Latent class analysis of death coping ability among palliative care nurses and its association with their emotional labor

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Abstract

Objective Death coping ability is a critical professional skill for palliative care nurses. This study aimed to identify subgroups of death coping ability among Chinese palliative care nurses based on their assessments using the Death Coping Ability Scale, and to analyze the relationship between these subgroups and their emotional labor.

Method Convenient sampling was employed to survey 868 palliative care nurses from medical institutions in Beijing, Jiangsu Province, Anhui Province, and Hunan Province. Data was collected using a general information questionnaire, the Chinese version of the Death Coping Ability Scale, and the Emotional Labor Scale. Latent profile analysis was conducted to categorize the nurses' death coping abilities, and differences in emotional labor among these categories were compared.

Results The death coping ability of palliative care nurses was categorized into three groups: "low death coping ability group" (11.5%), "medium death coping ability group" (52.0%), and "high death coping ability group" (36.5%). Factors influencing these categories included specialization in palliative care, opportunities for interaction with the bereaved, participation in grief counseling training, and personal bereavement experiences, all statistically significant ($p < 0.05$). Notably, there were significant differences in emotional labor scores among the three groups ($F = 33.006$, $p < 0.001$).

Conclusions The death coping ability of palliative care nurses can be classified into three distinct categories, each associated with different levels of emotional labor. Nursing managers should recognize these differences and implement targeted, personalized interventions to enhance the death coping abilities of palliative care nurses.

Keywords Palliative care, Nurse, Death coping ability, Emotional labor, Latent category analysis

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Introduction

With the increasing prevalence of an aging population and a rising annual mortality rate, palliative care has emerged as a critical modality for enhancing the quality of life for patients in end-stage conditions [1]. Palliative care provides comprehensive physical, psychological, spiritual and social care for dying patients with life-limiting illness [2]. This holistic approach not only helps patients with life-limiting illness ends with death comfortably, peacefully, and with dignity but also improves the quality of life, reduces medical costs, and optimizes the utilization of medical resources [3].

As the main practitioners of palliative care, nurses play a vital role in supporting communication among doctors, patients and families. They serve as coordinators within multidisciplinary care teams, and their comprehensive caregiving capacities significantly influence the quality of palliative services. In hospice units, nurses, as primary caregivers for terminally ill patients, and they inevitably face the patient's impending deaths and are tasked with managing all aspects related to end-of-life care [4]. The ability of nurses to effectively navigate these emotionally challenging events significantly impact the quality of care provided. Coping with death is a critical measure of nurses' overall capacity to handle end-of-life situations and represents a fundamental professional skill for hospice nurses [5].

The concept of 'death coping ability' refers to the capacity and skills to manage one's own or another's death, incorporating relevant attitudes and beliefs [6]. It involves strategies employed by individuals to mitigate stress when confronted with death. This comprehensive ability to handle death events is an indispensable professional skill for palliative care nurses and an important indicator of their overall competency [7]. Due to the nature of their work, palliative nurses inevitably face death events, which can pose significant challenges, especially for those with limited experience and preparation. Previous studies have indicated that in palliative care practice, nurses may experience a range of emotions distress, including calm acceptance, overwhelming emotional distress, such as fear of death, and sadness, which can lead to depression following the death of patients [8–9]. When regulating emotions, palliative care nurses expend considerable emotional labor, managing their emotional expressions and interactions with patients. Emotional labor involves adjusting and expressing emotions according to professional role requirements, empathizing genuinely with patients, and addressing negative emotions with a rational and professional attitude [10]. The strategies of emotional labor mainly include surface acting, deep acting and the expression of natural emotions. Surface acting involves passively repressing one's true emotions to display expressions that conform to

norms, without altering the inner emotions [11]. Deep acting, on the other hand, involves actively regulating and transforming one's internal emotional experience to align both internal and external emotions with the norms [12]. Natural emotional expression refers to employees expressing their genuine emotions at work, unaffected by the organization's emotional rules [13]. The process of emotional labor goes beyond merely regulating emotions; it also involves understanding and conceptualizing death [14]. Nurses with varying levels of death coping ability may exhibit different outcomes in managing death events, potentially leading to differences in their levels of emotional labor. However, current research primarily focuses on one of these aspects [15], with minimal information on the relationship between death coping ability and emotional labor [16]. To address this gap, we conducted this cross-sectional survey.

Several factors correlate with a high ability to cope with death among palliative care nurses, including age, educational background, attitudes toward death, palliative experience, and personal bereavement experiences [17]. The research underscores a significant association between palliative experience and the ability to manage death effectively [18]. Nurses with extensive palliative care experience generally exhibit a more robust ability to cope with death, likely due to their enhanced understanding of death and familiarity with effective coping strategies, enabling them to accept and manage death events more calmly [19]. Additionally, research has indicated that attitudes toward death are predictors of death coping ability; a negative attitude may affect the level of death coping ability [20]. Conversely, nurses with limited palliative experience or those new to the field often demonstrate a reduced ability to cope with death [21]. This may be attributed to traditional Chinese cultural perspectives that view death as a taboo, fostering negative emotional responses such as avoidance and fear [22]. This cultural influence can lead to inadequate preparation for handling palliative-related matters, including death, thereby hampering nurses' emotional regulation. Previous studies have found that death coping ability is positively correlated with care performance and tends to increase with age and accumulated palliative care experience [23, 24]. Such experiences enrich nurses' perceptions and reflections on life, which in turn enhances their emotional regulation and ability to cope with death events effectively [25].

Prior study on the ability to cope with death primarily assessed the level of research tools available, failing to classify and refine the group characteristics related to the death coping ability of palliative care nurses [25]. The capacity to manage death encompasses the ability to navigate death-related occurrences, such as communicating with family members, providing grief counseling,

effectively managing emotional distress stemming from death-related events, and maintaining emotional equilibrium in end-of-life care [7]. In addressing traumatic events related to death, palliative care nurses regulate their own emotions in accordance with organizational guidelines on emotional expression, thereby engaging in emotional labor [26]. Some scholars have noted that nurses exhibit varying emotional reactions and styles of emotional expression when dealing with death-related events based on their levels of coping ability [5]. However, existing studies have yet to elucidate the relationship between coping ability for death and emotional labor. This study aimed to analyze the relationship between subgroups of death coping ability and emotional labor. Emotional labor is a significant aspect of palliative care nursing, involving the regulation of emotions to meet professional standards. By understanding how different levels of death coping ability influence emotional labor, the study seeks to identify ways to better support nurses in managing their emotions effectively. The ability of nurses to cope with death and manage their emotional responses impacts the quality of care they provide. Analyzing this relationship can lead to the development of strategies to enhance both coping mechanisms and emotional labor, ultimately improving patient care outcomes. While previous studies have focused on either death coping ability or emotional labor independently, there is a lack of research examining the relationship between these two aspects. This study aims to fill this gap by using latent class analysis to categorize death coping abilities and explore their association with emotional labor among palliative care nurses. The findings from this analysis will provide insights into the emotional labor processes and inform targeted interventions to enhance the death coping abilities and emotional well-being of palliative care nurses.

To address this gap, this study employed latent class analysis (LCA) to identify different potential categories of death coping ability among palliative nurses and to explore the correlation between these categories and emotional labor. This approach is potentially beneficial for nursing managers to better understand the emotional labor process that palliative nurses undergo when coping with death events.

LCA is a person-centered statistical method designed to reveal hidden clusters within data by considering correlations between variables [27]. It categorizes individuals marked by multiple variables into mutually exclusive groups, ensuring minimal variation of observed variables within each category while maximizing the differences between categories. Currently, LCA is widely utilized to explore the heterogeneity within nurse groups. In this study, LCA was used to delineate the characteristics of different categories of palliative nurses' death coping

abilities and to investigate their relationship with emotional labor. This analysis can inform the development of targeted educational and training strategies, ultimately enhancing the quality of palliative care services.

Methods

Design, participants, and setting

This multicenter, cross-sectional study was conducted through an online survey from July to October 2023, in collaboration with the Jiangsu Nursing Association. It targeted palliative care nurses across medical facilities in four provinces in China. Convenience sampling was employed to recruit participants. The inclusion criteria were: (1) possession of a valid nursing license and current registration as a nurse; (2) a minimum of six months of experience in a palliative care ward or oncology department; and (3) provision of informed consent and voluntary agreement to participate in the research. Exclusion criteria included: (1) nurses who were currently receiving standardized training or were engaged in routine practice; (2) nurses who were unable to participate due to external study, advanced training, or vacation leave.

The survey was conducted using an electronic questionnaire developed with Questionnaire Star and distributed online. The objective and importance of the survey were clearly articulated in the title of the questionnaire to ensure the respondents were well-informed. To ensure the reliability and accuracy of the responses, several measures were implemented: (1) completion of all questions was compulsory to prevent omissions; (2) each respondent was restricted to one questionnaire submission to prevent multiple entries; (3) two researchers rigorously screened the responses to exclude any questionnaires that contained logical errors, patterned answers, incomplete fields, or were completed in less than five minutes. Out of 930 palliative nurses initially invited, 868 provided valid responses after data cleansing, yielding an effective response rate of 93.3%.

Instruments

The online questionnaire is composed of three sections: basic demographic and professional data, the Chinese version of the Death Coping Ability Scale, and the Emotional Labor Scale.

The Chinese version of the death coping ability scale

The Death Coping Ability Scale, developed by American scholar Bugen in 1980, is the first instrument designed to assess an individual's capacity to cope with death [28–29]. The Chinese version of the death coping ability scale was introduced and translated by Tseng Huantang [30]. Previous studies have confirmed that the scale has good reliability and validity [31]. The scale consists of 30 items across eight dimensions: self-acceptance of death, ability

to cope with death, ability to perceive and express oneself about death, ability to deal with the aftermath of death, ability to perceive life, ability to manage loss, ability to discuss other's death and ability to discuss one's own death. It employs a Likert 7-point scoring system, where scores range from 1 (least ability) to 7 (greatest ability), with a total possible score ranging from 30 to 210. The higher the score on the scale, the greater the individual's coping ability. Scores below 105 are classified as low level, scores between 105 and 157 are classified as medium level, and scores above 157 are classified as high level [32]. The Cronbach's alpha coefficient of the scale is 0.92.

Emotional labor scale

This scale was developed by scholar Grandey in 2003 and later adapted into a Chinese version by Luo Hong [33–34]. Previous research using this scale has reported satisfactory reliability coefficients ranging from 0.711 to 0.872 [15]. The scale includes three dimensions: surface acting (7 items), deep acting (3 items), and emotion display (4 items). It uses a Likert 6-point scoring method, with scores ranging from 1 to 6, and a total score ranging from 14 to 84. A higher score indicates a higher level of emotional labor. The Cronbach's alpha coefficients for the scale's dimensions range from 0.71 to 0.87. Emotional labor levels are categorized based on the average score per item: low level (≤ 1), slightly below average (>1 to ≤ 2), average (>2 to ≤ 4), slightly above average (>4 to ≤ 5), and high level (>5).

Ethical considerations

This study received ethical approval from the First Affiliated Hospital of Nanjing Medical University (approval number: 2022-SR-732). All participants provided their informed consent electronically prior to participating. The consent form was displayed on the first page of the survey, with options "Yes" and "No." Only those who selected "Yes" proceeded to the questionnaire. Participants were also free to withdraw from the study at any point.

Data analysis

Latent class analysis was conducted using Mplus 7.0 [35]. The primary model fit indices include the Log likelihood (LL) test and informational criteria such as the Akaike

Information Criterion (AIC), Bayesian Information Criterion (BIC), sample-size adjusted BIC (aBIC), and the Entropy index. The likelihood ratio tests, Lo-Mendell-Rubin (LMR) and the Bootstrap Likelihood Ratio Test (BLRT), were also utilized. Lower values of LL, AIC, BIC, and aBIC indicate a better model fit, while an Entropy index close to 1.0 suggests better predictiveness. An Entropy index approximately equal to 0.8 indicates that the accuracy of classification exceeds 90%. If the p-values for the LMR and BLRT are significant, it indicates that a model with k classes is significantly better than a model with k-1 classes. Data analysis was performed using SPSS 26.0 [36], employing the chi-square test for between-group comparisons and multinomial logistic regression for multifactorial analysis, with a significance level of $\alpha = 0.05$.

Results

Latent class analysis results of palliative care nurses' death coping ability

Table 1 shows the model fit indices of the latent profile analysis of palliative care nurses' death coping ability potential categories. As the number of categories increased, the Log Likelihood (LL), Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and adjusted BIC (aBIC) gradually decreased, with a notable reduction in the rate of decline after three categories. The Entropy index, indicative of classification accuracy, remained above 0.80 for 2–4 categories, peaking at three categories. The Lo-Mendell-Rubin (LMR) test suggested that three categories were preferable to two, with no significant improvement when expanding to four categories. Categories with probabilities below 8% in models with four and five categories were deemed non-representative. Thus, three categories were selected. Based on the scores in eight dimensions—acceptance of death, handling of dying, expression of death-related thoughts, funeral handling, life conservation, coping with loss, discussing others' deaths, and discussing one's own death—Group C1 was labeled "Low Death Coping Ability Group" (11.5%), Croup C2 as "Medium Death Coping Ability Group" (52.0%), and Croup C3 as "High Death Coping Ability Group" (36.5%). Conditional probability graphs for each category across these dimensions are presented in Fig. 1.

Table 1 The fitting indexes of each model of potential categories of palliative care nurses' death coping ability

Category	LL	AIC	BIC	aBIC	Entropy	LMR(*p*)	BLRT(*p*)	Classified probability
1	-11751.773	23535.547	23611.806	23560.994				
2	-10321.417	20692.834	20811.989	20732.595	0.872	< 0.001	< 0.001	0.493/0.507
3	-9733.945	19535.890	19697.941	19589.965	0.920	0.010	< 0.001	0.115/0.520/0.365
4	-9430.022	18946.044	19150.991	19014.433	0.899	0.317	< 0.001	0.073/0.412/0.391/0.124
5	-9250.594	18605.188	18853.030	18687.891	0.885	0.020	< 0.001	0.055/0.248/0.325/0.260/0.112

Note LL (Log likelihood), AIC (Akaike Information Criterion); BIC (Bayesian information criterion); LMR (Lo-Mendell-Rubin); BLRT (bootstrapped likelihood ratio test)
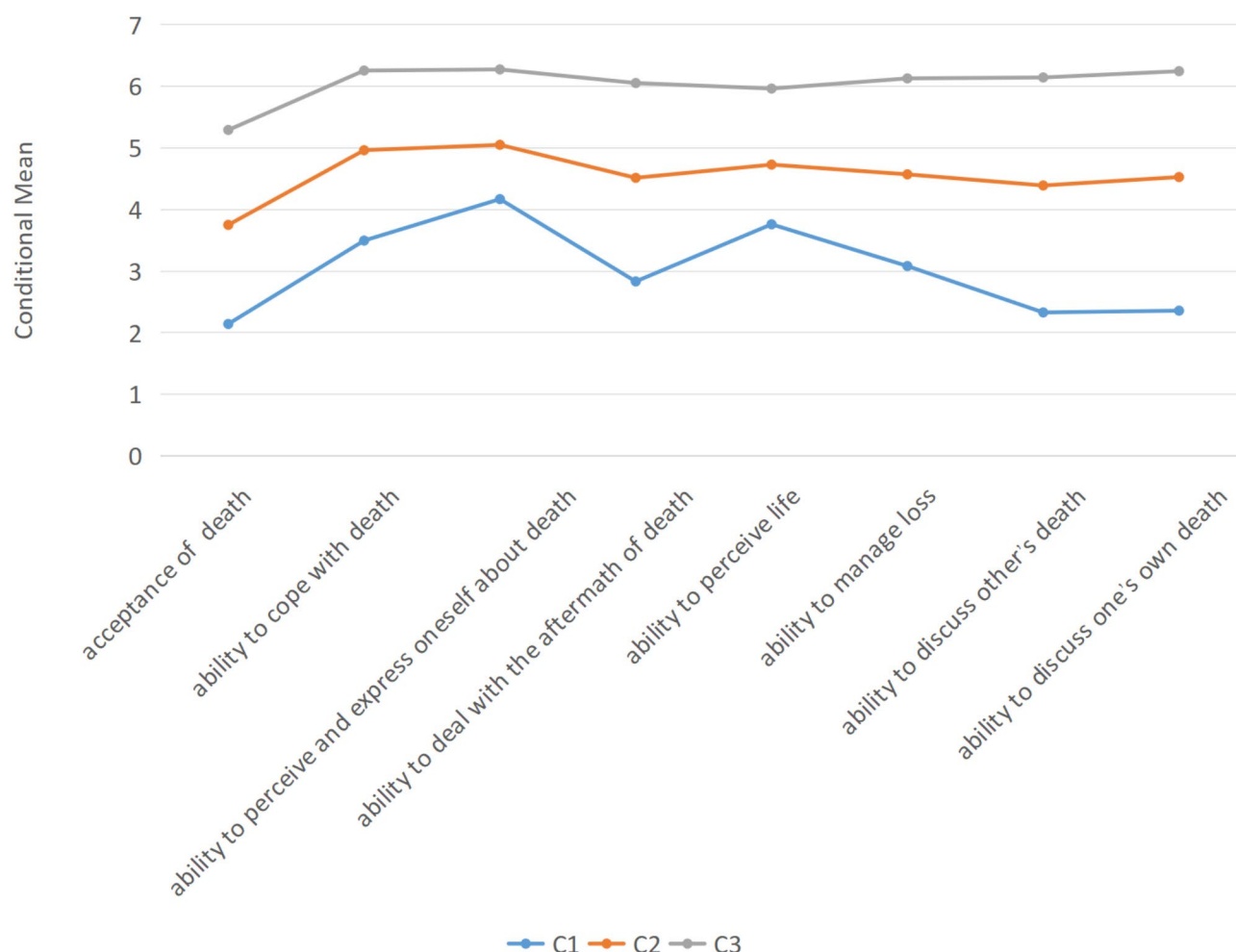
Fig. 1 Latent Profile Diagram of Death Coping Ability

General information distribution among palliative care nurses' death coping ability categories

An analysis of single-factor variables, including years of palliative experience, professional title, specialization in palliative care nursing, palliative care training course attendance, opportunities to interact with the bereaved, participation in grief counseling training courses, and personal bereavement experiences, revealed significant statistical differences ($p < 0.05$). Detailed data can be found in Table 2.

Multivariate logistic regression analysis of influencing factors on death coping ability

The multivariate logistic regression analysis utilized a stepwise variable selection method to examine the factors influencing palliative care nurses' death coping ability. Independent variables selected from significant results in single-factor analyses included nursing experience, professional title, tenure in palliative care, specialization in palliative care nursing, interaction with bereaved individuals, participation in grief counseling training, and

personal bereavement experiences. The model employed criteria of $\alpha \leq 0.05$ for inclusion and $\alpha \geq 0.10$ for exclusion. The analysis found that specialization in palliative care nursing, frequency of interactions with bereaved individuals, participation in grief counseling programs, and personal bereavement experiences significantly influenced the nurses' death coping strategies ($p < 0.05$). For detailed information on the influencing factors and their statistical significance, refer to Table 3.

Comparison of emotional labor among different categories of death coping ability

There were statistically significant differences in surface acting, emotional display, and deep acting among different categories of death coping ability potential categories ($p < 0.001$). Multiple comparisons revealed that the scores for total emotional labor and its three dimensions were higher in Group C3 than in Group C2. See Table 4.

Table 2 The characteristics of potential categories of coping ability to death

Characteristic	C1	C2	C3	χ^2/F	P
Gender, No. (%)				1.370	0.504
Male	1 (1.0)	0 (0.2)	2 (0.6)		
Female	101 (99.0)	450 (99.8)	313 (99.4)		
Marital status, No. (%)				3.926	0.140
Single or divorced	29 (28.4)	135 (29.9)	74 (23.5)		
Married	73 (71.6)	316 (70.1)	241 (76.5)		
Hospital classification, No. (%)				5.607	0.231
Tertiary hospital	65 (63.7)	305 (67.6)	227 (72.1)		
Secondary hospital	23 (22.5)	75 (16.6)	53 (16.8)		
Other	14 (13.7)	71 (15.7)	35 (11.1)		
Years of clinical experience, median (IQR), years	9 (6, 13)	10 (5.75, 15)	11 (6, 17)	4.867	0.088
Years of hospice experience median (IQR), years	4 (2, 6)	3 (1, 5)	3 (2, 5)	2.121	0.038
Education level, No. (%)				4.313	0.116
College and below	20 (19.6)	86 (19.1)	43 (13.7)		
Bachelor degree or above	82 (80.4)	365 (80.9)	272 (86.3)		
Professional title, No. (%)				10.344	0.035
Junior RN	56 (54.9)	245 (54.3)	153 (48.6)		
Middle RN	42 (41.2)	158 (35.0)	116 (36.8)		
Senior RN	4 (3.9)	48 (10.6)	46 (14.6)		
Professional position, No. (%)				1.937	0.380
Staff nurse	86 (84.3)	371 (82.3)	249 (79.0)		
Charge Nurse or Nurse manager	16 (15.7)	80 (17.7)	66 (21.0)		
Palliative Care Nursing Specialist, No. (%)				5.982	0.050
Yes	3 (2.9)	58 (12.9)	26 (8.3)		
No	99 (97.1)	393 (87.1)	289 (91.7)		
Palliative Care Training Course Attendance, No. (%)				3.863	0.145
Yes	52 (51.0)	254 (56.3)	193 (61.3)		
No	50 (49.0)	197 (43.7)	122 (38.7)		
Opportunities to interact with the bereaved (per month), No. (%)				162	< 0.001
≥ 10 times	13 (12.7)	137 (30.4)	141 (44.8)		
5–10 times	16 (15.7)	62 (13.7)	56 (17.8)		
< 5 times	73 (71.6)	252 (55.9)	118 (37.5)		
Participate in grief counseling training course, No. (%)				24.154	< 0.001
Yes	20 (19.6)	166 (36.8)	146 (46.3)		
No	82 (80.4)	285 (63.2)	169 (53.7)		
Personal Bereavement Experience, No. (%)				22.008	< 0.001
Yes	33 (32.4)	195 (43.2)	177 (56.2)		
No	69 (67.6)	256 (56.8)	138 (43.8)		

Note C1 = Low Death Coping Ability Group, C2 = Medium Death Coping Ability Group, C3 = High Death Coping Ability Group

Discussion

This study identified three latent categories of death coping abilities among palliative care nurses through latent class analysis, revealing significant intergroup heterogeneity. Over half of the nurses fall into the medium death coping ability group, aligning with findings by Wang et al. [37], which suggests that most palliative care nurses have a medium to high level of death coping abilities.

The latent profile analysis reveals that nurses in Croup C1 score lower across all eight dimensions of death coping ability, with particularly low scores in death acceptance and discussing death. This finding suggested that palliative care education support system in China

exhibits numerous deficiencies, including inadequate communication with terminal patients and insufficient emotional coping mechanisms [38]. These challenges create barriers for nurses struggling with patient deaths. A study revealed that over half of healthcare workers in China reported feeling physically and emotionally drained when faced with patients' suffering or mortality, leading to potential psychological distress and impacting their willingness to participate in palliative care initiatives [39]. Less experienced nurses often lack the skills to manage dying processes, increasing their anxiety and reluctance to work in end-of-life care [40]. This reluctance may be reinforced by traditional Chinese beliefs link

Table 3 Multivariable logistic regression analysis of potential factors affecting death coping ability ($n = 868$)

Model	Variable	B	SE	Wald	df	P	OR	95%CI Lower	95%CI Upper
C2	Intercept	1.026	0.315	10.617	1	0.001			
	Palliative Care Specialist Nurse	1.221	0.616	3.935	1	0.047	3.391	1.015	11.331
	Non-Palliative Care Specialist Nurse								
	Has Attended Grief Counseling Training	0.555	0.279	3.96	1	0.047	1.742	1.008	3.008
	Has Not Attended Grief Counseling Training								
	Frequent Contact with the Bereaved	0.805	0.412	3.822	1	0.051	2.236	0.998	5.012
	Less Contact with the Bereaved	-0.054	0.321	0.028	1	0.866	0.947	0.505	1.779
	Average Contact with the Bereaved								
	Has Bereavement Experience	0.252	0.246	1.047	1	0.306	1.286	0.794	2.083
	No Bereavement Experience								
C3	Intercept	0.683	0.325	4.414	1	0.036			
	Palliative Care Specialist Nurse	0.407	0.641	0.403	1	0.525	1.503	0.428	5.281
	Non-Palliative Care Specialist Nurse								
	Has Attended Grief Counseling Training	0.962	0.288	11.139	1	0.001	2.616	1.487	4.602
	Has Not Attended Grief Counseling Training								
	Frequent Contact with the Bereaved	0.842	0.415	4.117	1	0.042	2.321	1.029	5.235
	Less Contact with the Bereaved	-0.665	0.333	3.982	1	0.046	0.514	0.267	0.988
	Average Contact with the Bereaved								
	Has Bereavement Experience	0.594	0.257	5.324	1	0.021	1.811	1.094	2.999
	No Bereavement Experience								

Note C1 = Low Death Coping Ability Group, C2 = Medium Death Coping Ability Group, C3 = High Death Coping Ability Group. C1 was used as the reference group

Table 4 Testing differences in emotional labor by potential categories of death coping ability ($n = 868$)

Group	N	Surface Acting	Emotion Display	Deep Acting	Total Score
C1	102	3.11 ± 1.10	3.09 ± 1.21	4.01 ± 1.42	3.30 ± 1.04
C2	451	3.50 ± 0.85	3.52 ± 0.99	4.48 ± 0.84	3.71 ± 0.67
C3	315	3.78 ± 1.40	3.85 ± 1.45	5.06 ± 0.88	4.08 ± 1.11
F		15.655	16.950	60.391	33.006
P		<0.001	<0.001	<0.001	<0.001
LSD		Low < Moderate < High	Low < Moderate < High	Low < Moderate < High	Low < Moderate < High

Note C1 = Low Death Coping Ability Group, C2 = Medium Death Coping Ability Group, C3 = High Death Coping Ability Group

death with misfortune, reinforcing emotional restraint in death-related situations. Nurses raised in this cultural context may suppress emotions and avoid death discussions, as open grief and death-related conversations are often discouraged both personally and professionally. As a result, they may internalize these taboos, making it harder to process emotions and provide effective end-of-life care. The hierarchical healthcare system also limits junior nurses' opportunities to express emotions or seek guidance from senior colleagues, further reinforcing emotional suppression and avoidance [41].

However, their higher scores in expressing thoughts about death suggest that patient deaths encourage reflection on life and mortality. Yet, their limited cognitive understanding and coping skills make handling death difficult. To help nurses overcome cultural stigma, palliative care education should integrate culturally relevant approaches that align with traditional Chinese values. For example, seminars on Confucian and Buddhist views of death could provide a culturally acceptable framework for discussing mortality, reducing emotional avoidance, and fostering more empathetic care [42]. Additionally, palliative care training modules should be integrated into nursing education to improve their ability to manage terminal illnesses.

Nurses in C2 Group score lower in death acceptance, funeral handling, and discussing death, showing a tendency to avoid these topics. This reluctance is influenced by cultural norms that view death as inauspicious, making end-of-life discussions uncomfortable [41]. Despite efforts to promote life and death education, deeply ingrained beliefs continue to shape nurses' emotional responses and coping strategies [45]. Social and institutional barriers further limit nurses' ability to engage in death-related conversations. Chinese cultural expectations discourage open discussions about mortality, especially in professional settings where maintaining composure is expected [18]. Additionally, healthcare institutions hesitate to integrate structured death education, partly due to resistance from patients and medical staff. In China, families play a key role in medical decisions and often shield terminally ill patients from discussions about their prognosis. This practice may reinforce nurses' reluctance to discuss death for fear of violating cultural norms. To address these challenges, medical institutions should provide culturally sensitive training

that gradually introduces death-related discussions in a supportive environment. Interactive workshops, including simulated patient interactions and self-reflection exercises, can help nurses manage emotions and build confidence [43]. Additionally, case-based learning, documentary screenings, and guided discussions can normalize death conversations. These interventions can enhance nurses' emotional resilience and communication skills, ultimately improving palliative care quality [44].

Nurses in C3 Group demonstrate strong coping skills across various dimensions, but their lower scores in death acceptance suggest that, while they can effectively regulate emotions and apply professional strategies, their intrinsic understanding of death remains somewhat limited. This limitation may stem from China's traditional medical culture, which prioritizes curing diseases and saving lives, rather than accepting death as a natural process. Within this framework, healthcare professionals are trained to focus on active treatment measures, making it more difficult for them to mentally embrace the inevitability of death. Even experienced nurses who frequently encounter end-of-life situations may still struggle emotionally with the finality of a patient's passing. Additionally, hospital performance metrics focus on survival rates, reinforcing the idea that success means prolonging life [1]. This can lead to feelings of failure or helplessness when a patient dies, even in appropriate palliative care cases. As a result, nurses in this group may be skilled at managing death but still face psychological barriers in fully accepting it. To address this, palliative care training should include discussions on the meaning of life and death, incorporating Confucian, Buddhist, and Taoist perspectives to help nurses view death as a natural cycle. Hospitals should also shift evaluation criteria from survival rates to patient quality of life, encouraging a more open approach to death. These changes can help nurses balance professional competence with emotional acceptance, leading to more compassionate and stable end-of-life care [45].

Factors influencing death coping ability

Nurses specialized in palliative care demonstrated a higher capability to cope with death (OR = 1.503), consistent with related research [46]. One plausible explanation is that in China, palliative care specialists are subjected to comprehensive, structured training programs and must clear a stringent certification procedure to earn their qualifications. These programs not only broaden knowledge but also develop cognitive frameworks and problem-solving skills, enabling these specialists to adeptly handle death-related scenarios. In contrast to their general nursing counterparts, palliative care specialists demonstrate superior learning abilities and insights, possessing a profound comprehension of their field and

the capacity to swiftly and effectively translate theoretical knowledge into practical applications in clinical settings. In this study, palliative care nurses who had more frequent interactions with the bereaved exhibited higher levels of death coping capabilities (OR = 2.321), which aligns with the findings of related research [47]. This may be attributed to the fact that frequent encounters with the bereaved help these nurses to accept and recognize death as an integral part of life's completeness, enabling them to address death-related events with a proactive and positive attitude. Further research has indicated that regular engagement with the bereaved and involvement in the care of terminally ill patients enhances capabilities in aspects such as articulating thoughts on death and reflecting on life, which are critical components of death coping skills [48]. The extensive experience accumulated through practical exposure also fosters a substantial sense of self-efficacy, supporting their ability to manage death-related situations effectively. Grief counseling equips nurses with strategies to handle their emotions effectively, such as understanding and managing sorrow, anger, guilt, and helplessness which commonly arise following patient deaths. This emotional management is crucial for maintaining professionalism and providing high-quality care. Furthermore, it's noted that engaging in physical activities, mindfulness, and hobbies are part of effective self-care strategies that help nurses cope with the emotional toll of their duties [49]. Additionally, nurses with personal bereavement experiences also showed higher levels of death coping abilities (OR = 1.811), aligning with findings from related research [10]. This may be because nurses who have experienced the loss of a loved one understand the process of death events more profoundly. They possess a deeper comprehension of the meaning of life and death, are better able to empathize with grieving families, and can adopt coping strategies to handle death-related situations calmly and competently.

Emotional labor among palliative care nurses based on their death coping abilities

Emotional labor involves three types of labor strategies: surface acting, emotional display, and deep acting, representing a form of non-material labor [50]. This study explores the variations in total scores and individual dimensions of emotional labor among palliative care nurses, categorized by their different latent death coping abilities. The results indicate that there are differences in emotional labor scores across various categories of death coping abilities among palliative care nurses. Especially, stronger death coping abilities correlate with higher levels of emotional labor, a relationship that had not been addressed in prior research. This suggests that nurses who are better equipped to handle death are also

more engaged in emotional labor, potentially indicating a deeper commitment to their roles, which involves managing personal emotions to meet the job requirements effectively.

In this study, Group C3 showed an overall emotional labor score of 4.08 (SD = 1.11). Within this group, the scores for surface acting were 3.78 (SD = 1.40), deep acting scored the highest at 5.06 (SD = 0.88), and emotional display were 3.85 (SD = 1.45). Across all dimensions and the total score, Group C3 consistently outperformed Groups C2 and C1. In palliative care, nurses engaging with terminally ill patients need to invest significant emotional effort to recognize the psychological and emotional needs of their patients, inevitably leading to emotional labor [14]. The highest scores in the deep acting dimension indicate that palliative care nurses with strong death coping abilities tend to utilize deep acting strategies to regulate their emotions. Deep acting in emotional labor enables nurses to self-regulate their inner emotional state, thus improving their ability to recognize and understand the emotional needs of terminally ill patients. This facilitates deeper communication and interaction, playing a positive role [51]. Palliative care nurses with strong death coping abilities exhibit better emotional self-regulation when interacting with terminally ill patients. Their ability to manage emotional responses to death appears more mature, enabling them to engage more effectively in end-of-life care. This existential equanimity enables accelerated activation of deep emotional labor mechanisms, thereby optimizing the therapeutic efficacy of strategic affective regulation during end-of-life interactions [52].

Prior research has predominantly emphasized the adverse effects of emotional labor strategies while overlooking the beneficial impact of deep acting strategies [53]. This investigation reveals that nurses with robust coping mechanisms for palliative care can effectively employ deep role-playing strategies to maintain emotional detachment and manage negative emotions in death-related situations. The observed correlation stems from senior palliative care nurses with extensive clinical experience, who typically demonstrate superior death coping competence. These practitioners possess sophisticated emotion regulation techniques, exhibit heightened mastery in delivering profession-specific emotional displays, and manifest advanced capabilities in strategic deep acting—characteristics intrinsically linked to their accumulated end-of-life care expertise [54]. Therefore, nursing administrators should emphasize the effective application of strategic deep acting techniques in clinical practice. A competency-based stratification system, considering both seniority and death coping proficiency, can help senior nurses share their emotional expertise through structured mentorship programs. This tiered approach facilitates cross-tier scaffolding of communication optimization and thanatological crisis management capacities, particularly enhancing junior nurses' affective regulation mastery in end-of-life care contexts.

In this study, the scores for surface acting in Groups C1 to C3 were 3.11 (SD = 1.10), 3.50 (SD = 0.85), and 3.50 (SD = 0.85) respectively. All three groups of palliative care nurses exhibited a moderate level of surface acting. Especially, Group C1, apart from deep acting, showed a preference for surface acting strategies. This tendency may be attributed to the fact that nurses in Group C1 are generally less experienced, with limited life experience and less exposure to life-and-death situations, making them less capable of regulating emotions effectively at work. Surface acting is an emotional labor strategy, characterized by a disconnect between external emotional expressions and genuine internal feelings. This approach may lead to the suppression of negative emotions, potentially causing emotional dissonance, which can then evolve into job burnout and compassion fatigue, thus harming an individual's mental and physical health [50]. Previous research has shown that emotionally exhausted nurses exhibit higher levels of surface acting, internally suppressing their true emotions, which can weaken their empathy for patient attitudes and adversely affect palliative care practice [55]. Empirical evidence suggests that individuals with higher emotional intelligence experience lower levels of burnout, largely due to their more effective emotion regulation strategies [51]. Specifically, those demonstrating superior affective competence engage in more frequent positive affect experiences and display enhanced empathic attunement—key psychobehavioral mechanisms that modulate emotional labor demands in clinical settings.

For C1 Group practitioners, nursing administrators should prioritize the emotional labor ecology of palliative care nurses, particularly novices in thanatological care. Due to the high emotional labor burden in this group, it is crucial to implement structured training programs to enhance emotional intelligence.

Such psychopedagogical interventions not only enhance affective competence but also mitigate burnout trajectories and empathic fatigue—critical protective factors for preserving psychological resilience in end-of-life care providers. In addition to emotional intelligence training, peer support groups and supervised debriefing sessions can further assist novice nurses in managing emotional labor challenges in palliative care settings. It is also crucial to stay attuned to nurses' internal states and sense of well-being to help alleviate negative emotions and reduce the use of surface acting strategies.

Limitations.

This study has several limitations. First, the use of convenience sampling may introduce selection bias, as the

sample may not fully represent the broader population of palliative care nurses across China. Although efforts were made to include nurses from multiple regions, the lack of randomization may limit the external validity of the findings. Future research should consider employing stratified or probability sampling methods to improve representativeness and generalizability. Second, this study relies on self-reported data, which may be subject to response bias, including social desirability and recall bias. Nurses' perceptions of their emotional labor and coping abilities may not fully reflect their actual experiences in clinical practice. Future studies could incorporate objective assessments, such as supervisor evaluations or behavioral observations, to enhance the validity of the findings.

Conclusion

This study identifies three categories of death coping ability among palliative care nurses, highlighting the necessity for targeted interventions to bolster their abilities in emotional labor. Specialization in palliative care, frequent interactions with the bereaved, participation in grief counseling, and personal bereavement experiences significantly influence death coping abilities. Addressing this heterogeneity through comprehensive education, support and training can empower nurses to effectively manage death events and manage emotions, ultimately improving patient care outcomes.

Several important insights emerge from this research in relation to palliative care nursing. Firstly, the study offers a nuanced understanding of death coping abilities. By employing latent class analysis, distinct subgroups of death coping abilities among palliative care nurses were identified. This approach provides a more detailed understanding of the heterogeneity within the nurse population, which has not been extensively explored in previous studies. Secondly, the research highlights significant differences in emotional labor strategies among nurses with varying levels of death coping ability. Nurses with higher death coping abilities tend to engage in more effective emotional labor strategies, such as deep acting, which can lead to better emotional well-being and professional performance. This connection between coping abilities and emotional labor adds a new dimension to the existing body of research. Finally, from a contextual insight's perspective, the study was conducted among Chinese palliative care nurses, providing valuable insights into how cultural and contextual factors influence death coping and emotional labor. Within a cultural context where discussions of death are frequently viewed as taboo, the findings uncover distinctive challenges and coping strategies that are particular to Chinese nurses. Appreciating these contextual nuances is imperative for the future development of effective targeted interventions.

Declarations

Ethics approval and consent to participate
The ethical approval was obtained from the First affiliated hospital of Nanjing Medical University (approval number: 2022-SR-732).

Consent for publication
Not applicable.

Informed consent
All study participants were provided with informed consent electronically prior to participating in the study. The informed consent page presented two options (Yes/No). Only subjects who chose "Yes" were guided to the questionnaire pages, and participants could quit the process at any time.

Competing interests
The authors declare no competing interests.

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