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Integrating Personalized Psychological Support With Death Education in Nursing Interventions for Elderly Terminal Cancer Patients: A Retrospective Study on Life and Death Perception

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Abstract

Aims/Background Terminal cancer patients face profound physical, psychological, and existential challenges. Traditional support often lacks comprehensive approaches to address the nuanced emotional needs of patients. This study evaluates the effectiveness of nursing interventions integrating death education with personalized psychological support—a combined approach designed to synergistically address existential distress—in reshaping life and death perceptions among terminal cancer patients.

Methods This retrospective cohort study analyzed 251 advanced cancer patients aged $\geq$60 years. Propensity score matching (1:1 ratio) balanced covariates, including age, gender, body mass index (BMI), education, employment status, clinical stage, cancer type, and comorbidities, yielding 212 matched patients (106 pairs). Based on the type of nursing care, patients were divided into a conventional care group (n = 106) and a combined care group (n = 106). The conventional care group received standard health education, while the combined care group received additional death education and psychological support. Baseline and post-intervention assessments were conducted using the Death Attitude Profile-Revised (DAP-R), Anticipatory Grief Scale, Distress Thermometer (DT), and the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30) for quality-of-life evaluation.

Results After the intervention, the combined care group showed significant improvements in grief sensation, anger sensation, religious comfort, and perceived social support ($p < 0.05$) compared to the conventional care group. DAP-R scores indicated an enhanced approach and natural acceptance, with a decrease in death fear and avoidance ($p < 0.05$). Distress levels declined significantly, as evidenced by DT scores ($p < 0.001$). Quality-of-life scores demonstrated improvements in physical, role, emotional, and social functions ($p < 0.05$).

Conclusion Integrating death education in nursing interventions effectively reshapes outlooks on life and death for terminal cancer patients. These interventions correlate with reduced negative emotional responses and improvements in quality-of-life metrics, suggesting their potential utility in palliative care settings.

Key words: terminal cancer; hospice care; attitude to death; palliative care; aged

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Introduction

The diagnosis of terminal cancer is a profoundly challenging phase in a patient's life, often resulting in a complex interplay of physical, psychological, and existential crises (Wisesrith et al, 2021; Luna-Meza et al, 2021). As the disease progresses, patients experience a confrontation with their mortality, and traditional support systems may prove inadequate in addressing their nuanced emotional and psychological needs (Lei et al, 2022b). Terminal cancer patients cope with the profound impact of their prognosis, and reshaping their perspective on life and death becomes a crucial focus of end-of-life care. In recent years, the integration of death education into nursing interventions has garnered increasing attention as a potential approach to help patients navigate the complex psychological landscape of end-of-life transitions (Karaca and Ercan Sahin, 2025; Chua and Shorey, 2021; Chu and Jang, 2021).

Death education, a key component of palliative care, involves structured interventions aimed at helping patients understand and accept death as an intrinsic part of life. By addressing existential anxieties and fostering a comprehensive understanding of death, these educational interventions help patients reshape their experiences, enhancing their quality of life and emotional well-being. Drawn from existential psychology, death education posits that recognizing the inevitability of mortality can lead to a more meaningful and fulfilling life, free from the burden of existential dread (Wang et al, 2024; Su et al, 2023; Park et al, 2023).

Despite the theoretical promise of death education, empirical evidence substantiating its effectiveness in the context of terminal illness remains limited. Existing literature predominantly focuses on the psychological responses of patients to terminal diagnoses, with limited emphasis on structured educational interventions specifically tailored to reshape attitudes toward death (Valentine et al, 2022; Jiang, 2023). This gap highlights the need for further investigation into the impact of death education-based nursing interventions on terminal cancer patients' perspectives on life and death. Furthermore, the role of personalized psychological support, personalized to the unique cognitive and emotional needs of individual patients, has yet to be fully elucidated in these interventions.

The current retrospective study investigates the impact of a structured nursing intervention that integrates death education as a foundation for providing personalized psychological support, specifically examining how this combined approach facilitates terminal cancer patients to reshape their perspectives on life and death.

Methods

Case Selection

This retrospective cohort study initially enrolled 251 patients with advanced cancer admitted to the Fourth Hospital of Hebei Medical University between January 2023 and January 2024. To address potential selection bias, propensity score matching (PSM) was performed in a 1:1 ratio using nearest-neighbor matching with a caliper width of 0.2 standard deviations of the logit propensity score. Matching covariates included age, gender, body mass index (BMI), education level, employment status, marital status, current residence, lifestyle factors (smoking and alcohol use), comorbidities (hypertension/diabetes), clinical stage, and cancer type. After matching, 212 patients (106 pairs) were retained for analysis. Demographic and clinical data were retrieved from electronic medical records. Since this retrospective study utilized de-identified patient data, there was no potential risk to patient safety, and the requirement for informed consent was exempted. The study received approval from the Ethics Committee of the Fourth Hospital of Hebei Medical University (Ethics Approval Number: No. 2024KS141), adhering to regulatory and ethical standards, and following the guidelines of the Declaration of Helsinki. A flowchart of research design is shown in Fig. 1.

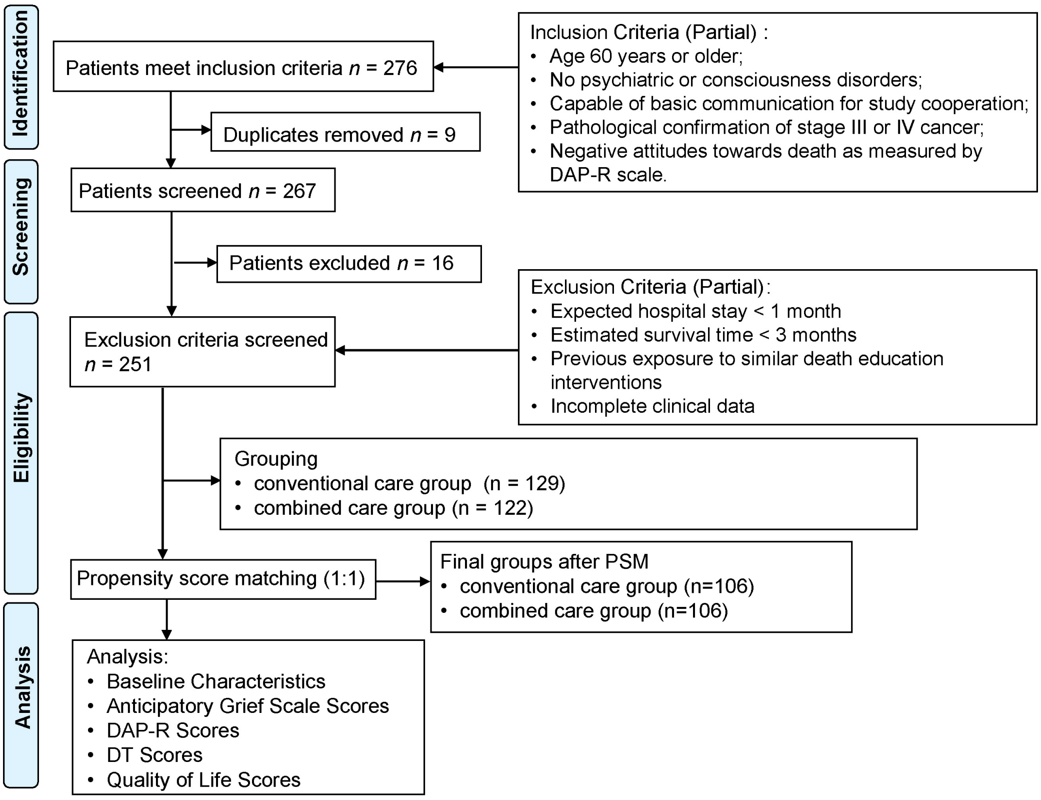

Fig. 1. A flowchart of research design. The flowchart was created using Microsoft PowerPoint (version 2021, Microsoft Corporation, Redmond, WA, USA). DAP-R, Death Attitude Profile-Revised; PSM, propensity score matching; DT, Distress Thermometer.

Inclusion and Exclusion Criteria

The inclusion criteria for patient selection were as follows: (1) participants were required to be 60 years or older, free from psychiatric or cognitive disorders, and able to communicate to cooperate with the study; (2) pathological confirmed stage III or IV cancer patients (van der Willik et al, 2020); (3) those with negative attitudes towards death, defined by a score ≥40 on the Death Attitude Profile-Revised (DAP-R) scale, specifically in the dimensions of death fear and death avoidance. Higher scores in these dimensions reflect increased fear and avoidance of death, indicating a negative attitude towards it (Wong et al, 2015).

Exclusion criteria included: (1) an expected hospital stay of less than one month; (2) an estimated survival time of less than three months; (3) prior exposure to similar death education interventions before the commencement of the study; (4)

incomplete clinical data; (5) recent (within the past 3 months) use of psychotropic medications (e.g., antidepressants, anxiolytics) or participation in psychotherapy/counseling, that could confound psychological assessments; and (6) patients with severe comorbidities (e.g., advanced heart failure, chronic kidney disease stage IV/V, or active psychiatric disorders such as schizophrenia or bipolar disorder) that might independently affect quality of life or psychological outcomes.

Grouping Standards and Treatment Methods

Study participants were categorized into two groups based on the type of nursing care documented in their medical records during their hospital stay (January 2023–January 2024). The conventional care group (n = 129) received standard protocols, while the combined care group (n = 122) received additional death education and personalized psychological support as part of an institutional pilot program. Group assignment was non-randomized and followed natural clinical practices, prompting the use of PSM in a 1:1 ratio to balance covariates and minimize selection bias. After matching, a total of 212 patients (106 pairs) were included in the final analysis.

Conventional Care Group

Patients in the conventional care group received standard health education as follows:

- Patients were provided with comprehensive information about the type, stage, and prognosis of their disease.
- They were thoroughly briefed about the available treatment modalities, including chemotherapy, radiation therapy, and surgical options.
- They were guided on coping mechanisms, including stress management techniques, relaxation exercises, and general psychological support provided by the healthcare team.
- Patients were regularly monitored and followed up by oncologists and nurses to determine disease progression and manage side effects of treatments.

Combined Care Group

The combined care group received an enhanced program that integrated comprehensive, personalized psychological support based on death education, specifically tailored to meet the individual needs of each patient. This program included the following steps:

- Advanced death education sessions: Led by experts, these sessions included essential knowledge about tumors and a deeper assessment of the psychological changes experienced by both patients and their families. Palliative care concepts and definitions of death were specially emphasized, tailored to individual patient needs.
- Tailored health education: Nurses provided highly customized guidance, suggestions, and explanations based on each patient's unique circumstances. Educational materials, such as brochures and visual aids, were distributed among patients to help them better understand and accept the final stages of life.

• Exchange meetings and peer education: Exchange meetings were organized in a warm, safe, and comfortable environment, allowing patients to share experiences. Furthermore, psychological responses to cancer were evaluated in three phases: emotional shock, searching and withdrawal, and acceptance and tranquility. Based on these assessments, individual analyses were conducted, and educational materials were distributed accordingly. Methods such as guidance, inspiration, suggestion, encouragement, and case explanation were applied to educate patients. Public media campaigns, including television (TV), bulletin boards, expert lectures, and discussions within the "Cancer Home" patient association, further supported this educational method (Zhang et al, 2024).

Intervention Duration

Both groups received interventions over a four-week period to provide consistent support throughout the study. To ensure standardization and consistency across all sessions, facilitators underwent comprehensive training, which included role-playing scenarios, case studies, and discussions on best practices in death education and psychological support.

Data Collection

(1) Baseline data collection: Demographic information was collected from the medical records for all enrolled patients.

(2) Anticipatory Grief Scale: This scale assessed anticipatory grief in terminal cancer patients both before and after the intervention. It consists of seven dimensions across a total of 31 items: self-awareness (3 items), illness adjustment (2 items), grief sensation (12 items), anger sensation (4 items), religious comfort (3 items), physical symptoms (4 items), and perceived social support (3 items). A 4-point Likert scale, ranging from "disagree" (0 points) to "agree" (3 points), was used to rate each item, resulting in a total possible score range from 0 to 93 points. Higher scores indicate a more severe anticipatory grief. The scale demonstrates strong reliability, with a Cronbach's alpha coefficient of 0.919 for the overall scale and coefficients ranging from 0.533 to 0.926 for the individual dimensions (Theut et al, 1991).

(3) Death Attitude Profile-Revised (DAP-R): The validated DAP-R scale was utilized to evaluate patients' attitudes toward death before and after the intervention. This 32-item scale is rated on a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree", and covers five dimensions:

• Approach acceptance (10 items): Higher scores suggest viewing death as a transition to a better existence.

• Natural acceptance (5 items): This dimension reflects an acceptance of death as both natural and peaceful.

• Escape acceptance (5 items): Higher scores indicate reduced fear of death and reframing it as relief.

• Death fear (7 items): This dimension measures the level of fear associated with death.

- Death avoidance (5 items): Higher scores demonstrate a tendency to avoid discussions and topics related to death.

The DAP-R provides a comprehensive assessment of participants' attitudes toward death, capturing nuanced changes in their psychological perspectives (Wong et al, 2015).

(4) Distress Thermometer (DT): Psychological distress was evaluated utilizing the validated DT both before and after the intervention to measure the level of distress experienced by patients. The DT uses a linear scale ranging from 0 to 10, with 0 representing "No Distress" and 10 indicating "Extreme Distress" (Zwahlen et al, 2008).

(5) Quality of life: The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30) was utilized to assess patients' quality-of-life both before and after the intervention. The QLQ-C30 evaluates five domains: physical function, role function, cognitive function, emotional function, and social function, using fifteen items. Each item was rated on a 4-point scale from 1 to 4. The raw score (RS) for each item was calculated by summing the scores of the included items and dividing by the number of items in that domain. To ensure comparability across items, the RS was linearly transformed into a standard score (SS) ranging from 0 to 100 using the following formula: $SS = [1 - (RS - 1) / R] \times 100$, where R represents the full range of possible scores for that domain or item. Higher scores indicate better quality of life. The validity and reliability of this questionnaire have been well established (Chie et al, 2004).

The selection of assessment tools was guided by their validated ability to capture distinct yet complementary dimensions of psychological and existential distress, anticipatory grief, and quality of life in terminal cancer patients. The DAP-R was chosen to evaluate multidimensional attitudes toward death (e.g., fear, avoidance, acceptance), aligning directly with the study's objective of assessing changes in life and death perceptions. The DT provides a rapid, validated measure of psychological distress severity, enabling quantification of intervention effects on acute emotional burden. The Anticipatory Grief Scale was selected for its specificity in measuring grief-related emotions (e.g., anger, social isolation) unique to terminal illness, while the EORTC QLQ-C30 was included to comprehensively assess functional and symptomatic aspects of quality of life. Collectively, these instruments address the study's dual focus on existential and emotional outcomes and improvements in quality of life.

Data for all scales (Anticipatory Grief Scale, DAP-R, DT, QLQ-C30) were retrospectively extracted from electronic medical records. Following institutional protocol, these scales were routinely administered by oncology nurses during standard palliative care assessments. The records were reviewed by the clinical research coordinators with at least 3 years of experience in psychosocial oncology, using predefined scoring criteria. All scales were validated instruments with established scoring guidelines, and no additional rater training was conducted for this retrospective analysis.

Statistical Analysis

Data analysis was performed using SPSS 29.0 (IBM Corp., Armonk, NY, USA) and R version 4.3.1 (R Foundation for Statistical Computing, Vienna, Austria). Continuous variables were expressed as mean ± standard deviation. Between-group comparisons were performed using independent sample *t*-tests, while within-group changes over time were assessed using paired sample *t*-tests. Normality of continuous variables was assessed using the Shapiro-Wilk test, with a p-value $>$ 0.05 indicating approximate normality. Categorical variables were reported as frequencies (%) and compared using the chi-square.

For the propensity score-matched cohort, PSM was performed using age, sex, BMI, education level, employment status, marital status, current residence, lifestyle factors (smoking status, alcohol use), comorbidities, clinical stage, and cancer type. Covariate balance was rigorously assessed using standardized differences, with a threshold of $<$0.1 indicating acceptable balance. Mixed-effects models, adjusted for baseline scores, age, sex, and clinical severity, were employed to account for repeated measures and residual confounding. These models were used to assess between-group differences in psychological outcomes (DAP-R, Anticipatory Grief Scale, and DT) and quality of life (EORTC QLQ-C30). Sensitivity analyses included multiple imputations for missing data ($<$5%) and bootstrapping to confirm model stability. Statistical significance was set at a two-tailed p-value of $<$0.05.

Results

Comparison of Baseline Characteristics Between the Two Groups Before Propensity Score Matching

Before propensity score matching, statistically significant differences were observed between the conventional care group (n = 129) and the combined care group (n = 122) regarding age ($p < 0.001$), employment status ($p = 0.023$), and clinical stage distribution ($p = 0.049$). However, no substantial differences were found in other baseline characteristics, including gender, body mass index, education level, marital status, residence, lifestyle factors, comorbidities, and cancer type ($p > 0.05$ for all). These imbalances prompted the use of propensity score matching to mitigate potential confounding effects. Comparison of baseline characteristics between the two groups is detailed in Table 1.

Comparison of Baseline Characteristics Between the Two Groups After Propensity Score Matching

As shown in Table 2, covariate balance was successfully achieved post-matching, with standardized differences for all variables $<$0.1, indicating acceptable balance. Following propensity score matching (1:1 ratio), 106 pairs of patients were successfully matched. Post-matching analyses revealed no significant differences in age ($p = 0.939$), employment status ($p = 0.887$), or clinical stage distribution ($p = 0.890$). These findings suggest that factors (age, employment status, clinical stage) demonstrating significant differences before matching no longer influenced the study outcomes after matching. Post-matching analyses revealed balanced base-

Table 1. Comparison of baseline characteristics between the conventional care and combined care groups before propensity score matching.

Parameters	Conventional care group (n = 129)	Combined care group (n = 122)	t/χ^2	*p*-value
Age (years)	69.53 ± 4.23	71.48 ± 4.19	3.681	<0.001
Gender (male/female)	72/57	71/51	0.145	0.703
Body mass index (kg/m^2)	22.47 ± 3.58	23.21 ± 3.54	1.638	0.103
Education level [n (%)]			0.038	0.981
- Primary or below	29 (22.48%)	27 (22.13%)		
- Secondary school	64 (49.61%)	62 (50.82%)		
- College or above	36 (27.91%)	33 (27.05%)		
Employment status [n (%)]			5.132	0.023
- Employed	62 (48.06%)	76 (62.30%)		
- Unemployed	67 (51.94%)	46 (37.70%)		
Marital status [n (%)]			0.183	0.980
- Married	105 (81.40%)	99 (81.15%)		
- Single	11 (8.53%)	10 (8.20%)		
- Divorced	7 (5.43%)	6 (4.92%)		
- Widowed	6 (4.65%)	7 (5.74%)		
Current residence [n (%)]			0.128	0.721
- Urban	69 (53.49%)	68 (55.74%)		
- Rural	60 (46.51%)	54 (44.26%)		
History of alcohol consumption [n (%)]	48 (37.21%)	45 (36.89%)	0.003	0.958
History of smoking [n (%)]	56 (43.41%)	52 (42.62%)	0.016	0.900
Hypertension [n (%)]	35 (27.13%)	36 (29.51%)	0.175	0.676
Diabetes [n (%)]	22 (17.05%)	21 (17.21%)	0.001	0.973
Clinical stage [n (%)]			3.868	0.049
- III	71 (55.04%)	52 (42.62%)		
- IV	58 (44.96%)	70 (57.38%)		
Cancer type [n (%)]			0.142	1.000
- Esophageal cancer	17 (13.18%)	16 (13.11%)		
- Nasopharyngeal cancer	11 (8.53%)	10 (8.20%)		
- Colorectal cancer	18 (13.95%)	17 (13.93%)		
- Breast cancer	17 (13.18%)	16 (13.11%)		
- Liver cancer	13 (10.08%)	12 (9.84%)		
- Gastric cancer	14 (10.85%)	13 (10.66%)		
- Oral cancer	10 (7.75%)	9 (7.38%)		
- Lung cancer	17 (13.18%)	16 (13.11%)		
- Bile duct cancer	12 (9.30%)	13 (10.66%)		

line characteristics across groups, with no statistically significant differences in any covariates (all $p > 0.05$), suggesting effective mitigation of selection bias.

Comparison of Anticipatory Grief Scale Scores Between the Two Groups

Table 3 shows a comprehensive comparison of Anticipatory Grief Scale scores between the conventional care group and the combined care group, both before and

Table 2. Comparison of baseline characteristics between the two groups after propensity score matching.

Parameters	Conventional care group (n = 106)	Combined care group (n = 106)	t/χ^2	*p*-value
Age (years)	69.18 ± 4.07	69.22 ± 4.11	0.076	0.939
Gender (male/female)	67/39	65/41	0.080	0.777
Body mass index (kg/m^2)	23.22 ± 3.69	23.39 ± 3.72	0.329	0.743
Education level [n (%)]			0.076	0.963
- Primary or below	23 (21.70%)	24 (22.64%)		
- Secondary school	53 (50.00%)	51 (48.11%)		
- College or above	30 (28.30%)	31 (29.25%)		
Employment status [n (%)]			0.020	0.887
- Employed	66 (62.26%)	67 (63.21%)		
- Unemployed	40 (37.74%)	39 (36.79%)		
Marital status [n (%)]			0.240	0.971
- Married	87 (82.08%)	86 (81.13%)		
- Single	7 (6.60%)	8 (7.55%)		
- Divorced	6 (5.66%)	7 (6.60%)		
- Widowed	6 (5.66%)	5 (4.72%)		
Current residence [n (%)]			0.019	0.890
- Urban	58 (54.72%)	59 (55.66%)		
- Rural	48 (45.28%)	47 (44.34%)		
History of alcohol consumption [n (%)]	40 (37.74%)	41 (38.68%)	0.020	0.888
History of smoking [n (%)]	47 (44.34%)	48 (45.28%)	0.019	0.890
Hypertension [n (%)]	31 (29.25%)	32 (30.19%)	0.023	0.881
Diabetes [n (%)]	19 (17.92%)	18 (16.98%)	0.033	0.856
Clinical stage [n (%)]			0.019	0.890
- III	48 (45.28%)	47 (44.34%)		
- IV	58 (54.72%)	59 (55.66%)		
Cancer type [n (%)]			0.346	1.000
- Esophageal cancer	13 (12.26%)	12 (11.32%)		
- Nasopharyngeal cancer	9 (8.49%)	9 (8.49%)		
- Colorectal cancer	17 (16.04%)	16 (15.09%)		
- Breast cancer	13 (12.26%)	14 (13.21%)		
- Liver cancer	12 (11.32%)	11 (10.38%)		
- Gastric cancer	10 (9.43%)	11 (10.38%)		
- Oral cancer	7 (6.60%)	8 (7.55%)		
- Lung cancer	14 (13.21%)	13 (12.26%)		
- Bile duct cancer	11 (10.38%)	12 (11.32%)		

after the intervention. Initially, no significant differences were observed between the groups in self-awareness ($p = 0.797$), illness adjustment ($p = 0.667$), grief sensation ($p = 0.942$), anger sensation ($p = 0.810$), religious comfort ($p = 0.809$), physical symptoms ($p = 0.784$), perceived social support ($p = 0.848$), or total anticipatory grief score ($p = 0.780$), indicating similar baseline levels of anticipatory grief across these domains. Post-intervention, significant improvements were found in

Table 3. Comparison of Anticipatory Grief Scale scores between the two groups before and after intervention.

Parameters	Time	Conventional care group (n = 106)	Combined care group (n = 106)	t	p-value
Self-awareness	Before	7.19 ± 1.42	7.14 ± 1.38	0.257	0.797
	After	6.82 ± 1.41	6.54 ± 1.35**	1.481	0.140
Illness adjustment	Before	3.24 ± 0.87	3.29 ± 0.84	0.432	0.667
	After	3.10 ± 0.86	2.89 ± 0.89***	1.744	0.083
Grief sensation	Before	24.68 ± 5.64	24.74 ± 5.59	0.073	0.942
	After	23.58 ± 5.60	21.32 ± 4.78***	3.156	0.002
Anger sensation	Before	9.13 ± 1.36	9.18 ± 1.31	0.240	0.810
	After	8.78 ± 1.64	7.26 ± 1.87***	6.261	<0.001
Religious comfort	Before	6.35 ± 1.17	6.39 ± 1.13	0.242	0.809
	After	6.32 ± 1.26	6.68 ± 1.14	2.16	0.032
Physical symptoms	Before	9.54 ± 1.15	9.58 ± 1.11	0.274	0.784
	After	8.91 ± 1.44***	8.54 ± 1.53***	1.805	0.073
Perceived social support	Before	6.89 ± 1.07	6.92 ± 1.04	0.192	0.848
	After	6.86 ± 0.96	7.24 ± 0.87*	3.008	0.003
Total score	Before	66.92 ± 8.21	67.24 ± 8.15	0.280	0.780
	After	64.37 ± 8.42*	60.57 ± 8.03***	3.356	<0.001

Note: *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$. Superscript symbols indicate comparisons within groups (after intervention vs. before intervention).

the combined care group compared to the conventional care group, particularly in grief sensation ($p = 0.002$) and anger sensation ($p < 0.001$). Additionally, the combined care group showed significant increases in religious comfort ($p = 0.032$), perceived social support ($p = 0.003$), and the total anticipatory grief score ($p < 0.001$). Although illness adjustment and physical symptoms exhibited a trend towards improvement, these did not reach statistical significance (illness adjustment: $p = 0.083$; physical symptoms: $p = 0.073$). Within-group comparisons indicated significant post-intervention improvements in the combined care group across multiple domains, as denoted by asterisks (*: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$). These findings suggest that the nursing interventions incorporating death education and personalized psychological support effectively reduced anticipatory grief and improved emotional well-being among terminal cancer patients. The results underscore the potential of such tailored interventions in enhancing patients' coping capabilities and overall quality of life by fostering emotional stability and stronger social connections.

Comparison of DAP-R Scores Between the Two Groups

Table 4 presents the comparison of DAP-R scores between the conventional care group and the combined care group before and after the intervention. There were no significant differences observed between the groups in approach acceptance ($p = 0.923$), natural acceptance ($p = 0.910$), escape acceptance ($p = 0.932$), death fear ($p = 0.891$), or death avoidance ($p = 0.927$), indicating comparable

Table 4. Comparison of DAP-R scores between the two groups before and after intervention.

Parameters	Time	Conventional care group (n = 106)	Combined care group (n = 106)	t	p-value
Approach acceptance	Before	22.35 ± 4.58	22.41 ± 4.62	0.097	0.923
	After	24.41 ± 4.31***	25.72 ± 4.17***	2.244	0.026
Natural acceptance	Before	16.78 ± 3.84	16.84 ± 3.89	0.113	0.910
	After	17.82 ± 2.86*	18.81 ± 2.54***	2.682	0.008
Escape acceptance	Before	10.27 ± 3.21	10.31 ± 3.19	0.085	0.932
	After	11.39 ± 3.22*	12.07 ± 2.98***	1.600	0.111
Death fear	Before	18.45 ± 3.12	18.51 ± 3.08	0.138	0.891
	After	18.51 ± 5.10	16.23 ± 4.67***	3.396	<0.001
Death avoidance	Before	13.21 ± 4.05	13.26 ± 4.01	0.092	0.927
	After	11.26 ± 4.02***	10.15 ± 3.76***	2.073	0.039

Note: *: $p < 0.05$; ***: $p < 0.001$. Superscript symbols indicate comparisons within groups (after intervention vs. before intervention).

baseline attitudes towards death. Post-intervention, significant improvements were found in the combined care group compared to the conventional care group, particularly in approach acceptance ($p = 0.026$) and natural acceptance ($p = 0.008$), as well as a significant reduction in death fear ($p < 0.001$) and death avoidance ($p = 0.039$). While escape acceptance, which reflects viewing death as relief from suffering, was statistically insignificant ($p = 0.111$), the upward trend in this dimension suggests that some patients may have perceived death as an escape from terminal distress. Within-group comparisons indicated significant post-intervention improvements in the combined care group across multiple domains. These findings underscore the effectiveness of nursing interventions that incorporate death education in enhancing positive attitudes towards death and reducing negative emotional responses among terminal cancer patients.

Comparison of DT Scores Between the Two Groups

Before the intervention, DT scores were similar between the groups, with the conventional care group scoring 5.84 ± 1.73 and the combined care group scoring 5.89 ± 1.71 ($p = 0.834$), indicating comparable distress levels at baseline (Table 5). Following the intervention, there was a significant reduction in DT scores in the combined care group, decreasing to 4.12 ± 1.58, compared to 5.23 ± 1.67 in the conventional care group ($p < 0.001$). This significant reduction in distress levels in the combined care group underscores the effectiveness of nursing interventions incorporating death education in alleviating psychological distress among terminal cancer patients.

Comparison of Quality-of-Life Scores Between the Two Groups

The comparison of quality-of-life scores between the conventional care group and the combined care group before and after the intervention is detailed in Table 6. Prior to the intervention, no significant differences were observed between the two groups in physical function ($p = 0.882$), role function ($p = 0.880$), cognitive function

Table 5. Comparison of DT scores between the two groups before and after intervention.

Parameters	Time	Conventional care group (n = 106)	Combined care group (n = 106)	t	p-value
DT scores	Before	5.84 ± 1.73	5.89 ± 1.71	0.21	0.834
	After	5.23 ± 1.67**	4.12 ± 1.58***	4.938	<0.001

Note: **: $p < 0.01$; ***: $p < 0.001$. Superscript symbols indicate comparisons within groups (after intervention vs. before intervention).

Table 6. Comparison of quality-of-life scores between the two groups before and after intervention.

Parameters	Time	Conventional care group (n = 106)	Combined care group (n = 106)	t	p-value
Physical function	Before	68.35 ± 6.47	68.49 ± 7.38	0.149	0.882
	After	70.12 ± 8.67	72.45 ± 8.13***	2.021	0.045
Role function	Before	63.41 ± 7.82	63.57 ± 6.76	0.151	0.880
	After	66.23 ± 7.78**	68.62 ± 7.89***	2.217	0.028
Cognitive function	Before	72.12 ± 7.64	72.28 ± 7.57	0.156	0.876
	After	73.45 ± 7.56	75.21 ± 6.67**	1.793	0.074
Emotional function	Before	65.78 ± 8.32	65.84 ± 8.28	0.051	0.960
	After	68.56 ± 8.12*	72.45 ± 8.32***	3.444	<0.001
Social function	Before	67.21 ± 8.95	67.34 ± 8.79	0.100	0.921
	After	69.45 ± 6.87*	72.21 ± 6.12***	3.090	0.002

Note: *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$. Superscript symbols indicate comparisons within groups (after intervention vs. before intervention).

($p = 0.876$), emotional function ($p = 0.960$), or social function ($p = 0.921$), indicating similar baseline conditions. Post-intervention, significant improvements were noted in the combined care group compared to the conventional care group in physical function ($p = 0.045$), role function ($p = 0.028$), and social function ($p = 0.002$). Although cognitive function demonstrated a trend towards improvement, it did not reach statistical significance ($p = 0.074$). However, the most pronounced difference was observed in emotional function ($p < 0.001$), with the combined care group exhibiting substantial enhancement. Within-group comparisons indicated significant post-intervention improvements across all measured domains in the combined care group, reflecting the positive impact of nursing interventions that incorporate death education on various aspects of patients' quality of life.

Discussion

This retrospective study investigates the impact of nursing interventions that incorporate death education and personalized psychological support on reshaping the outlook on life and death in terminal cancer patients.

The crux of this study lies in the paradigm shift through death education, which plays a critical role in helping terminal cancer patients reconcile with their mortality.

The improvement in grief and anger sensation scores in the combined care group suggests that death education supports a healthier processing of these emotional responses to terminal diagnoses. By understanding death as a natural and intrinsic part of the life cycle, patients are able to move through the stages of grief more smoothly, achieving greater emotional peace and acceptance (Davis and Dukart-Harrington, 2023; Zhang et al, 2024). The structured sessions, which provide fundamental knowledge about tumors, anticipated psychological changes, and palliative care concepts, appear to offer patients a sense of control and understanding, mitigating the feelings of helplessness and anger that often accompany a terminal diagnosis (Feldstain, 2024; Lei et al, 2022a).

The observed enhancement in religious comfort and perceived social support in the combined care group can be partly attributed to the focus on personalized psychological support that integrates spiritual awareness into coping approaches. Terminal cancer not only challenges physical endurance but also deeply affects spiritual and existential beliefs. By incorporating discussions on spiritual values and beliefs regarding life and death, the educational sessions offered greater religious comfort, providing patients a spiritual anchor—an essential buffer against the existential distress associated with terminal illness (Phan et al, 2020). Additionally, the tailored psychological support and peer exchange meetings were crucial in establishing robust social support networks, vital for emotional resilience. These interactions, particularly with peers facing similar challenges, likely cultivated a strong sense of community and mutual understanding, promoting positive social and emotional outcomes (Xie et al, 2025; Bridgeman et al, 2024).

The elevated scores in the approach and natural acceptance dimensions of the DAP-R scale highlight the efficacy of these interventions in reshaping patients' perspectives on death. These changes can be interpreted through the lens of existential psychology, which suggests that recognizing and integrating the reality of death into one's worldview can reduce existential fear and avoidance. The death education interventions enabled patients to perceive death not as an ominous end but as a continuation of existence, thereby reducing the intense fear and avoidance often associated with it. The reduction in death fear and avoidance may result from a demystification process, whereby death's inevitability is placed within a broader, more meaningful narrative of life. This narrative was reinforced through educational materials and guided discussions that framed death as a natural and even positive progression, extending beyond its biological finality (Testoni et al, 2021a; Ramos-Pla et al, 2023; Phan et al, 2024).

The reduction in psychological distress, as indicated by a decrease in DT scores, supports the idea that informed acceptance and reduced existential distress contribute to enhanced psychological well-being. By addressing misconceptions and anxieties about death, the interventions likely alleviated distress, allowing patients to focus their remaining energy on meaningful activities and relationships. This reduction in distress reflects a shift from a fear-driven end-of-life experience to one characterized by a sense of closure and peace, underscoring the therapeutic significance of conscientious, multifaceted end-of-life care strategies (Yang et al, 2024; Wu et al, 2023).

Improvements across various facets of quality of life further affirm the efficacy of personalized interventions. Enhanced physical and role functions suggest improved daily living capabilities and the fulfillment of personal roles, which likely correlate with the emotional stability facilitated through death education. The substantial improvement in emotional function underscores how targeted psychological support and education can promote mental peace, which positively influences overall well-being. The significant improvement observed in social function may result from strengthened interpersonal relationships and community ties developed during exchange meetings and peer support frameworks. These interactions were pivotal in reshaping the social dynamics of end-of-life care, emphasizing connection, empathy, and mutual support, which were key elements for maintaining psychosocial health in terminal settings (Testoni et al, 2023; Li et al, 2023).

While the study provides compelling evidence supporting the clinical application of death education interventions, it is crucial to interpret these results within the broader societal and cultural contexts that shape attitudes toward death. For instance, cultural beliefs and values surrounding death and dying profoundly influence individuals' receptivity to death education and support. Tailoring educational interventions to respect and integrate these cultural nuances is essential to maximizing acceptance and efficacy. Furthermore, the impact of family dynamics and health care systems on facilitating or hindering open discussions about death cannot be underestimated. Encouraging more inclusive and open dialogues about end-of-life care within families and clinical practice can lay the foundation for the broader implementation of such comprehensive educational programs. Moreover, the potential psychological burden on health professionals administering death education must be acknowledged. Training and supporting these caregivers to handle the emotional challenges of providing death education are imperative to prevent burnout and ensure the delivery of compassionate, high-quality care (Testoni et al, 2021b; Murnane et al, 2023).

Despite the promising findings, this study has several limitations that should be acknowledged. Firstly, the retrospective design limits the ability to establish causal inferences, and potential biases may arise from the use of historical data. Moreover, while the self-reported measures used in this study are validated, they may introduce response biases and do not incorporate objective clinical observations or perspectives of caregivers and family members. Future studies should combine patient-reported outcomes with observational data and input from caregivers or family members to enhance the robustness and comprehensiveness of findings. Additionally, the single-center design limits the generalizability of the findings to broader populations, particularly those in diverse healthcare systems or cultural contexts. Caution should be exercised when extrapolating these results to other settings until they are validated through multicenter studies.

The relatively short study period (one year) limits the ability to assess the long-term stability of the observed improvements in psychological outcomes and quality of life. Future research should extend follow-up periods to evaluate the sustainability of the intervention's effects. Furthermore, the lack of randomization in assigning patients to the intervention or conventional care groups may introduce selection bias, which could potentially influence the outcomes. While the study adjusted various demographic and clinical variables, unmeasured confounders, such as individual coping styles and pre-existing mental health conditions, may have affected the observed effects of the interventions. Finally, practical considerations for implementing this intervention in broader clinical settings—such as resource allocation, staff training, and cultural adaptability—were not explicitly addressed. Future studies should explore cost-effectiveness, scalability, and strategies for mitigating potential logistical barriers in diverse environments.

Conclusion

In conclusion, the positive outcomes observed in this study highlight the significance of incorporating personalized death education into nursing care strategies for patients with terminal cancer. The association between these interventions and the shift in perceptions of death—from fear-laden to peaceful acceptance—highlights their potential to improve well-being and quality of life for individuals at the end of life. Future research should focus on exploring the long-term effects of these interventions and their applicability across diverse cultural settings, facilitating broader implementation and enhancing care paradigms in palliative contexts. Further refinement and adaptation of these interventions may help healthcare systems better meet the nuanced needs of terminal patients, supporting them in navigating the final stages of life with dignity and peace.

Key Points

- Integrated interventions that combine death education with personalized psychological support significantly reduced negative emotional responses, such as grief and anger, while also enhancing perceived social support among elderly terminal cancer patients.
- Patients in the combined care group demonstrated improved attitudes toward death, including increased acceptance of death as a natural part of life, alongside a reduction in fear and avoidance of death.
- Psychological distress, as measured by the Distress Thermometer (DT), substantially decreased in the intervention group, indicating enhanced emotional stability and a better quality of life.
- The study highlights the critical role of structured death education within palliative care frameworks, helping to address existential distress and fostering a more dignified end-of-life experience.
- For broader implementation, cultural adaptability and systemic support for healthcare providers are essential to effectively scale these interventions across diverse clinical settings and sociocultural contexts.

Availability of Data and Materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions

LLW and SYZ designed the research study. LLW, JYL and SYZ performed the research. SYZ analyzed the data. LLW drafted the manuscript. All authors contributed to revising the manuscript critically for important intellectual content. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

This study was approved by the Ethics Committee of the Fourth Hospital of Hebei Medical University (Ethics Approval Number: No. 2024KS141), adhering to applicable regulatory and ethical standards, and following the ethical guidelines of the Declaration of Helsinki. Since this retrospective study utilized de-identified patient data, there was no potential risk to patient safety, and the requirement for informed consent was exempted.

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Conflict of Interest

The authors declare no conflict of interest.

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