informal curricular experiences, students reported extensive experience observing end-of-life care but less experience providing it. Over 85% of students observed others giving bad news more than 3 times, yet half of students re-

TABLE 1A. FOURTH-YEAR MEDICAL STUDENT CHARACTERISTICS (N= 1455) FROM SIXTY-TWO MEDICAL SCHOOLS

<i>Demographics</i>	
% Male (n)	56.7 (825)
% Race/Ethnicity (n)	
White, non-Hispanic	70 (1011)
Asian	17 (249)
Black	5.8 (83)
Hispanic	4.7 (68)
Other	2.8 (41)
American Indian	1.1 (16)
Pacific Islander	0.3 (7)
Mean age in years (standard deviation)	28.3 (3.6)
% Experienced death of loved one (n)	83 (1206)
% Christian (n) (includes Catholic, Protestant, Christian)	64 (924)
% Religious/spiritual beliefs "very important" (n)	37 (538)
% Intended specialty (n)	
Primary care ^a	39 (565)
Surgical specialty ^b	14 (210)
Medical subspecialty	15 (221)
Emergency medicine	7 (100)
Obstetrics/gynecology	6 (93)
Radiology	5 (74)
Anesthesia	4 (65)
Psychiatry	3 (49)
% Medical school region (n)	
Northeast (18 schools)	32 (470)
Southeast (22 schools)	30 (440)
Midwest (16 schools)	27 (393)
West (7 schools)	10 (152)

^aPrimary care includes internal medicine, pediatrics, and family medicine.

^bSurgical specialties include ENT, orthopedics, urology, neurosurgery, and general surgery.

TABLE 1B. MINORITY FOURTH-YEAR MEDICAL STUDENT (N= 400) FROM SIXTY-TWO MEDICAL SCHOOLS CHARACTERISTICS

	<i>Black</i> (n = 83)	<i>Asian</i> (n = 249)	<i>Hispanic</i> (n = 68)
% Christian (n)	85 (69) ^a	38 (94) ^a	69 (47)
% Primary care (n)	48 (39)	41 (101)	35 (23)
% Experienced death of a loved one (n)	84 (70)	71 (177) ^a	78 (53)
% Religious/spiritual beliefs "very important" influence on actions (n)	61 (51) ^a	30 (74) ^a	40 (27)
% Medical school region (n)			
Northeast	48 (40)	37 (92)	28 (19)
Southeast	23 (19)	31 (78)	32 (22)
Midwest	24 (20)	19 (46)	16 (11)
West	5 (4)	13 (33)	24 (16)

^aSignificantly different from general population of students ($p < 0.05$).

ported never personally giving bad news, and less than half of those students received any feedback (Table 2B). The mean informal curricular score was 11.1 (SD 4.9; scale range, 0-24).

Only 20% of respondents reported that faculty and residents conveyed negative messages "a lot" or "a moderate

TABLE 2. FOURTH-YEAR MEDICAL STUDENTS, ($N=1455$) FROM SIXTY-TWO MEDICAL SCHOOLS RESPONSES TO ITEMS ON FORMAL, INFORMAL, AND HIDDEN CURRICULUM EXPERIENCES AND EXPOSURE TO END-OF-LIFE CARE

2A. Formal Curriculum

Respondents were asked, "thinking only about medical school coursework and clerkships, have you been explicitly taught how to..."

Item	Yes, % (n)
Teach families how to provide home care for a dying patient	21 (311)
Respond to a patient's request for physician-assisted suicide	25 (360)
Help patients and their families to say goodbye	30 (428)
Tell a patient that he/she is dying	58 (840)
Discuss treatment withdrawal with patients and families	61 (889)
Assess and manage depression in patients at the end of life	65 (944)
Recognize tolerance to opioids	69 (1001)
How to determine when to refer patients to hospice	71 (1028)
Treat neuropathic vs. somatic pain	71 (1036)

amount" (e.g., death is a medical failure, physicians should remain emotionally uninvolved). However, 60% felt that residents and attending physicians conveyed that working with dying patients was rewarding only "a little" or "not at all" (Table 2C). The mean summed score for negative ideas conveyed in the hidden curriculum was 13.8 (SD 3.0; scale range, 6–24).

Outcomes: Perceived preparedness, quality of education, and attitudes

Students reported feeling "moderately well prepared" for a majority of end-of-life care tasks. They felt least prepared to manage their feelings and most prepared to manage a dying patients' pain (Table 3A). The mean preparedness score was

18.4 (SD 4.1; scale range, 7–28). A majority of students felt that the quality of end-of-life education was "good" to "very good" (Table 3B). For the two attitude items, 25% agreed that they dreaded dealing with the emotional distress of families and 45% agreed that caring for dying patients was depressing (Table 3C). The summed mean was 5.58 (SD 1.3; scale range, 2–8).

Predictors of perceived preparedness, quality of end-of-life education, and attitudes

Each of the three curricular scales was associated with students' perceived preparedness to perform end-of-life care (F -statistic = 129, $p < 0.0001$, $R^2 = 0.43$) (Table 4A). Formal and informal curricular scales were positively associated while the hidden curriculum, the conveyed negative messages, was negatively associated. Neither respondents' demographics nor intended primary care specialty were associated with perceived preparedness.

The quality of end-of-life education item was positively associated with the formal and informal curricular experiences and negatively associated with the hidden curriculum score (F -statistic = 44, $p < 0.0001$, $R^2 = 0.24$). Male and Asian students had lower ratings of end-of-life care education quality (Table 4B).

Attitudes toward end-of-life care were positively associated with the informal curriculum, negatively associated with the hidden curriculum but not associated with formal curriculum (F -statistic = 11.6, $p < 0.0001$). The amount of variability explained by the model was relatively weak ($R^2 = 0.08$). Asian and black students had slightly more negative attitudes (Table 4C).

Discussion

Our findings suggest that medical students across the United States lack comprehensive education about end-of-life care, specifically aspects of communication and empathy. Fourth-year students received explicit teaching in the cognitive domains of end-of-life care (e.g., treating pain) and felt better prepared in these aspects. The majority observed physicians performing end-of-life care, but considerably less had

TABLE 2. (Continued)

2B. Informal Curriculum

Respondents were asked, "how many times have you..."

Item	Never % (n)	1–2 Times % (n)	3–6 Times % (n)	>6 Times % (n)
Discussing difficult news:				
Observed patient being told of a life-threatening illness (bad news)	3.9 (56)	10 (145)	31.2 (452)	55 (797)
Observed bad news given well ^a	1.5 (21)	20 (281)	35 (489)	43 (600)
Told a patient bad news	51 (739)	26 (374)	15 (221)	8 (118)
Given feedback about a giving bad news discussion ^b	48 (343)	35 (253)	12 (85)	5 (32)
Discussing patient wishes and values:				
Observed discussion of wishes and values for care at the end-of-life	8 (117)	17 (246)	32 (463)	43 (626)
Observed discussion about wishes for care at the end-of-life done well ^a	2 (26)	25 (308)	35 (469)	40 (530)
Held a discussion about wishes and values for care at the end-of-life	42 (612)	29 (419)	19 (275)	10 (147)
Given feedback about a discussion of wishes for care at the end-of-life ^b	53 (446)	29 (245)	13 (106)	5 (42)

^aOf students who had observed experience.

^bOf students who had had discussion.

TABLE 2. (Continued)

2C. Hidden Curriculum: Messages Not Explicitly Taught

Fourth-year medical students' impression of the transmission of implicit messages; respondents were asked, "during your clerkship, to what extent do you think residents and attendings . . ."

Responses coded as "negative messages" are highlighted in gray.

Item	Not at all % (n)	A little % (n)	A moderate amount % (n)	A lot % (n)
Convey the idea that having patients die is a medical failure	32 (468)	47 (679)	17 (248)	4 (53)
Convey that in order to provide the best end-of-life care, a physician should be emotionally uninvolved with their patient	39 (560)	38 (553)	18 (258)	5 (76)
Consider dying patients to be good teaching cases for students	9 (136)	36 (514)	40 (574)	15 (216)
Convey the idea that it's okay to express your feelings about the death of a patient	16 (237)	35 (514)	32 (467)	16 (230)
Convey that treating the psychosocial needs of dying patients is a core clinical competency	9 (136)	32 (460)	40 (583)	19 (271)
Convey the idea that working with dying patients is a rewarding experience	18 (260)	41 (598)	30 (441)	10 (147)

opportunity to practice, fewer received feedback. Negative messages about end-of-life care were not uncommon. Medical school experiences and the learning environment seem to each contribute to end-of-life care skill development.

Our result that formal curriculum, operationalized as explicit teaching, was positively and strongly associated with students' perceived preparedness to provide end-of-life care contrasts with prior research. Surveyed senior students with clinical experience were more likely to report feeling prepared

to discuss end-of-life issues; but they did not identify formal courses as helpful educational experiences.⁴ Third-year medical students at one institution believed that didactic curricula had less impact than mentored experiences on their end-of-life care learning.²⁶ Perceived intern skill with end-of-life care was associated with the amount of observed end-of-life communication not the amount of formal teaching.¹⁴ Residents surveyed from 12 programs identified clinician role models as the most important educational component of

TABLE 3. FOURTH-YEAR MEDICAL STUDENT (N=1455) AT SIXTY-TWO MEDICAL SCHOOLS RESPONSES TO OUTCOME SCALE ITEMS ASSESSING PERCEIVED PREPAREDNESS TO PERFORM END-OF-LIFE CARE, QUALITY OF END-OF-LIFE CARE EDUCATION, AND ATTITUDES TOWARD END-OF-LIFE CARE

3A. Perceived Preparedness ("How well have your medical school courses and clerkships prepared you to . . .")

Item	Not well at all % (n)	Not very well % (n)	Moderately well % (n)	Very well % (n)
Manage pain	5 (78)	22 (321)	54 (785)	19 (270)
Discuss end-of-life care decisions with a patient	3 (46)	24 (345)	53 (766)	20 (297)
Talk with a patient about dying	7 (98)	36 (518)	41 (607)	16 (231)
Address cultural issues related to end-of-life	14 (203)	40 (587)	32 (465)	14 (198)
Address spiritual issues related to end-of-life	13 (191)	36 (526)	38 (555)	12 (180)
Help family members during bereavement	10 (142)	36 (529)	43 (618)	11 (163)
Manage your feelings	13 (193)	34 (498)	41 (590)	12 (171)

3B. Quality of End-of-Life Care Education

Item	Poor % (n)	Fair % (n)	Good % (n)	Very good % (n)	Excellent % (n)
Rate the quality of your end-of-life care education	8 (119)	24 (346)	29 (419)	28 (401)	11 (166)

3C. Attitudes toward End-of-Life Care Statements

Item	Completely disagree % (n)	Disagree % (n)	Agree % (n)	Completely Agree % (n)
I dread dealing with the emotional distress of family members of a patient at the end of life	27 (397)	47 (677)	22 (326)	3.7 (54)
Caring for dying patients is depressing	12 (176)	42 (617)	40 (583)	5 (78)

TABLE 4. MULTIVARIATE REGRESSION ANALYSIS WITH CLUSTERING BY MEDICAL SCHOOL OF FOURTH-YEAR STUDENTS (N = 1455) FROM SIXTY-TWO MEDICAL SCHOOLS

4A. Predictors of Perceived Preparation To Perform End-of-Life Care $F = 129.0, p < 0.0001, R^2 = 0.43$

Predictors	β	Robust SE	95% CI	p
Formal curriculum	0.73	0.04	(0.65, 0.81)	<0.001
Informal curriculum	0.09	0.02	(0.04, 0.10)	<0.001
Hidden curriculum	-0.41	0.03	(-0.46, -0.36)	<0.001
Age	-0.03	0.02	(-0.07, 0.01)	0.18
Gender	0.18	0.19	(-0.20, 0.57)	0.35
Race/Ethnicity	0.04	0.18	(-0.32, 0.40)	0.84
Primary care/specialty	0.12	0.16	(-0.20, 0.43)	0.47

SE, standard error; CI, confidence interval.

4B. Predictors of Perceived Quality of End-of-Life Care Education $F = 44.2, p < 0.0001, R^2 = 0.24$

Predictors	β	Robust SE	95% CI	p
Formal curriculum	0.16	0.01	(0.13, 0.18)	<0.001
Informal curriculum	0.02	0.01	(0.01, 0.03)	0.006
Hidden curriculum	-0.08	0.01	(-0.10, -0.06)	<0.001
Age	0.01	0.01	(-0.01, 0.02)	0.31
Gender	0.13	0.06	(0.01, 0.24)	0.04
Race/Ethnicity ^a				
Black	-0.15	0.11	(-0.38, 0.08)	0.19
Hispanic	-0.10	0.14	(-0.37, 0.17)	0.45
Asian	-0.23	0.09	(-0.41, -0.06)	0.008
Primary Care/Specialty	-0.05	0.06	(-0.16, 0.09)	0.48

^aReferent white, non-Hispanic.

SE, standard error; CI, confidence interval.

4C. Predictors of Attitudes toward End-of-Life Care $F = 11.6, p < 0.0001, R^2 = 0.08$

Predictors	β	Robust SE	95% CI	p
Formal curriculum	0.02	0.02	(-0.16, 0.05)	0.35
Informal curriculum	0.03	0.01	(0.01, 0.05)	0.002
Hidden curriculum	-0.06	0.01	(-0.09, -0.03)	<0.001
Age	0.04	0.01	(0.03, 0.06)	<0.001
Gender	0.12	0.08	(-0.04, 0.28)	0.13
Race/ethnicity ^a				
Black	-0.34	0.17	(-0.69, -0.002)	0.05
Hispanic	-0.18	0.18	(-0.53, 0.18)	0.32
Asian	-0.29	0.08	(-0.46, -0.13)	0.001
Primary Care/Specialty	-0.01	0.06	(-0.14, 0.12)	0.70
Death of Loved One	0.22	0.10	(0.02, 0.41)	0.03

^aReferent White, non-Hispanic.

SE, standard error; CI, confidence interval.

learning end-of-life care.²⁷ Our results may differ from prior studies because we included students from 62 schools providing more power and also perhaps minimizing school-specific deficiencies or talents. However, our formal curricular scale of "explicitly taught" topics may also overlap with informal, bedside learning experiences and not reflect the purely formal didactic sessions referred to in these other

studies. Alternatively, the inclusion of formal teaching on end-of-life care may reflect an increased level of overall institutional commitment to end-of-life care education.

Each of the three curricula was also associated with students' perceptions of their end-of-life care education quality, and our findings uniquely identify the hidden curriculum as responsible for negative perceptions of quality. In our study,

the informal curriculum was positively associated, contradicting a single-institution study reporting that educational quality was inversely correlated with informal curriculum.²⁸ In that study, the negative association was thought to be secondary to the discordance in messages conveyed by informal experiences and formal teaching. Parsing out the negative messages into a hidden curricular scale suggests that it is the unintended teachings, rather than the modeled care, that negatively affect students' assessments of education quality. It may be that faculty and residents who lack expertise or interest in end-of-life care detract from teachings explicitly conveyed in lectures and at the bedside.²⁹ Students who discern this discordance may have rated their education lower.

Negative messages of the hidden curriculum were also negatively associated with students' perceived preparation and attitudes toward caring for the dying, perhaps by impairing their compassion and confidence. A prior qualitative study found that third-year medicine clerkship students identify attending physician responses to emotion, attitudes and behaviors—components of the hidden curriculum—as crucial to learning about end-of-life care.²⁶ Others have suggested students, observing the behaviors of residents and attendings, may develop the impression that compassion is more theoretical than practical.³⁰ The hidden curriculum has been characterized as molding a physician temperament of “detached concern,”³¹ which conflicts with the ideals of empathy and compassion in palliative care. An environment depersonalizing patients through hidden curriculum messages may hinder student development of end-of-life care skills. To improve skills and attitudes, faculty must promote a humanistic climate and model emotional support for dying patients.³² Socialization for death is a core component of medical training; faculty can help students overcome detachment by valuing empathic communication and demonstrating compassion.

Students' attitudes toward caring for the dying were also associated with informal curricular experiences and students' backgrounds. Formal instruction was not, consistent with prior studies.^{12,33} Minorities, specifically black and Asian students, had slightly more negative attitudes, but no differences in perceived preparation. Studies of practicing physicians found minority physicians felt less comfortable discussing end-of-life issues^{34,35}; another found black and white physicians held different preferences toward end-of-life care.³⁶ Black students more frequently, and Asians less frequently, believed that religion strongly influenced their actions, differing significantly from other groups. Background experiences and cultural differences in attitudes about care of the dying likely continue to impact physicians despite socialization and formal instruction in medical school. However, given the weak effect, the differences may not be meaningful.

This study has several important limitations. First, the survey was conducted in 2001 and medical school curricula and institutional attitudes may have changed since then. However, a recent national survey argues otherwise, with little apparent progress in end-of-life care education.¹¹ Second, survey items may not fully or accurately measure the underlying constructs that we propose. The attitude items, as evident in prior studies,^{21,25} do not cohesively measure a single construct. Our definition of “formal” and “informal” curriculum by method of learning (explicit teaching vs. observed exposures) may not appropriately differentiate these types of

curricula. Defining formal curriculum as “explicitly taught” topics may not represent learning distinct from informal bedside demonstrations. The survey relies on recall of experiences. The self-perceived preparedness likely reflects confidence, not skill. The survey items have content validity, but none of the curricular instruments have been formally validated against other measures. Finally, this cross-sectional survey can identify associations, but cannot determine the causal relationships between these variables. Additional research is needed to address these issues. Despite these limitations, the survey is strengthened by its large number of respondents from many geographically diverse U.S. institutions.

Medical students absorb lessons from many forms of education, including intentional schooling and implicit messages. They learn end-of-life care from didactics, role-modeled discussions with patients as well as careless comments. The negative hidden curricular messages appear to have a consistently detrimental effect on students' perceptions of end-of-life care and may reflect medical culture. Compared to Britain, U.S. medical students have worse attitudes, less conveyed support by faculty, and overall feel less prepared³⁷—perhaps in part because of the hidden curriculum. When students experience disparate messages from formal, informal and hidden curricula, the deficiencies of their medical training may become more apparent. Thus, it is critical to ensure that the messages that permeate the wards and saturate the casual discussions of healthcare staff are those that promote professionalism and end-of-life care. If faculty and residents articulate and exemplify the merits of providing high quality end-of-life care, students may be more likely to have the confidence, experience and enthusiasm to carry this high-quality care into their professional lives.

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