

# Documentary Effects on Medical Student Attitudes & Skills Regarding Nutrition at the End of Life

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Medical trainees rarely have the opportunity to provide comprehensive end of life care or see the physical transformation of the dying process. Studies suggest that the use of film in medical education is an effective means of exposing students to aspects of medicine they might not otherwise receive. *Dying Wish* is a visual instrumental case study of a patient with end-stage cancer who chose to stop eating and drinking at the end of his life. In this randomized, controlled study, we assessed the impact of *Dying Wish* on medical students' attitudes, knowledge, and confidence in patient/family discussions surrounding nutrition at the end of life using student surveys and independently validated standardized patient assessments. By the middle of the first clinical year, about 58% of students witnessed and 38.6% actively participated in a discussion regarding nutrition at the end of life with a patient and/or their family. Although there was no significant difference in students' self-perceived knowledge or skills, a significantly higher percentage of students who viewed "Dying Wish" prior to standardized patient visits clearly explained the biological consequences of stopping eating and drinking compared to those who had not viewed the film. Students agreed that "Dying Wish" improved their knowledge of the physical effects of stopping eating and drinking and effectively introduced the ethical and psychosocial issues associated with nutrition at the end of life. Documentaries are considered by students to be effective teaching tools and "Dying Wish" represents a feasible way to deliver instruction regarding nutrition at the end of life. Visual depictions and documentary films that portray the natural courses of illnesses may prove to be helpful, efficient teaching tools and their role in the educational process for healthcare providers should continue to be studied.

**Keywords:** Medical Education; Documentary Film; Visual Instrumental Case Study; End of Life; Nutrition

## Introduction

Understanding and identifying the signs and symptoms of death is an essential skill needed by all physicians to provide quality care and, as such, is an important component of medical students' competency in end of life care (Field & Cassel, 1997; Gibbins, McCoubrie, Alexander, Kinzel, & Forbes, 2009; Nelson, Angoff, & Binder, 2000). Medical trainees rarely have the opportunity to provide comprehensive end of life care or see the physical transformation of the dying process (Gibbins, McCoubrie, Alexander, Kinzel, & Forbes, 2009; Billings & Block, 1997). This lack of exposure may result in medical trainees feeling underprepared and having difficulty educating patients and their families about what to expect at the end of life (Buss, Marx, & Sulmasy, 1998; Fraser, Kutner, & Pfeifer, 2001; Van der Riet, Good, Higgins, & Sneesby, 2008; Gibbins, McCoubrie, & Forbes, 2011).

Didactic sessions can be limited in their ability to convey complex aspects of care. Experiential approaches including standardized patients, role-play, and the humanities have been

shown to be effective means of learning affective and skills-based objectives (Block, Bernier, & Crawley, 1998; Schmidt, Norton, & Tolle, 1992; Serwint & Simpson, 2002; Kahn, Sherer, Alper, Lazarus, Ledoux, Anderson, & Szerlip, 2001). Early studies suggest that the use of film in medical education is an effective means of exposing students to aspects of medicine they might not otherwise receive (Self, DeWitt, & Baldwin, 1990). Films can be used to educate, create self-reflection and generate discussion about the general emotional reactions of the viewer, diagnostic impressions, therapeutic and treatment considerations, and associations with one's own profession and personal life (Alexander & Lenahan, 2005).

*Dying Wish* is a visual instrumental case study of Dr. Michael Miller, a retired surgeon with end-stage cancer who voluntarily chose to stop eating and drinking at the end of his life. The film documents Dr. Miller's decision-making process and raises the topics of bioethics, spirituality, patient autonomy, voluntary refusal of food and fluids (VRFF), as well as the physical and emotional aspects of stopping eating and drinking. The film allows the viewer to visualize the physical dying

process and the physiology of stopping eating and drinking at the end of life.

In this study, we assessed the impact of *Dying Wish* on medical students' attitudes, knowledge, and confidence in patient/family discussions surrounding nutrition at the end of life. In addition, we assessed the effect of the film on the likelihood that students would initiate a conversation about nutrition or VREF and the adequacy of their description of the biological consequences of such a decision during a simulated patient encounter.

## Methods

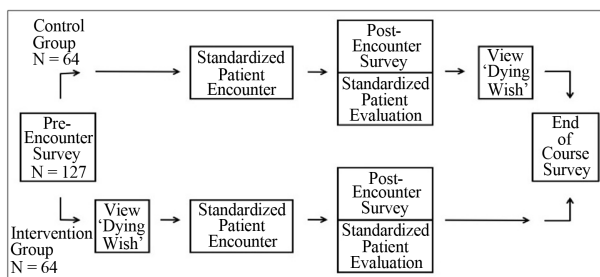
### Study Design

This randomized, single-blinded, controlled trial took place at University of Colorado School of Medicine during a required one-week curriculum delivered near the mid-point of the third year of medical school. The overarching goal of the curriculum is to teach the fundamentals of end of life care and advanced communication skills. One hundred twenty-seven medical students answered questions about their knowledge, attitudes and self-confidence in discussing the topic of nutrition/hydration at the end of life via a computerized Likert scale survey at the start of the one-week curriculum. Three yes or no questions also assessed the students' prior personal and curriculum-associated experiences with nutrition at the end of life. Students were then randomized into 2 groups (Figure 1).

The intervention cohort (n = 64) viewed *Dying Wish* and then worked in pairs to lead a standardized patient (SP) encounter of a family meeting wherein the patient has late stage Alzheimer's disease and has been admitted for recurrent aspiration pneumonia. The family is being asked to address the issue of nutrition and hydration, among other end of life issues. The control cohort (n = 64) completed the same SP encounter in pairs without having viewed *Dying Wish*. Immediately following the SP encounter, students from both groups were asked again about their knowledge, attitudes and self-confidence regarding nutrition/hydration via a computerized survey.

SPs completed a computerized checklist that asked if the medical students: 1) initiated a conversation about nutrition at the end of life, 2) mentioned voluntary refusal of food and fluids as an option at the end of life, and 3) clearly explained the biological consequences of stopping eating and drinking at the end of life. The SPs were blinded to intervention or control group assignment status. The SPs' responses to the checklists were validated by a video review of 20 randomly selected encounters.

Finally, all students were asked about their level of agree-



**Figure 1.** Study design.

ment regarding the usefulness of “Dying Wish” and documentary films in general for medical education as part of the course evaluation at the completion of the week of curriculum. A Likert-type scale was used to measure responses: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree.

### Statistical Methods

Chi-square analysis was used to compare the control and intervention groups' responses to the pre-SP encounter survey and their performances on the SP checklist. McNemar's test was used to compare students' responses to the pre- and post-SP encounter surveys within groups. The Wilcoxon signed rank test was used to compare the intervention and control groups' responses to the post-SP encounter survey. Descriptive analysis of the 4 point Likert-type scale survey administered at the end of the weeklong curriculum documented the perceived efficacy of the documentary film as a teaching tool.

## Results

### Demographic Information

One hundred and twenty-eight of the 147 students that graduated in the class of 2011 participated in the surveys. The discrepancy in the number of students reflects those who were absent or who joined the graduating class later from combined degree programs or other causes for delay in training. There were 48.3% female students, 10.2% ethnically diverse students and the age range at the time of graduation was 26 years 9 months to 39 years 11 months.

### Pre-Intervention Survey

Of all the students surveyed, 58.2% (57.1% of the control group and 59.4% of the intervention group) reported that they had witnessed a discussion regarding nutrition at the end of life with a patient and/or their family in their role as a medical student, while 38.6% (31.7% of the control group and 45.3% of the intervention group) had actively participated in such a discussion with a patient and/or their family in their role as a medical student and 44.1% (44.7% of the control group and 43.8% of the intervention group) had personal experience with decisions regarding nutrition at the end of life outside of their role as a medical student. There were no significant differences found between the control and intervention groups with regard to prior experiences with nutrition at the end of life.

A majority of students felt they had the knowledge (62.5% control and 57.1% intervention) and skills (68.8% control and 68.3% intervention) necessary to discuss the biological effects of stopping eating and drinking at the end of life. Fewer students felt they had the knowledge (56.3% and 49.2%, respectively) or skills (65.6% and 68.3%, respectively) to discuss the various nutrition options at the end of life. Most students in both groups felt that voluntary refusal of food and fluid at the end of life is both ethical and legal. There were no significant differences found between the control and intervention groups in self-perceived knowledge or skills on the pre-intervention survey.

### Post-Intervention Survey

Both the control and intervention groups reported significant improvements in the knowledge and skills needed to lead a

discussion with patients and their families regarding nutritional options and the biological effects of stopping eating and drinking at the end of life (Table 1).

In addition, both the control and intervention groups significantly improved with regards to their comfort level with discussing nutrition at the end of life. Neither group significantly changed its belief that voluntary refusal of food and fluids at the end of life is both legal and ethical.

### SP Evaluation of Student's Performance

SPs did not note a significant difference between the control and intervention groups in the percentage of students that initiated conversations about nutrition nor those that mentioned voluntary refusal of food and fluids as an option (Table 2).

However, a significantly higher percentage of students in the intervention group clearly explained the biological consequences of stopping eating and drinking at the end of life (76% vs. 48%,  $p = 0.005$ ).

### End of Curriculum Survey

Students agreed that documentary films can be effective tools for teaching medical topics (mean Likert-type response was 3.3/4.0, SD 0.6). In addition, students agreed that "Dying Wish" improved their knowledge of the physical effects of stopping eating and drinking (mean Likert response 3.1/4.0, SD 0.7) and effectively introduced the ethical and psychosocial issues associated with nutrition at the end of life (mean Likert response 3.1 and 3.1/4.0, SD 0.7 and 0.6 respectively). Students were not concerned that "Dying Wish" was shown to manipulate their personal thinking regarding nutrition at the end of life (mean Likert response was 2.1, SD 0.8).

**Table 1.**  
Responses to pre- and post-SP encounter surveys.

	Control Group (n = 64)			Intervention Group (n = 63)			Comparison
	Before SP Encounter	After SP Encounter	% change (p-value)	Before SP Encounter	After SP encounter	% change (p-value)	
I have the knowledge I need to discuss the biological effects of stopping eating and drinking at the end of life.	62.5%	81.3%	+18.8% (0.002)	57.1%	82.5%	+25.4% (0.000)	0.851
I have the skills I need to discuss the biological effects of stopping eating and drinking at the end of life.	68.8%	84.4%	+15.6% (0.004)	68.3%	82.5%	+14.2% (0.008)	0.952
I have the knowledge I need to discuss the various options for nutrition at the end of life.	56.3%	75.0%	+18.7% (0.002)	49.2%	63.5%	+14.3% (0.008)	0.782
I have the skills I need to discuss the various for nutrition at the end of life	65.6%	84.4%	+18.8% (0.002)	68.3%	81.0%	+12.7% (0.008)	0.754
Based on my personal beliefs, VRFF at the end of life is ethical.	92.2%	95.3%	+3.1% (0.480)	93.7%	88.9%	-4.8% (0.248)	0.749
Legally, a patient has the right to voluntarily refuse food and fluids at the end of life.	93.8%	96.9%	+3.1% (0.480)	87.3%	98.4%	+11.1% (0.023)	0.216
I feel comfortable leading a discussion about options for nutrition at the end of life.	59.4%	84.4%	+25.0% (0.00)	61.9%	87.3%	+25.4% (0.000)	0.771

## Discussion

This study describes mid-third year medical students' experiences, knowledge and attitudes regarding nutrition at the end of life and VRFF at one institution. By the middle of third year, just over 58% of students witnessed and 38.6% actively participated in a discussion regarding nutrition at the end of life with a patient and/or their family in their role as a medical student. Although watching *Dying Wish* did not improve students' self-perceived knowledge or skills compared to those who did not, a significantly higher percentage of students who viewed "Dying Wish" prior to their SP visits clearly explained the biological consequences of stopping eating and drinking compared to those who had not viewed the film. Students agreed that "Dying Wish" improved their knowledge of the physical effects of stopping eating and drinking and effectively introduced the ethical and psychosocial issues associated with nutrition at the end of life.

Medical trainees rarely have the opportunity to provide comprehensive end of life care or see the physical transformation of the dying process. This lack of exposure may result in medical trainees having difficulty educating patients and their families about what to expect (Van der Riet, Good, Higgins, & Sneesby, 2008). In our study, although both the control and intervention groups reported significant improvements in the knowledge and skills needed to lead a discussion with patients and their families regarding nutritional options, SPs reported that students who had viewed *Dying Wish* were significantly more likely to clearly explain the biological consequences of stopping eating and drinking during the standardized patient encounter. This suggests that *Dying Wish* helped the students to translate their new knowledge and skills to actual behavior at least in the simulated environment.

**Table 2.**  
SP evaluation of students' performance.

SP Checklist Item	% of SPs responding "Yes"		
	Control	Intervention	p-value
Medical student initiated conversation about nutrition	59%	62%	0.715
Medical student mentioned VRFF	64%	63%	0.351
Medical student clearly explained the biological consequences of starvation	48%	76%	0.005

The results of this study further supports the idea that films can be used as an adjunct in medical education to provide experiences that are hard to ensure consistently during clinical training. The students surveyed as part of this study agreed that documentary films can be effective tools for teaching and agreed that "Dying Wish" improved knowledge of the physical effects of stopping eating and drinking. The efficacy of "Dying Wish" is consistent with prior studies of humanities modalities as educational tools for end of life topics (Self, DeWitt, & Baldwin, 1990; Lorenz, Steckart, & Rosenfeld, 2004; Weber & Silk, 2007; Kumagai, 2008).

There are some limitations to this study and its assessment. As the film was shown to students as part of a weeklong multimodal end of life curriculum, it is difficult to isolate the effects of the film on the changes in self-reported attitudes and knowledge. It is also unclear how evaluations and self-reported efficacy at this early point in medical students' careers will translate to ability in actual practice. Traditionally self-report has been an unreliable measure of clinical skill (Davis, Thomson, O'Brien, Freemantle, Wolf, Mazmanian, & Taylor-Vaisey, 1999).

## Conclusion

Although the self-reported knowledge and skills around counseling patients regarding nutrition and VRFF at the end of life were not significantly altered by viewing "Dying Wish", the film did affect students' ability to clearly explain the biological effects of stopping eating and drinking to SPs. This is likely due to the film's visual depiction of the process of stopping eating and drinking at the end of life. Documentaries and other humanities modalities are considered by students to be effective teaching tools and "Dying Wish" represents a feasible way to deliver instruction regarding VRFF and nutrition at the end of life. Visual depictions and documentary films that portray the natural courses of illnesses may prove to be helpful, efficient teaching tools and their role in the educational process for healthcare providers should continue to be studied.

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