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Death coping ability, death attitude, and professional quality of life among geriatric nurses: a multicentre cross-sectional study

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Abstract

Background and aim The ability of geriatric nurses to cope with death affects both their physical and mental health, as well as the quality of the hospice services they provide. The aim of this study was to investigate the death coping ability, death attitude, and professional quality of life of geriatric nurses, analyse the influencing factors of death coping ability, and explore the correlations among them.

Design A multicentre cross-sectional study design was used and reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist.

Methods From October to November 2024, a convenience sampling method was used to survey 357 geriatric nurses from 9 hospitals in 8 provinces and cities, including Guangdong and Hubei, China, as the research subjects. The general information questionnaire, Coping With Death Scale (CDS), Death Attitude Profile-Revised (DAP-R), and Nurse Professional Quality of Life Scale were used for the investigation.

Results The death coping ability score of the geriatric nurses was 135.23 ± 33.04 points, the total death attitude score was 96.65 ± 21.04 points, and the total raw professional quality of life score was 90.00 ± 11.91 points. Pearson correlation analysis revealed that the death coping ability of geriatric nurses was positively correlated with death attitudes, negatively correlated with secondary trauma and occupational burnout, and positively correlated with compassion satisfaction. Regression analysis revealed that age, frequency of sharing experiences of caring for terminally ill patients with others, participation in death-related courses or training, attitude towards death, and professional quality of life were factors influencing geriatric nurses' ability to cope with death ($P < 0.05$).

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Conclusion The death coping ability of geriatric nurses is moderate and is related to death attitude and professional quality of life. Nursing managers are encouraged to enhance death education or training for geriatric nurses to help them develop a positive attitude towards death, pay attention to the quality of professional life of geriatric nurses and improve their ability to cope with death.

Keywords Geriatric nurses, Coping with death, Death attitude, Professional quality of life

Introduction

According to relevant data from the United Nations Development Programme (UNDP) and the National Bureau of Statistics, China will become a deeply aging society around 2030, with the proportion of people aged 65 and above exceeding 14%, by 2040, it is projected to transition into a super-aging society, with the proportion of people aged 65 and above surpassing 20% [1]. With the rapid development of ageing, the global demand for hospice care is growing. The World Health Organization (WHO) reported that approximately 56.84 million people worldwide require hospice care each year, and the proportion of hospice care needed for elderly individuals aged 70 years and above accounts for as many as 40% of all hospice care [2]. The "Cross-National Comparison of Expert Assessments of Quality of Death 2021" [3] report shows that the ranking of quality of death of the Chinese mainland population has risen to 53rd place, which is still a large gap compared with advanced countries in the world, indicating an urgent need for improvement in China's hospice service capabilities.

In China, hospice care is specialized care for individuals approaching the end of life, who have discontinued curative or disease-controlling treatments, provided by healthcare professionals, social workers, and others to offer medical and psychological support, manage pain and distressing symptoms, and help patients achieve peace, comfort, and dignity, while also supporting their families [4]. As hospice care in China is still in its development stage, there is a lack of professional hospice nurses. Some hospice care services are provided by geriatric nurses engaged in geriatric care in hospital geriatric departments, community health service centres, nursing homes, long-term care institutions, and special care institutions [5]. Thus, their nursing ability is related to the quality of life, patient safety, and health outcomes of elderly patients [6]. Moreover, due to the influence of traditional Chinese culture, death remains a taboo subject in China [7]. To a certain extent, this traditional culture has constrained the progression of death education in the country. The death education courses offered by colleges and universities are neither systematic nor comprehensive [8], leading to a lack of hospice care knowledge among geriatric nurses after graduation. Therefore, paying attention to the hospice care capabilities of geriatric nurses has become an important issue that needs to be addressed.

Death coping ability refers to a nurse's ability to think positively about life and death, actively deal with negative emotions caused by events such as death, and provide hospice care for patients [9]. The ability to cope with death is an important reflection of the level of hospice care. Compared with nurses in other departments, geriatric nurses more likely face elderly terminally ill patients and their families and participate in the death care of terminally ill patients, their ability to cope with death affects the physical and mental health of geriatric nurses and the quality of hospice care services [10]. Studies have shown that 33.33% of nurses do not cope well with patient death [11]. A survey in China also revealed that nurses were not well prepared to deal with death [12]. A significant number of nurses have difficulty communicating with the families of dying patients and lack hospice care communication skills [13]. After patients die, their nurses may also experience a series of emotions, such as fear, guilt, and self-blame, and suffer from great occupational stress and psychological trauma [14]. If this continues for a long period of time, then patients' hospice care needs will not be met, leading to a decline in professional quality of life and occupational burnout [15].

Death attitude is an individual's evaluative and relatively stable internal psychological tendencies toward death [15]. Most studies discuss unilateral fear of death and death anxiety as death attitudes. However, individuals not only have negative attitudes towards death but also positive attitudes, such as death acceptance [16]. Attitudes towards death are influenced by traditional culture, and people from different cultural backgrounds have a variety of attitudes towards death. Cybulska et al.[17] investigated 516 nurses in the West Pomeranian Province of Poland and reported that the acceptance of death dimension was the highest, whereas the avoidance of death dimension was the lowest. In the study by Duran & Polat [18], nurses were more positive about death and had lower scores on fear of death and avoidance. A systematic review in China revealed that the scores of the death attitude dimension of Chinese nurses were ranked from high to low in terms of natural acceptance, death avoidance, approach acceptance, death fear, and escape acceptance [19], highlighting the differences in attitudes towards death between Chinese and Western cultures. Among the existing studies, there is a lack of evidence on the death coping ability, death attitude, and professional quality of life of geriatric nurses in the specific cultural

context of China, and there is little discussion on the relationships among the three. Having a positive attitude towards death and accepting death as a natural process can help nurses better regulate their emotions and cope with death positively [20]. Therefore, it is necessary to conduct a comprehensive assessment of the death coping ability of geriatric nurses to provide a reference for nursing managers to improve geriatric nurses' ability to cope with death.

The aims of this study were [1] to investigate the death coping ability, death attitude, and professional quality of life of geriatric nurses; [2] to analyse the influencing factors of death coping ability in the Chinese cultural context; and [3] to explore the correlations among geriatric nurses' death coping ability, death attitude, and professional quality of life.

Method

Design

This study is a multicentre cross-sectional study. From October to November 2024, 357 geriatric nurses from 9 hospitals in 8 provinces and cities in China, including Guangdong, Hubei, Gansu, Beijing, Shanxi, Heilongjiang, Shanghai, and Sichuan, were selected for the study. This study was conducted under the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (Additional file S1).

Participants

A convenience sampling method was used to select geriatric nurses as the research subjects. The inclusion criteria were as follows: [1] geriatric nurses who hold the Chinese Nursing Practice Certificate; [2] who had worked for 1 year or more; [3] who voluntarily participated in this study. The exclusion criteria were as follows: [1] nurses who were undergoing training, internships and [2] individuals who were absent during the investigation period. This study included a total of 32 variables. According to the sample size calculation method for multivariate correlation studies [21], the sample size was 10 times greater than that of the independent variable, and considering 10% invalid questionnaires, the minimum sample size required was 355 cases, and the final sample size was 389 cases.

Instruments

General information questionnaire

The research team reviewed previous literature and designed the questionnaire inductively. Demographic information included sex, age, whether the participant is an only child, marital status, religious beliefs, education level, professional title, hospital level, years of geriatric nursing experience. Sociological information included whether the participant has experienced a patient's death, cared for patients who were about to die, experienced the death of a close relative, attended a funeral, participated in courses or training related to death education, and the frequency of sharing experiences of caring for the terminally ill or discussing death within the family.

The coping with death scale (CDS)

CDS was developed by Buge & Larry [7], and the Chinese version of the CDS was revised by Zeng & Chen [22]. The scale contains 8 dimensions and a total of 30 items, namely, death thinking skills, near-death processing ability, life reflection ability, talking about one's own death ability, funeral handling capabilities, talking about the death of others, the ability to handle loss, and death acceptance. The Likert 7-point scoring method was used, with 1 representing "completely disagree", 4 representing "neutral", and 7 representing "completely agree". The total score ranges from 30 to 210. The score is directly proportional to the ability to cope with death. The Cronbach's α coefficient of the scale is 0.92, and the reliability and validity are good.

The death attitude profile-revised (DAP-R)

DAP-R which was developed by Wong et al. [23] and adapted by Tang et al. [24], is a Chinese version of the DAP-R suitable for mainland China. The scale is divided into two subscales: negative attitude (two dimensions: death fear and death avoidance) and positive attitude (three dimensions: natural acceptance, approach acceptance, and escape acceptance), with a total of five dimensions and 32 items. The scale is scored from 5 to 1 according to the scale's score: "strongly agree, agree, no opinion, disagree, or strongly disagree." The higher the score on a dimension is, the more people agree with the viewpoint on that dimension. The Cronbach's α coefficient of the total scale is 0.875, and the Cronbach's α coefficient of each dimension is above 0.7, indicating good reliability and validity [25].

The Chinese version of the professional quality of life scale

The Chinese version of the Professional Quality of Life Scale for Nurses developed by Zheng et al. [26], which includes three dimensions, namely, compassion satisfaction, job burnout, and secondary traumatic stress, with 30 items, was used. The Likert 5-point scoring method was used, with 1 point representing "never" and 5 points representing "always." Items 1, 4, 15, 17, and 29 are reverse scored, and the remaining items are forward scored. The scale has good reliability and validity in the nursing population [27], with a Cronbach's α coefficient of 0.71. The Cronbach's α coefficients of the three subscales were 0.82, 0.73, and 0.76, respectively.

Table 1 Comparison of the death coping ability scores of geriatric nurses across sociodemographic characteristics ($\bar{x} \pm s$, $n=357$)

Variables	*N*(%)	Score (M ± SD)	F/t	*P*
Sex				
Male	23(6.4)	135.91 ± 36.90	0.102	0.919
Female	334(93.6)	135.18 ± 32.81		
Age				
<25	38(10.6)	121.66 ± 37.397	4.989	0.001
25–30	97(27.2)	131.99 ± 31.089		
30–35	77(21.6)	137.53 ± 31.389		
35–40	57(16.0)	139.51 ± 30.629		
>40	88(24.6)	140.22 ± 35.218		
Whether one is an only child				
Yes	70(19.6)	138.26 ± 30.557	0.854	0.394
No	287(80.4)	134.49 ± 33.620		
Marital status				
Single	126(35.3)	129.93 ± 33.938	2.863	0.058
Married	225(63.0)	137.84 ± 32.301		
Divorced	6(1.7)	148.83 ± 30.433		
Religious beliefs				
Yes	20(5.6)	144.40 ± 32.782	1.279	0.202
No	337(94.4)	134.69 ± 33.018		
Education level				
High school or technical secondary school	4(1.1)	104.00 ± 53.113	2.672	0.032
College	81(22.7)	123.79 ± 36.539		
Bachelor's degree	257(72.0)	138.77 ± 30.587		
Master's degree	15(4.2)	138.47 ± 33.487		
Professional title				
Nurse	85(23.8)	120.40 ± 32.385	6.703	0.001
Junior nurse	87(24.4)	137.91 ± 33.658		
Supervisor nurse	160(44.8)	139.63 ± 31.635		
Associate chief nurse	19(5.3)	144.95 ± 26.732		
Chief nurse	6(1.7)	158.67 ± 26.402		
Level of hospital				
Level 1	45(12.6)	127.60 ± 39.641	1.390	0.250
Level 2	23(6.4)	137.39 ± 39.243		
Level 3	289(81.0)	136.25 ± 31.316		
Years of geriatric nursing work experience				
≤5	141(39.5)	128.83 ± 33.076	4.484	0.012
6–10	71(19.9)	140.07 ± 31.557		
>10	145(40.6)	139.09 ± 32.916		
Whether one has experienced a patient's death				

Table 1 (continued)

Variables	*N*(%)	Score (M ± SD)	F/t	*P*
Yes	324(90.8)	135.10 ± 31.840	-0.239	0.811
No	33(9.2)	136.55 ± 43.651		
Whether one has participated in caring for patients who were about to die				
Yes	297(83.2)	135.32 ± 32.161	0.115	0.908
No	60(16.8)	134.78 ± 37.351		
Frequency of sharing experiences of caring for the terminally ill with others				
Never	27(7.6)	123.48 ± 33.732	9.428	0.001
Rarely	222(62.2)	130.95 ± 31.208		
Often	82(23.0)	142.71 ± 34.122		
Always	26(7.3)	160.38 ± 28.664		
Whether one has experienced a death of a close relative				
Yes	266(74.5)	137.23 ± 32.130	1.957	0.051
No	91(25.5)	129.41 ± 35.083		
Whether or not have attended a funeral				
Yes	299(83.8)	136.94 ± 32.229	2.225	0.027
No	58(16.2)	126.45 ± 35.936		
Frequency of discussing death in the family				
Never discussed	82(23.0)	125.79 ± 36.233	4.591	0.011
Occasionally discussed	258(72.3)	137.76 ± 30.820		
Often discussed	17(4.8)	142.35 ± 42.001		
Whether one has participated in courses or training related to death education				
Yes	149(41.7)	143.64 ± 31.682	4.165	0.001
No	208(58.3)	129.21 ± 32.737		

Procedure

Before the questionnaire was distributed, it was prefilled by the team members to test its suitability. It was determined that a valid questionnaire should take at least two minutes to complete and should not contain repeated responses. The questionnaire was approved by the hospital ethics committee, and the nursing department provided informed consent before it was distributed to the department WeChat group in the form of an online questionnaire platform (https://www.wjx.cn). Nurses could answer the questions via mobile phones or computers, and each IP address could be used once to fill out a questionnaire. The homepage of Questionnaire Star provides instructions for completing the questionnaire and providing informed consent. To ensure that all the questionnaires were completed without missing items, all the items were set as the required items. They can only be submitted after all items are completed. After the data were collected, the research team excluded invalid questionnaires. A total of 389 responses were received. The research team members checked the data and found that 32 of the submitted questionnaires were deemed invalid and thus excluded because they were filled out too quickly and had obvious logical inconsistencies. Finally, 357 valid questionnaires were received, with an effective response rate of 91.77%.

Data analysis

Microsoft Excel was used to organise and export the data, and SPSS 26.0 was used to process the data. The counting data are expressed as frequencies and percentages (%), and the measurement data that conformed to the normal distribution are expressed as the means and standard deviations. A t test was performed, and comparisons between groups were performed via one-way analysis of variance. Pearson correlation analysis was used to analyse the correlations between death coping ability, death attitude, and professional quality of life, and linear regression analysis was used to analyse the influencing factors. $P < 0.05$ was considered statistically significant.

Ethical considerations

This study was approved by the Ethics Committee of Shenzhen People's Hospital (Ethics Number: LL-KY-2024176-01). The research was conducted in full compliance with the ethical principles outlined in the Declaration of Helsinki and adhered to all applicable guidelines and regulations. Before the questionnaires were distributed, the director of the nursing department of this research centre coordinated with the head nurses of the geriatric departments of each unit, and the nurses who participated in the survey signed an informed consent form after being fully informed about the purpose of the study. In this study, the online platform Questionnaire Star automatically assigned a code number to each questionnaire to ensure the confidentiality and anonymity of the respondents. Moreover, we assured the participants that the data would be used for research purposes only and that the participants had the right to withdraw from the study at any time.

Results

Participants' sociodemographic characteristics

Among the 357 geriatric nurses, most were female (93.6%), and most were over 25 years old. A total of 80.4% of the participants were not only children, 63.0% of the participants were married, 94.4% of the participants had no religious beliefs, 72.0% had obtained a bachelor's degree, and nearly half of the participants held a supervisory position (44.8%). The vast majority (81.0%) of the participants came from tertiary hospitals, and only 16.6% of the participants had worked for 6–10 years. A total of 90.8% of the participants had experienced patient death, and 83.2% of the participants were caring for patients who were about to die. More than half of the participants (62.2%) rarely shared their experiences of caring for the terminally ill with others. Most participants (74.5%) had experienced the death of a close relative, 83.8% of the participants had participated in funeral experiences, and 72.3% of the participants occasionally discussed death with family members. However, more than half of the participants (58.3%) had not participated in death education courses or training, see Table 1 for details.

Comparison of the death coping ability scores of geriatric nurses across demographic characteristics

The univariate analysis revealed that the factors affecting the death coping ability of geriatric nurses were age, education level, professional title, years of geriatric nursing work experience, frequency of sharing experiences of caring for terminally ill patients with others, frequency of discussing death topics at home, participation in funeral experiences, and participation in death education-related courses or training, see Table 1 for details.

Scores of geriatric nurses' death coping ability, death attitude, and professional quality of life

The total death coping ability score of the geriatric nurses was 135.23 ± 33.04 points, and the average score for each dimension is shown in Fig. 1. The total death attitude score was 96.65 ± 21.04 points, and the original total professional quality of life score was 90.00 ± 11.91 points, see Table 2 for details.

Correlation between death coping ability, death attitude, and professional quality of life among geriatric nurses

Pearson correlation analysis revealed that the total death coping ability of geriatric nurses was positively correlated

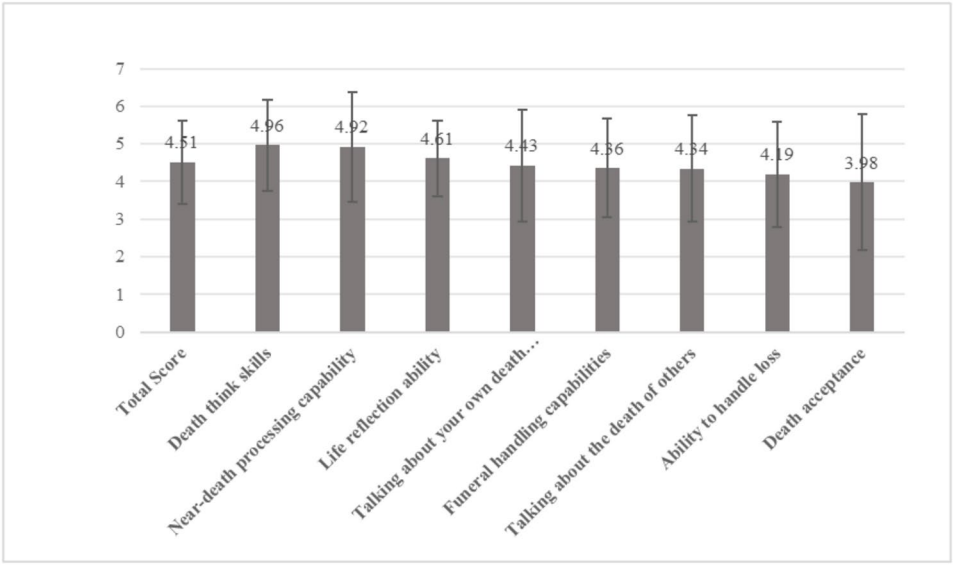

Fig. 1 Mean score for each item on the coping with death scale

Table 2 Death coping ability, death attitude, and professional quality of life scores of geriatric nurses ($\bar{x} \pm s$, $n = 357$)

Item	Number of entries	Score	Item Average
Total score of ability to cope with death	30	135.23 ± 33.04	4.51 ± 1.10
Death thinking skills	5	24.85 ± 6.02	4.96 ± 1.20
Near-death processing ability	4	19.68 ± 5.79	4.92 ± 1.45
Life reflection ability	4	18.46 ± 4.04	4.61 ± 1.01
Talking about your own death ability	3	13.28 ± 4.48	4.43 ± 1.49
Funeral handling capabilities	4	17.45 ± 5.28	4.36 ± 1.32
Talking about the death of others	3	13.02 ± 4.25	4.34 ± 1.42
Ability to handle loss	3	12.57 ± 4.21	4.19 ± 1.40
Death acceptance	4	15.92 ± 7.21	3.98 ± 1.80
Total death attitude score	32	96.65 ± 21.04	3.02 ± 0.65
Total score of negative attitude towards death	12	35.77 ± 11.07	2.98 ± 0.92
Death fear	7	20.8 ± 6.84	2.97 ± 0.98
Death avoidance	5	14.97 ± 5.09	2.99 ± 1.02
Total score of positive attitude towards death	20	60.87 ± 14.39	3.04 ± 0.72
Natural acceptance	5	18.83 ± 4.26	3.77 ± 0.85
Escape acceptance	5	14.17 ± 5.32	2.84 ± 1.06
Approach acceptance	10	27.87 ± 8.88	2.79 ± 0.89
Professional quality of life	30	90.00 ± 11.91	3.00 ± 0.39
Secondary trauma stress	10	31.28 ± 4.48	3.12 ± 0.47
Burnout	10	30.05 ± 3.99	3.00 ± 0.39
Compassion Satisfaction	10	28.67 ± 4.25	2.86 ± 0.42

with the total death attitude score ($r = 0.185$, $P < 0.001$) and the total positive death attitude score ($r = 0.333$, $P < 0.05$), negatively correlated with secondary trauma ($r = 0.381$, $P < 0.001$) and occupational burnout ($r = 0.255$, $P < 0.001$), positively correlated with compassion satisfaction ($r = 0.138$, $P < 0.05$), and positively correlated with the total professional quality of life score ($r = 0.288$, $P < 0.001$), see Table 3 for details.

Linear regression analysis of factors influencing the death coping ability of geriatric nurses

Regression analysis was performed with the total score of death coping ability as the dependent variable and 8 statistically significant variables in univariate analysis (age, education level, professional title, years of geriatric nursing work experience, willingness to share the experience of caring for terminally ill patients with others, participation in funeral experience, frequency of discussing death topics in the family, and participation in

Table 3 Correlation between death coping ability, death attitude and professional quality of life of geriatric nurses

Variables	Death acceptance		Near-death processing ability		Death thinking skills		Funeral handling		Life reflection		Ability to handle loss		Talking about the death of others		Talking about your own death ability		Total score of cope with death	
	r	*P*	*r*	*P*	*r*	*P*	*r*	*P*	*r*	*P*	*r*	*P*	*r*	*P*	*r*	*P*	*r*	*P*
Total score of negative attitude towards death	-0.244	<0.001	-0.040	0.450	0.070	0.187	0.038	0.470	0.029	0.586	-0.053	0.318	-0.106	0.044	-0.173	0.001	-0.082	0.123
Death fear	-0.239	<0.001	-0.038	0.476	0.080	0.160	0.040	0.500	0.045	0.392	-0.079	0.138	-0.100	0.058	-0.150	0.004	-0.077	0.145
Death avoidance	-0.208	<0.001	-0.036	0.492	0.050	0.330	0.040	0.510	0.002	0.972	-0.010	0.857	-0.097	0.068	-0.175	0.001	-0.074	0.163
Total score of positive attitude towards death	0.281	<0.001	0.271	<0.001	0.244	<0.001	0.280	<0.001	0.292	<0.001	0.301	<0.001	0.252	<0.001	0.208	<0.001	0.333	<0.001
Natural acceptance	0.271	<0.001	0.445	<0.001	0.430	<0.001	0.250	<0.001	0.388	<0.001	0.285	<0.001	0.315	<0.001	0.310	<0.001	0.422	<0.001
Escape acceptance	0.225	<0.001	0.093	0.081	0.080	0.130	0.200	<0.001	0.152	0.004	0.163	0.002	0.089	0.093	0.049	0.353	0.169	0.001
Approach acceptance	0.191	<0.001	0.170	0.001	0.140	0.010	0.220	<0.001	0.197	<0.001	0.254	<0.001	0.204	<0.001	0.159	0.003	0.237	<0.001
Total death attitude score	0.064	0.228	0.164	0.002	0.200	<0.001	0.210	<0.001	0.215	<0.001	0.178	0.001	0.116	0.028	0.051	0.334	0.185	<0.001
Secondary trauma stress	-0.241	0.001	0.401	<0.001	-0.349	<0.001	-0.323	<0.001	0.327	<0.001	-0.297	<0.001	-0.268	<0.001	0.224	<0.001	-0.381	<0.001
Compassion Satisfaction	0.090	0.089	0.093	0.080	0.155	0.003	0.129	0.015	0.145	0.006	0.134	0.011	0.076	0.152	0.066	0.213	0.138	0.009
Burnout	0.160	0.002	-0.288	<0.001	0.249	<0.001	-0.216	<0.001	0.214	<0.001	-0.190	<0.001	-0.174	0.001	-0.122	0.022	-0.255	<0.001
Professional quality of life	0.183	0.001	0.291	<0.001	0.279	<0.001	0.248	<0.001	0.255	<0.001	0.231	<0.001	0.193	0.001	0.154	0.003	0.288	<0.001

Table 4 Linear regression analysis of factors affecting the death coping ability of geriatric nurses

Independent Variable	Regression coefficient	Standard error	Standardised regression coefficients	t	*P*
Constant	54.829	16.933		3.238	0.001
Age	7.164	2.360	0.208	3.036	0.003
Education level	3.383	3.096	0.054	1.093	0.275
Professional title	-2.403	1.873	-0.098	-1.283	0.200
Years of geriatric nursing work experience	1.012	2.430	0.027	0.417	0.677
Frequency of sharing experiences of caring for a dying patient	8.130	2.226	0.175	3.652	<0.001
Funeral experience	-7.502	4.221	-0.084	-1.777	0.076
Frequency of discussing death in the family	2.957	3.268	0.044	0.905	0.366
Participated in death education courses or training	-5.825	3.166	-0.087	-1.840	0.047
Total death attitude score	-0.758	0.149	-0.483	-5.084	<0.001
Total score of positive attitude towards death	1.477	0.215	0.644	6.882	<0.001
Total score of professional quality of life	0.408	0.153	0.147	2.665	0.008

Note: $R = 0.511$, $R^2 = 0.303$; adjusted $R^2 = 0.281$, $F = 13.635$, $P < 0.001$

death course-related training) and 3 statistically significant variables in correlation analysis (total score of death attitude, total score of positive death attitude, and total score of professional quality of life) as the independent variables. The linear regression results revealed that age, frequency of sharing experiences of caring for terminally ill patients with others, participation in death education courses or training, total death attitude score, total positive death attitude score, and total professional quality of life score were influencing factors of geriatric nurses' ability to cope with death ($P < 0.05$), see Table 4 for details.

Discussion

This study explored the level of death coping ability of geriatric nurses and analysed the correlations between death coping ability and death attitudes and the professional quality of life of geriatric nurses. The results revealed that the overall death coping ability of geriatric nurses was at a moderate level, which was closely related to death attitude and professional quality of life. This study emphasized the importance of implementing death education in the Chinese cultural context.

A survey from Spain found that 61.2% of 534 nurses reported having a strong ability to cope with death, which may be attributed to the fact that Western culture is more adept at coping with death and prioritizes holistic care, quality of life, and the quality of death for patients [28]. In contrast, this study showed that the death coping scores of geriatric nurses were 135.23 ± 33.04, indicating a moderate level overall. This divergent result might be explained by cultural differences. Ancient Chinese culture traditionally held a primitive belief in the immortality of the soul, believing that the soul is separated from the spirit after death and that rituals are needed to appease the deceased, so different provinces and ethnic groups developed complex funeral customs [29]. Some funeral elements, such as coffins, are deliberately exaggerated to be miserable and terrifying, which further exacerbates the association between death and bad luck and increasing people's fear of death [30, 31]. As a result, people often avoid discussing topics related to death in China [31]. Additionally, given that China's palliative care education and training system is still underdeveloped, geriatric nurses possess limited knowledge of palliative care, and their ability to cope with death remains low [32].

This study showed that the highest-scoring dimension was the ability to think about death, and the lowest-scoring dimension was the ability to accept death, which aligns with the findings of previous studies [33, 34]. Death thinking and expression refer to the ability of nurses to perceive death and express their fear of death [34]. Elderly patients experience a long life journey from birth to death. Death, as a continuous stressor, can prompt geriatric nurses to reflect on mortality and experience the full scope of life, thereby facilitating emotional regulation and catharsis when coping with death. However, in China, the Confucian concept of filial piety, the Taoist concept of joy in death, and the Buddhist concept of reincarnation have collectively influenced the formation of traditional cultural customs of respecting gods and valuing filial piety [29]. Influenced by the family-oriented culture [35], geriatric nurses are accustomed to notifying family members first. Furthermore, most family members are often unable to accept and unwilling to face the reality out of love for their loved ones or fear of their loved ones' impending death. They believe that informing the patient about the death will bring bad luck, and they will "hide" or avoid the actual condition of the elderly patient. This practice also invisibly weakens the acceptance of geriatric nurses when discussing topics related to their own death.

Positive attitudes toward death enhance the ability of geriatric nurses to cope with death [32, 36]. This study reported that the death coping ability of geriatric nurses was positively correlated with the total score of positive attitude toward death and the total score of death attitude. In other words, death attitude can predict the ability of geriatric nurses to cope with death. A positive attitude toward death enables geriatric nurses to learn relevant knowledge about hospice care and calmly accept the death of their patients, actively providing hospice care [37]. It can also prompt geriatric nurses' reflection during the care process, allowing them to accept that death is an inevitable natural cycle and thus establish a correct view of life and death.

According to the findings of this study, the death coping ability of geriatric nurses was negatively correlated with secondary trauma and occupational burnout and positively correlated with compassion satisfaction and the total professional quality of life score, these findings are similar to those of Wang et al.[38]. The greater the level of death coping ability of geriatric nurses, the more confident they are in providing high-quality care for terminally ill patients and the more job satisfaction and happiness they gain at work [39]. Conversely, the lower the ability to cope with death, the greater the likelihood that the traumatic event of the death of an elderly patient will lead to negative emotions and reduced empathy among geriatric nurses [40]. Geriatric nurses are subject to greater occupational stress and psychological trauma. In the long run, they can become unable to meet patients' hospice care needs, leading to a decline in nursing quality and occupational burnout [15]. Therefore, it is recommended that nursing managers, when implementing death education, first seek to change the geriatric nurses' cognition and attitude towards death and then teach them relevant death coping skills while also supplementing them with emotion regulation techniques to help better cope with the impact of death, improve the quality of care, and stabilise the geriatric care team.

Similar to previous studies [32, 38], the findings of this study demonstrated that age is closely related to the ability of geriatric nurses to cope with death. For instance, newly graduated nurses are not well prepared in terms of their ability to cope with death [12]. As they age, their life experiences and nursing experiences increase, enabling them to cope effectively with the death of patients.

Moreover, this study also found that frequent sharing of care experiences can help improve death coping ability, which may be due to the fact that when sharing the care experience of dying patients, nurses can receive social support and help from peers, family members, and friends. Social support is positively correlated with the ability to cope with death [41], and psychological encouragement and experiential support from superiors and peers can help alleviate the psychological stress experienced by geriatric nurses when they are facing death events [42]. These findings also suggest that nursing managers can provide a supportive environment for geriatric nurses. In death education for geriatric nurses, peer education can be incorporated, with nurses of the same level, senior nurses and junior nurses listening to each other's care feelings, passing on care experiences, and achieving consistency in emotions and social cognition [42].

Previous research [43, 44] indicates that participating in death education courses can help improve nurses' death coping ability, and the results of this study also support this conclusion. Death education provides knowledge about coping with dying and death, as well as opportunities to discuss death-related events [43], accelerates changes in nurses' attitudes towards death, reduces their fear of death, and improves their ability to cope with death and the quality of hospice care [45]. Currently, death education is relatively mature in Hong Kong and Taiwan but relatively underdeveloped in mainland China [46]. In this study, 58.3% of geriatric nurses had not received systematic death education training. A survey in China on the need for death education revealed high demand among nurses [47]. In the future, death education can be carried out through lectures and workshops to strengthen geriatric nurses' knowledge of hospice care, enhance their ability to cope with death, and improve the quality of hospice care.

Limitations

Some limitations of our study need to be acknowledged. The primary limitation is the use of convenience sampling, with participants came from different hospitals, leading to an uneven distribution of hospital grades, which may have resulted in selection bias, limiting the study's ability to accurately represent the broader population. Secondly, this study used a self-assessment questionnaire, and the attitudes and interests of the respondents may affect the reliability of the collected data. Furthermore, this study only included responses from nurses who volunteered to participate, and the views of non-participating nurses are unknown, which may further limit the generalizability of the findings.

Conclusion

The coping ability of geriatric nurses is at a moderate level. Factors such as age, frequency of sharing experiences of caring for terminally ill patients with others, participation in death education-related courses or training, attitudes towards death, and professional quality of life will affect the coping ability of geriatric nurses.

It is recommended that nursing managers implement death education that is suitable for traditional Chinese culture, strengthen the training of geriatric nurses, pay

special attention to junior nurses, and improve the ability of geriatric nurses to cope with death. Moreover, providing psychological support to geriatric nurses and offering effective emotion counselling and professional development opportunities can improve the quality of professional life and hospice care.

Relevance to clinical practice

Improving the ability of geriatric nurses to cope with death will help improve the quality of hospice care services, help patients and their families better face and accept death, reduce their psychological burden, and promote their mental health. This study explored the death coping ability of geriatric nurses in China, providing valuable insights for nursing managers to design tailored death education training programs and advance the implementation of death education based on the needs of geriatric nurses.

Supplementary Information

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Supplementary Material 1

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Author contributions
Wei Liu was involved in study design, questionnaire creation and distribution, data collection, organization and analysis, as well as manuscript writing and overall review. Yu jie Su was involved in study design, selection of subjects, data collection, organization and analysis, as well as writing and overall review of the manuscript.Si-jia Zhou and Wu-Hong Deng were involved in study design, supervision and overall review of the manuscript. Hong-Ying Hu, Qing-Cui and, An-shuai Fang were involved in study selection, data organization, quality assessment and overall review of the manuscript. Yue-ming Peng and Wei-xiang Luo were involved in the design of the study, data analysis, and overall review of the manuscript. A

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Data availability
The datasets used and/or analyzied during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study was approved by the Ethics Committee of Shenzhen People's Hospital (Ethics Number: LL-KY-2024176-01), and all the subjects provided informed consent.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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