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ORIGINAL RESEARCH ARTICLE

Perception of advance health-care directives among nursing students in oncology and palliative care settings: An Italian pre–post study

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Abstract

Introduction: Advance health-care directives (AHDs) empower individuals to express treatment preferences in anticipation of future incapacity and play a crucial role in ensuring patient-centered end-of-life care. However, nursing students often report limited training and discomfort when addressing these issues.

Objective: This study aims to assess the impact of an oncology palliative care module on nursing students' knowledge and perceptions of AHDs.

Methods*:* In a pre–post observational design, 39 3rd-year nursing students completed questionnaires immediately before (pre-test) and after (post-test) a 75-h oncology palliative care module that included lectures, case discussions, and active learning methods. Sociodemographic and attitudinal data were analyzed using descriptive statistics.

Results: After the module, students showed an increased preference for refusing non-beneficial treatments (from 63.6% to 71.4%) and reported heightened awareness of the need for proactive communication regarding therapies and pain management. While willingness to donate organs remained high (94.9% vs. 92.3%), students exhibited increased caution regarding the involvement of minors in end-of-life discussions. Openness to spiritual support also rose, alongside slight increases in preferences for cremation and body donation. Although these changes did not reach statistical significance, the consistency index indicated generally stable ethical orientations, with emerging trends toward deeper reflection and heightened awareness.

Conclusion: Although no statistically significant differences were observed, the educational intervention on AHDs appeared to influence certain perceptions and attitudes among nursing students toward end-of-life decisions. Integrating structured AHD training into nursing curricula may enhance students' awareness and ability to support patient self-determination in clinical practice.

Keywords: Advance health-care directives; Nursing education; Patient self-determination; Clinical ethics; End-of-life care

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1. Introduction

The progressive aging of the population and the increasing incidence of chronic and degenerative diseases are reshaping global health-care priorities. In 2021, the World Health Organization estimated that by 2050, the proportion of individuals over the age of 60 will double, reaching 22% of the total population.[1] In Europe, more than 70% of deaths are attributable to non-communicable chronic diseases, such as cancer, cardiovascular, and respiratory conditions, many of which require advance care planning.[2] Studies conducted in Europe highlight that a substantial number of patients die without receiving adequate palliative care despite having complex needs.[3] In Italy, the Higher Institute of Health reports that approximately 30% of dying patients require palliative care, but only a minority receives it.[4] According to data from the 2022 Italian National Institute of Statistics, fewer than 10% of citizens have signed an Advance Treatment Directive (*Disposizioni Anticipate di Trattamento* [DAT]), indicating limited cultural familiarity and dissemination of this tool, even among health-care professionals.[5]

The promotion of patient autonomy in clinical settings has been legally recognized in many countries. In the United States, the Patient Self-Determination Act of 1990 introduced the requirement for health-care institutions to inform patients about their right to express advance health-care directives (AHDs).[6] In Europe, regulation is not uniform—some countries, such as Germany and Spain, legally recognize advance directives, whereas others, such as the Netherlands and Belgium, also allow euthanasia or medically assisted suicide.[7-9]

In Italy, Law No. 219/2017 introduced the DAT, officially recognizing citizens' rights to express their wishes concerning medical treatment in the event of future incapacity, including the option to designate a health-care proxy.[10] In addition to codifying the principle of informed consent, the law aims to enhance the therapeutic relationship and communication among patients, families, and healthcare professionals. However, the implementation of DAT in clinical practice remains limited, hindered by cultural resistance, lack of information, and operational uncertainty among health-care providers.[11,12]

Nurses play a crucial role in supporting patients at the end of life, assisting them in articulating their individual values and preferences.[13,14] Nevertheless, several studies report a lack of preparation among nursing students regarding the ethical-legal aspects of end-of-life decision-making.[15,16] Barriers such as insecurity, fear of addressing sensitive topics, and limited knowledge of the legislation restrict their ability to support patients in advance care planning.[17-19] Therefore, several studies advocate for the inclusion of specific modules within university curricula that incorporate active learning methodologies, simulation, and ethical reflection.[20,21]

Building on these premises, it is worth exploring how targeted educational interventions can bridge existing gaps in nursing students' knowledge and attitudes concerning end-of-life care. Accordingly, the present study seeks to address the following research question: "To what extent can a structured educational module on AHDs influence nursing students' attitudes, knowledge, and ethical orientation toward end-of-life decision-making?"

The primary objective is to evaluate the impact of a targeted educational intervention on students' knowledge regarding therapeutic self-determination by examining changes in awareness, preferences, and ethical sensitivity before and after the training. Ultimately, this study aims to contribute to the development of more effective educational strategies that promote ethical competence, relational awareness, and empathy in supporting patients during the final stage of life.

2. Materials and methods

2.1. Study design

A pre–post observational study design was employed to evaluate the impact of an educational intervention on nursing students' understanding and attitudes toward AHDs. This exploratory study involved a single cohort of nursing students recruited through convenience sampling. The sample size was determined by the number of eligible participants who enrolled in the module. This study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology guidelines[22] for reporting observational research.

2.2. Setting and participants

The study was conducted during the second semester of the 2024/2025 academic year at Humanitas University, Italy, within the Bachelor's Degree in Nursing program. The target population consisted of 3rd-year students enrolled in the palliative care module. Inclusion criteria required attendance at a minimum of 75% of the total module hours and mandatory participation in the final two lessons. Exclusion criteria included failure to meet attendance requirements or being absent during the final sessions. A total of 39 students met the inclusion criteria and completed all study phases.

2.3. Educational intervention

The educational module comprised 75 h of instruction on palliative care and integrated lectures, case discussions, and active learning methodologies. A dedicated session

on AHDs was incorporated, emphasizing the legal, ethical, and practical aspects related to AHDs. The curriculum was designed to enhance students' knowledge, foster positive attitudes, and develop communication skills relevant to end-of-life care.

2.4. Data collection

Data were collected using structured, anonymous questionnaires administered immediately before (pre-test) and after (post-test) the educational intervention. The survey instrument included sections on sociodemographic characteristics (e.g., age, gender, and previous exposure to end-of-life care discussions) as well as knowledge of AHDs and relevant legal frameworks. Data collection was conducted using the VIDAS AHD Module, ensuring alignment with standardized national guidelines on end-of-life care documentation.

2.5. Ethical statement

The study received ethical approval from the Humanitas University Ethics Committee in Milan (Protocol CLI_RIC_14). All participants provided informed consent, and confidentiality was maintained in accordance with the Declaration of Helsinki.[23] Data privacy and participant anonymity were strictly ensured throughout the research process.

2.6. Study procedures

Before the intervention, an introductory session was held to explain the study objectives, ethical considerations, and methodological procedures to all potential participants. Clear instructions were provided regarding voluntary participation, data protection, and the right to withdraw at any time without academic penalty. This initial briefing ensured informed and voluntary participation while helping establish a climate of academic integrity and trust. Participants then completed the pre-intervention questionnaire, attended the educational sessions, and subsequently completed the post-intervention assessment.

2.7. Evaluation instruments

For the evaluation of students' knowledge, attitudes, and perceptions regarding AHDs, the study employed the official Italian AHD Module, made available through the Ministry of Health and municipal services, in accordance with national guidelines for end-of-life care documentation.[24] This structured and standardized questionnaire was specifically designed to explore individual preferences concerning end-of-life care, therapeutic choices, and personal attitudes toward critical issues such as organ donation, the refusal of therapeutic obstinacy, and funeral practices, in line with the provisions of Italian Law No. 219/2017.

The instrument collected sociodemographic information, including age, gender, and previous exposure to end-of-life care discussions. It also assessed students' knowledge regarding the legal and ethical aspects of AHDs, as well as their attitudes toward advance directives and communication with healthcare professionals. In addition, it explored personal preferences related to end-of-life decisions, such as willingness to donate organs and the choice between cremation and traditional burial.

The adoption of the VIDAS AHD module enabled a culturally sensitive, legally coherent, and methodologically standardized evaluation, ensuring the reliability of both pre- and post-intervention measurements. This approach provided a comprehensive understanding of the educational intervention's impact on students' awareness and attitudes toward end-of-life care planning. While the questionnaire was based on the VIDAS module and the official AHD template, no formal psychometric validation (e.g., reliability testing or factor analysis) was performed.

2.8. Statistical analysis

Descriptive statistics (e.g., mean, standard deviation, median, and interquartile range) were used to characterize the sample and summarize pre- and post-intervention responses. McNemar's test was applied to paired binary variables (e.g., willingness to donate organs and preference for life-sustaining treatments), and odds ratios were calculated to explore directional tendencies. Only participants who provided complete and valid responses for both the pre- and post-intervention phases were included in each pairwise comparison. Consequently, the number of observations analyzed with McNemar's test varied by item and was sometimes lower than the total sample size (n = 39), which ensured methodological rigor while preserving internal validity.

A consistency index (range: 0–7) was computed by summing the number of identical responses across seven dichotomous items administered pre- and post-intervention. Although not derived from a validated scale, the index was constructed based on item-level concordance, a method commonly employed in preference-sensitive research to describe decision stability. The index should be interpreted as an exploratory tool intended to describe trends in response stability rather than as a validated outcome measure.

Pearson's correlation coefficient was used to explore the association between consistency (index score) and age, as both were continuous variables. Gender was dummy-coded (0 = female, 1 = male) and included in the correlation

and regression models as an independent variable. However, it was excluded from the correlation analysis due to insufficient variability. To identify predictors of post-intervention willingness to donate organs, a binary logistic regression model was conducted, including age, gender, and consistency as independent variables.

Finally, thematic analysis of open-ended responses was performed, followed by frequency analysis and graphical visualization of thematic shifts. All analyses were conducted using R version 4.3.2 (R Core Team, Vienna, Austria). A two-tailed $p<0.05$ was considered statistically significant.

3. Results

3.1. Sample characteristics

A total of 39 3rd-year nursing students participated in this study, with a mean age of 22.4 ± 1.8 years, and 74.6% were female. All participants completed both the pre- and post-module questionnaires, yielding a fully paired dataset. The homogeneity of the academic level and the narrow age range helped control for extraneous variability, although the predominance of female respondents reflects the broader gender distribution typical within nursing cohorts. All data are presented in Tables S1-S6.

3.2. Advance disclosure of health status

Before the educational intervention, nearly all students (n = 36, 92.3%) reported feeling comfortable authorizing disclosure of their health status and life expectancy to their parents. This proportion decreased slightly to 34 (87.2%) after the module. In contrast, the willingness to share such information with siblings increased slightly from 31 (79.5%) to 32 (82.1%) students, while authorization for friends rose from 19 (48.7%) to 20 (51.3%) students. The most pronounced change occurred regarding participants' own children: initial willingness was 16 (41.0%) but decreased significantly to 8 (20.5%) post-intervention, suggesting that students reconsidered the ethical and emotional appropriateness of involving minors in end-of-life discussions. Authorization to inform partners remained largely unchanged, shifting from 27 (69.2%) to 26 (66.7%) participants.

3.3. Preferences for life-sustaining treatments in irreversible conditions

When asked about specific life-sustaining interventions in the context of an irreversible illness, students' responses remained remarkably consistent. Cardiopulmonary resuscitation was accepted by 14 students (35.9%) out of 39, both before and after the module. Mechanical ventilation showed a slight reduction in approval, from 12 (30.8%) student's pre-module to 11 (28.2%) post-module. Approval of artificial nutrition increased slightly from 14 (35.9%) students to 15 (38.5%), whereas acceptance of deep sedation increased from 29 (74.4%) students to 30 (76.9%). Preferences for dialysis remained unchanged (n = 11, 28.2%) at both time points, mirroring approval for emergency surgery (n = 13, 33.3%). Finally, support for blood transfusions increased from 12 (30.8%) students to 14 (35.9%), and antibiotic therapy rose from 16 (41.0%) students to 17 (43.6%). These marginal shifts underscore that, even after targeted palliative care education, core attitudes toward these critical treatments were largely stable. Preferences for cardiopulmonary resuscitation and dialysis demonstrated a non-significant increase after the intervention (odds ratio [OR] = 2.50 and 2.00, respectively), whereas palliative sedation remained unchanged (OR = 1.00). These findings may indicate a trend toward greater therapeutic openness, although this change was not statistically significant (Table 1).

3.4. Religious support and funeral arrangements

The module appeared to affect students' views on spiritual care and post-mortem planning. Before instruction, 5 (12.8%) participants opted against any religious assistance at the end of life. However, after completing the module, none (n = 0, 0%) chose "no religious assistance," indicating a unanimous openness to spiritual support. In parallel, the proportion selecting a religious funeral increased from 28 (71.8%) participants to 32 (82.1%), suggesting that the educational content may have highlighted the role of faith and tradition in holistic palliative care. In addition, the proportion choosing "other" types of assistance decreased slightly from 3 (7.7%) to 2 (5.1%), whereas non-response rates increased from 4 (10.3%) to 5 (12.8%). These shifts suggest not only a growing preference for formal religious rites but also a modest consolidation of opinions, with fewer participants opting for unspecified options.

3.5. Post-mortem dispositions

Students' post-mortem preferences also shifted to a limited extent. Support for organ donation for transplant remained nearly universal, declining only slightly from 37 participants (94.9%) before the module to 36 (92.3%) afterward (χ^2 [1 =1.778, p=0.182), indicating stable attitudes toward this option. Willingness to donate one's body for scientific purposes increased from 14 (35.9%) pre-module to 16 (41.0%) post-module, and preference for cremation increased from 18 (46.2%) to 21 (53.8%) (χ^2 [1 = 0.205, p=0.651). In contrast, the choice of inhumation remained unchanged, shifting from 10 (25.6%) before to 9 (23.1%).

These patterns suggest that the educational content may have influenced less familiar dispositions—particularly

Table 1. Preferences for life-sustaining treatments

Treatment	Odds ratio	*p*-value	Interpretation
Resuscitation	2.50	0.450	Slight post-intervention increase[a]
Dialysis	2.00	0.683	Non-significant variation[a]
Sedation	1.00	1.000	No change observed[a]

Notes: Odds ratio values indicate the likelihood of post-intervention endorsement relative to pre-intervention responses. [a]No statistically significant difference. Life-sustaining treatments were evaluated in the context of irreversible clinical conditions. Only items with a sufficient number of paired binary responses (pre/post) are included. Data are based on 3rd-year nursing students (n=39) who completed both assessments.

body donation and cremation—while attitudes toward organ donation and traditional burial remained largely unchanged. McNemar's test revealed no statistically significant changes in students' post-mortem decisions following the educational module: preferences for organ donation (p=0.248), body donation (p=1.000), cremation (p=1.000), and traditional burial (p=0.480) did not reach significance. Although some response trends shifted, no variable met the threshold for statistical significance (Table 2).

3.6. Consistency and predictive modeling

The consistency index ranged from 3 to 7, with most students showing a high level of decision stability. Pearson's correlation revealed a weak positive association between consistency and age (r = 0.23), suggesting that older participants may demonstrate more stable preferences. Gender was excluded from the analysis due to insufficient variability.

A binary logistic regression (Table 3) was conducted to predict willingness to donate organs post-intervention. Although no predictor reached statistical significance, higher consistency was associated with an increased likelihood of organ donation (β = 1.98, p=0.105), whereas age showed a mild negative trend (β = –0.0028, p=0.102), and gender did not contribute significantly (β = –0.134, p=0.811).

Thematic analysis of open-ended responses revealed recurring themes, including requests for "no resuscitation," preferences for "organ donation," and references to "spiritual needs." These responses reflect students' evolving ethical reflections and are illustrated through frequency graphs.

4. Discussion

The present study suggests that a targeted oncology palliative care module may meaningfully influence nursing students' knowledge and attitudes toward AHDs.

Table 2. Pre/post changes in post-mortem dispositions

Variable	Pre→post (b)	Post→pre (c)	*p*-value	Odds ratio
Organ donation	0	3	0.248	0.00
Body donation	3	3	1.000	1.00
Cremation	3	4	1.000	0.75
Burial	0	2	0.480	0.00

Notes: The number of observations included in each comparison is based only on participants with paired valid responses. This explains the variability in the total n across items. "b" indicates the number of participants who changed their response from "Yes" (pre) to "No" (post), whereas "c" denotes number of participants who changed their response from "No" (pre) to "Yes" (post).

Table 3. Logistic regression predicting organ donation post-intervention

Variable	Estimate (β)	Standard error	*z*-value	*p*-value
Intercept	–5.734	4.793	–1.196	0.232
Age	–0.0028	0.00174	–1.634	0.102
Consistency	+1.984	1.225	+1.620	0.105

Note: No statistically significant predictors at P=0.05. However, consistency showed a near-significant trend.

The observed increase in the preference to refuse non-beneficial treatments aligns with previous findings that activate learning strategies in enhancing self-efficacy.[18,25] By engaging students in case discussions and role-plays, the intervention appears to have strengthened their ability to support patient autonomy, a crucial mediator of clinical behavior.

Systematic evaluations further demonstrate that palliative care education not only improves immediate learning outcomes but also fosters long-term retention of competencies. For example, Gupta *et al.*[26] reported that Indian nurses who completed the End-of-Life Care Nursing Education Consortium program maintained significant gains in knowledge, attitudes, and practices up to 18 months post-training. Similarly, Hökkä *et al.*[27] found that pedagogical strategies—particularly interactive methods such as simulations and small-group discussions—were associated with sustained improvements among nursing and medical students. These findings suggest that integrating AHD content longitudinally throughout the nursing curriculum, rather than concentrating it in a single standalone module, could promote more enduring competence.

The slight decline in willingness to donate organs observed in this study (from 94.9% to 92.3%) diverges from previous research that reported stable or increased intent after organ-donation education.[28,29] One possible interpretation is that exposure to values-clarification

exercises, which emphasize both procedural knowledge and moral reasoning,[30] may have fostered deeper ethical reflection. Embedding structured discussions on the ethical complexities of organ donation could therefore be essential to balance factual instruction with personal and cultural exploration.

The module's emphasis on simulation and role-play likely contributed to students' increased awareness of communication needs regarding therapies and pain management. Previous research confirms that experiential learning promotes both practical skill acquisition and empathic engagement.[20] Future curricular initiatives could further enhance these outcomes by integrating high-fidelity simulations and standardized patient encounters to strengthen skills in navigating difficult conversations.

Interprofessional learning is increasingly recognized as a best practice in palliative care education, promoting collaboration and role clarity among future health-care teams.[31] Expanding educational modules to include joint sessions with medical, social work, and allied health students may foster more holistic, patient-centered approaches to end-of-life care.

The module's impact on students' spiritual perspectives also deserves attention. The unanimous shift away from "no religious assistance" reflects the importance of addressing cultural and spiritual diversity in palliative training. Studies have shown that spiritual beliefs and family dynamics strongly influence end-of-life decisions.[13,16] Incorporating multicultural case vignettes and discussions could better prepare students to honor each patient's unique worldview.

The thematic content of the free-text responses provided valuable insight into students' evolving views, particularly regarding dignity, autonomy, and spirituality. Even without statistical significance, these narratives enhance our understanding of how students internalize end-of-life concepts.

To move beyond attitudinal change, it is crucial to assess whether these educational interventions translate into measurable effects on clinical practice. Audit-and-feedback interventions have been shown to improve nursing compliance with documentation practices, with post-intervention rates exceeding 70% in several educational settings.[32-35] Embedding structured audits of AHD-related conversations during clinical placements, coupled with individualized feedback, could provide objective evidence linking student participation in such training to improvements in both the quality and frequency of end-of-life discussions.

Moreover, blended learning approaches—which combine asynchronous e-learning with face-to-face experiential activities—have demonstrated preliminary trends of superior effectiveness compared to traditional methods, with a standardized mean difference of 0.73 in knowledge outcomes.[36] Applying this model to AHD education could increase accessibility, reinforce key concepts through spaced learning, and optimize long-term retention as well as real-world application.

Integrating behavioral audit strategies alongside innovative blended delivery models could therefore enable nursing programs not only to foster attitudinal change but also to achieve measurable improvements in the quality of advance-care conversations, ultimately enhancing patient-centered care at the end of life.

An additional priority is fostering emotional resilience. Palliative care environments expose nurses to profound ethical and emotional challenges, and resilience skills are crucial for sustaining professional well-being. Rushton *et al.*[37] proposed a collaborative model for building moral resilience through structured debriefings and peer support. Embedding such reflective practices into palliative care education, especially after high-intensity simulations, may help students process difficult emotions, mitigate moral distress, and promote long-term professional sustainability.

Taken together, the findings support the strategic incorporation of AHD education within broader palliative care training, emphasizing active, reflective, and interprofessional methodologies to prepare nursing students for the complex realities of end-of-life care.

Although the open-ended responses yielded valuable insights into students' evolving perspectives, the qualitative analysis was intentionally kept descriptive rather than interpretive. Rather than applying a formal coding framework, the analysis focused on identifying the most frequent semantic patterns to capture emerging sentiments across the cohort. This approach allowed for an overview of key conceptual areas such as dignity, autonomy, and spirituality; however, it limited the interpretive depth typically afforded by more structured qualitative methodologies such as reflexive thematic analysis[38,39] or framework analysis.[40,41] In addition, the absence of triangulation and peer debriefing may have constrained the trustworthiness of the findings.[42-44] Future studies should therefore consider incorporating rigorous qualitative designs—including iterative coding, inter-rater reliability checks, and deeper contextual interpretation—to more fully explore the moral reasoning and emotional responses elicited by end-of-life training.

4.1. Limitations and future directions

This study presents several limitations that should be acknowledged. First, no data were collected on the disease

status or medical background of the participants' family members, which could have influenced students' emotional responses and preferences regarding end-of-life decisions. This represents a potential unmeasured confounding factor. While the homogeneity of the cohort (3rd-year nursing students from the same institution) ensured internal consistency, it also limited external validity, particularly in relation to diverse cultural or institutional contexts.

Second, the short-term nature of the assessment—conducted immediately before and after the educational intervention—precludes drawing conclusions regarding the long-term retention of knowledge or sustained changes in attitudes and behavior. Third, although the study included a thematic analysis of open-ended responses, it lacked in-depth qualitative data (e.g., interviews or focus groups) that could have provided richer insights into the students' emotional and ethical reasoning processes.

Furthermore, the study did not collect data on participants' ethnicity or geographic origin. While this reflects the relatively homogeneous composition of the nursing student cohort, it limits the analysis of cultural differences in perceptions of AHDs. The relatively small sample size also limited the statistical power of the study, and the absence of statistically significant findings may be attributable to this limitation. It is also important to note that no a priori power analysis was conducted to determine the minimum required sample size. Another limitation concerns the use of a non-validated instrument. Although grounded in national guidelines, the lack of psychometric evaluation could reduce the interpretability and generalizability of the findings.

Future research should address these limitations by employing multicenter randomized controlled trials with larger sample sizes and more diverse educational settings. Longitudinal follow-up studies are also warranted to assess the durability of attitudinal and behavioral changes over time, particularly during clinical placements or post-graduation. Moreover, incorporating qualitative methodologies, such as narrative interviews or focus groups, could provide deeper insights into the nuanced ways in which educational interventions shape students' moral development and communication strategies in end-of-life care.

4.2. Clinical and educational implications

The findings of this study have significant implications for both nursing education and clinical practice. Integrating AHD content longitudinally into nursing curricula, rather than confining it to isolated modules, is a key educational strategy. This approach supports the reinforcement of ethical principles, communication skills, and reflective competencies throughout the course of study, as supported by Dimoula *et al.*[18] and Muliira *et al.*[25]

The results also highlight the value of active learning strategies, such as case discussions, simulation, and role-play. These pedagogical methods have been shown to deepen understanding and foster empathy, particularly in emotionally complex contexts of end-of-life care.[20,27] By confronting students with complex scenarios, they help them develop confidence and relational competence when addressing sensitive issues such as therapeutic limitation and patient autonomy.

Shifts in students' views on spiritual and post-mortem preferences suggest the importance of providing culturally sensitive education that incorporates spiritual beliefs, personal values, and family dynamics as integral aspects of holistic palliative care. The literature confirms that cultural and spiritual factors profoundly influence end-of-life decisions.[13,16] Educational interventions that use intercultural case vignettes and facilitate structured ethical reflection may better prepare students to support patients from diverse backgrounds with cultural humility.

Another important implication is the need to integrate interprofessional education into palliative care training. Learning environments that bring together students of nursing, medicine, social work, and other allied health professions can enhance communication skills, clarify professional roles, and foster collaboration—key elements for delivering integrated and patient-centered care in multiple clinical settings.[31,45-49]

Finally, the emotional demands of palliative care call for strategies that promote emotional resilience and moral integrity among nursing students. Incorporating structured debriefings, peer support mechanisms, and guided ethical discussion, particularly after emotionally intense learning experiences, can help mitigate moral distress and prepare students for the psychological challenges of end-of-life care. As emphasized by Rushton *et al.*,[37] cultivating moral resilience is essential for sustaining compassionate and ethically grounded nursing practice over time.

5. Conclusion

This study suggests that a targeted oncology palliative care module may enhance nursing students' understanding and attitudes toward AHDs, although the observed changes were not statistically significant. Key outcomes included an increased preference for refusing non-beneficial treatments and heightened awareness of the need for improved communication regarding therapies and pain management. Although a slight decline in willingness to donate organs was observed—potentially reflecting

deeper ethical engagement—overall, the results indicate that structured, active-learning strategies may strengthen students' ability to support patient self-determination.

These results carry meaningful implications for the broader academic and professional nursing community. Educators and curriculum developers should consider integrating AHD content longitudinally within palliative care pathways, using interactive strategies such as simulation, case-based learning, and interprofessional collaboration. Institutions should also invest in training frameworks that address cultural and spiritual diversity, promote ethical reflection, and build emotional resilience among students facing the challenges of end-of-life care.

This study highlights the urgent need for further multicenter, longitudinal research to evaluate the long-term impact of AHD education on clinical practice and to explore how these educational interventions translate into real-world behaviors, such as documentation of patient preferences and the quality of end-of-life communication. By aligning educational innovation with empirical validation, the nursing profession can strengthen its role in safeguarding patient autonomy and dignity across care settings.

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Conflict of interest

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Ethics approval and consent to participate

The study received ethical approval from the Humanitas University Ethics Committee in Milan (Protocol CLI_RIC_14). All participants provided informed consent, and confidentiality was maintained in accordance with the Declaration of Helsinki. Data privacy and participant anonymity were strictly ensured throughout the research process.

Consent for publication

All participants provided written informed consent before enrollment in the study. No identifiable personal data or images were collected or published.

Availability of data

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

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