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The Impact of Palliative Care Knowledge and Death Attitudes on Palliative Care Attitudes Among Vocational Nursing Students

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Abstract: ***This study investigates the relationships between palliative care knowledge, death attitudes, and palliative care attitudes among vocational nursing students, aiming to identify factors that influence their approach to end-of-life care. Through an online survey, data were collected on demographics, palliative care knowledge, death attitudes, and attitudes toward palliative care. Pearson correlation and linear regression analyses revealed that palliative care attitudes were significantly influenced by both knowledge and death attitudes. Specifically, natural acceptance of death positively impacted palliative care attitudes, while escape acceptance and fear of death had negative effects. These findings suggest that fostering natural acceptance of death and addressing death-related fears in educational programs can help improve vocational nursing students' attitudes toward palliative care and enhance their readiness for end-of-life care.***

Keywords: Palliative care knowledge, Death attitudes, Palliative care attitudes, Vocational nursing students**.**

1. Introduction

Palliative care has gained increasing attention in recent years as healthcare professionals recognize its critical role in improving the quality of life for patients with terminal illnesses. Palliative care focuses on providing relief from the symptoms and stress of serious illness, aiming to improve the overall well-being of patients and their families [1]. For nursing students, developing a strong understanding of palliative care, along with positive attitudes toward death and end-of-life care, is essential to delivering compassionate care to terminally ill patients [2].

Attitudes toward death, including fear of death and acceptance of death, can significantly influence how healthcare professionals approach palliative care [3]. Similarly, knowledge of palliative care principles and practices plays a key role in shaping these attitudes. Understanding the complex interplay between death attitudes, palliative care knowledge, and palliative care attitudes is crucial for designing effective educational programs that prepare nursing students for the challenges of end-of-life care.

This study aims to investigate the relationships between palliative care knowledge, death attitudes, and palliative care attitudes among nursing students. By examining these factors, the study seeks to identify key predictors of positive palliative care attitudes and provide evidence for improving palliative care education.

2. Research Instruments

2.1 General Information Questionnaire

This section covers basic demographic and personal information, including gender, academic year, location of family residence, whether the respondent is an only child, educational background, attitude toward the nursing profession, religious beliefs, internship experience in hospitals, formal work experience in hospitals, experience in caring for terminal patients, personal experience with major illness, family history of major illness, history of contact with critically ill patients, experience handling deceased patients, personal encounters with the death of a close relative, participation in body farewell ceremonies, and history of antidepressant use.

2.2 Palliative Care Knowledge Questionnaire (PCQN)

The Palliative Care Knowledge Questionnaire (PCQN) was developed in 1996 by Professor Ross [4] and colleagues in Canada. The PCQN is easy to use and has been translated into multiple languages, including French, Spanish, and Chinese. In this study, we used the Chinese version adapted by domestic scholar Zou Min [5]. The questionnaire is primarily used to assess healthcare professionals' knowledge of palliative care, compare levels of palliative care knowledge across different dimensions, evaluate the effectiveness of palliative care education programs, and identify common errors in palliative care knowledge. It consists of three dimensions: principles of palliative care, pain and symptom management, and psychosocial support, with a total of 20 items. Each item is scored as "correct" (1 point) or "incorrect/unknown" (0 points), with higher scores indicating better knowledge of palliative care. The questionnaire's Cronbach's alpha coefficient is 0.758, demonstrating good reliability.

2.3 Palliative Care Attitude Scale

The Palliative Care Attitude Scale was developed by Dr. Frommelt [6], a nursing scholar from the United States, in 1989, with several subsequent revisions. The scale has two forms: Form A, which measures nurses' attitudes toward end-of-life care, and Form B, which can be used to assess the

attitudes of medical professionals, including nurses, as well as medical students toward end-of-life care. This study used the version developed by Meng Zhaoxia [7] to measure nurses' attitudes toward palliative care. The scale includes 30 items divided into two dimensions: 1) positive attitudes toward caring for terminal patients, and 2) holistic care awareness. There are 15 positively scored items (e.g., items 1, 2, 4, 10, 12, 16, 18, 20, 21, 22, 23, 24, 25, 27, 30), and the rest are negatively scored. Responses are rated on a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree," with positive items scored from 1 to 5 points and negative items scored from 5 to 1 points. Total scores range from 30 to 150, with higher scores indicating more positive attitudes toward palliative care and a greater likelihood of engaging in palliative care behaviors. The Cronbach's alpha coefficient for this scale in the current study was 0.927, indicating good reliability.

2.4 Death Attitude Profile-Revised (DAP-R)

The Death Attitude Profile-Revised (DAP-R), developed and revised by Wong and colleagues [8], is used to assess nursing students' attitudes toward death. The scale includes five dimensions: fear of death, death avoidance, neutral acceptance, approach acceptance, and escape acceptance. It measures both negative attitudes, such as fear and avoidance of death, and positive acceptance of death. The multi-dimensional approach avoids the limitations of single-dimensional measurements. In this study, we used the Chinese version adapted by Tang Lu. The meanings of the different dimensions are as follows:

1) Fear of Death: the negative emotional and psychological state of fear when facing death (7 items: 1, 2, 7, 18, 20, 21, 32).
2) Death Avoidance: the psychological avoidance of thinking or discussing death-related topics (5 items: 3, 10, 12, 19, 26).
3) Neutral Acceptance: viewing death as a natural part of life, neither fearing nor welcoming it (5 items: 6, 14, 17, 24, 30).
4) Approach Acceptance: accepting death as a path to a blissful afterlife (10 items: 4, 8, 13, 15, 16, 22, 25, 27, 28, 31).
5) Escape Acceptance: accepting death as a way to escape a painful life (5 items: 5, 9, 11, 23, 29).

The scale is scored on a 5-point Likert scale, where 1 represents "strongly disagree" and 5 represents "strongly agree." Higher scores in each dimension indicate a stronger tendency toward that specific death attitude.

3. Survey Methodology

Study Participants: From May to August 2024, a cluster sampling method was used to select participants from the nursing students at Guangzhou Huaxia Vocational College. An electronic questionnaire was created using the Wenjuanxing platform to assess the current status of nursing students' attitudes towards death and their knowledge and attitudes towards palliative care. The questionnaire was distributed via a QR code shared through WeChat.

Inclusion criteria:
Nursing students from vocational colleges.
Informed consent and voluntary participation in the study.

Exclusion criteria:

Individuals who refused to participate in the study.

This study primarily used an online survey method. Questionnaires were distributed to students across various grade levels through WeChat, facilitated by counselors and full-time teachers. The introductory page of the questionnaire provided uniform instructions, explaining the purpose and significance of the study, as well as the method for completing the questionnaire, ensuring informed consent from the participants. Respondents filled out the questionnaire anonymously online, with all questions set as mandatory. To ensure data integrity, each IP address was allowed to submit only once, preventing incomplete or duplicate submissions.

The questionnaire was distributed via Wenjuanxing (Questionnaire Star), and a total of 503 responses were collected. The responses were screened based on two predetermined criteria: first, any questionnaire completed in less than 90 seconds was excluded; second, questionnaires where over 95% of the answers were identical were also excluded. After applying these criteria, a total of 320 valid responses remained, resulting in an effective response rate of 63.6%.

4. General Information

A total of 320 valid questionnaires were collected, and the basic demographic information is as follows: the majority of respondents were female (85.94%), non-only children (92.19%), and individuals with no religious affiliation (88.44%). Students from the class of 2023 made up the highest proportion at 70.63%, while participation was relatively lower among other cohorts due to internships, employment, and the fact that the class of 2024 had not yet reported. A significant portion of respondents were from rural areas (75.63%), and 58.13% of the students came from vocational high school backgrounds with a diploma as their starting point. Additionally, 69.69% had internship experience. These characteristics are consistent with the profile of nursing students at Guangzhou Huaxia Vocational College. When asked about their attitudes toward the nursing profession, only 3.75% of students reported disliking it. Detailed demographic data can be found in Table 1.

Regarding relevant experiences, a small percentage of nursing students had a personal history of major illness (2.19%) or had used antidepressant medications (2.5%). Among the respondents, 21.56% had formal work experience in hospitals, 30% had experience caring for terminally ill patients, 42.5% had experience working with critically ill patients, and 26.88% had handled deceased patients. Additionally, 19.69% had family members with a history of serious illness. The percentage of students who had directly faced the death of a family member was 50%, with the other 50% having no such experience. Furthermore, 61.25% had participated in body farewell ceremonies or funerals. Only 20.31% of respondents reported having knowledge of palliative care. Specific data are presented in Table 1.

Abbreviation Notes:

Basic Info (BI), Student Source (SS), High School to Vocational College (HS-VC), Secondary Vocational to Vocational College (SV-VC), Nursing Attitude (NA), Family Location (FL), Religious Belief (RB), Only Child (OC), Internship Experience (IE), Formal Work in Hospital (FWH), Handling Deceased Patients (HDP), Terminal Patient Care Experience (TCE), Family Member Death (FMD), Personal Major Illness History (PMIH), Family Major Illness History (FMIH), Critical Patient Contact (CPC), Knowledge of Palliative Care (KPC), Antidepressant Usage History (AUH), Attended Funeral (AF).

5. Correlation Analysis

Pearson correlation analysis was used to examine the relationships between palliative care knowledge, attitudes toward death, and palliative care attitudes. The results are as follows:

Abbreviation Notes:

Escape Acceptance (EA): Escape Acceptance Dimension of the Death Attitude Scale
Approach Acceptance (ApA): Approach Acceptance Dimension of the Death Attitude Scale
Natural Acceptance (NA): Natural Acceptance Dimension of the Death Attitude Scale
Death Avoidance (DA): Death Avoidance Dimension of the Death Attitude Scale.
Death Fear (DF): Death Fear Dimension of the Death Attitude Scale
Knowledge (K): Overall Palliative Care Knowledge Scale
Attitude (Att): Overall Palliative Care Attitude Scale

Table 1: General Information of Nursing Students

BI	Number	Percentage (%)	BI	Number	Percentage (%)
Gender (G)			SS		
Male	45	14.06	HS-VC	89	27.81
Female	275	85.94	SV-VC	186	58.13
Grade (GR)			3+2	40	12.5
2020	3	0.94	Others	5	1.56
2021	36	11.25	NA		
2022	48	15	Like	85	26.56
2023	226	70.63	Neutral	223	69.69
2024	7	2.19	Dislike	12	3.75
FL			RB		
Rural	242	75.63	Yes	37	11.56
Urban	78	24.38	No	283	88.44
OC			IE		
Yes	25	7.81	Yes	223	69.69
No	295	92.19	No	97	30.31
FWH			HDP		
Yes	69	21.56	Yes	86	26.88
No	251	78.44	No	234	73.13
TCE			FMD		
Yes	96	30	Yes	160	50
No	224	70	No	160	50
PMIH			AF		
Yes	7	2.19	Yes	196	61.25
No	313	97.81	No	124	38.75
FMIH			AUH		
Yes	63	19.69	Yes	8	2.5
No	257	80.31	No	312	97.5
CPC			KPC		
Yes	136	42.5	Yes	65	20.31
No	184	57.5	No	255	79.69

Table 2: Correlation Analysis of Knowledge, Attitudes, and Death Attitudes in Palliative Care

	EA	ApA	NA	DA	DF	K	Att
EA	1						
ApA	0.766**	1					
NA	0.364**	0.382**	1				
DA	0.258**	0.425**	0.208**	1			
DF	0.390**	0.505**	0.053	0.618**	1		
K	0.134*	0.159**	0.260**	0.150**	0.116*	1	
Att	-0.106	-0.067	0.315**	-0.112*	-0.275**	0.112*	1

The analysis clearly shows a significant positive correlation between palliative care attitudes and palliative care knowledge, with a correlation coefficient showing significance at $P < 0.05$ and a positive coefficient. Additionally, palliative care attitudes and the "natural acceptance" dimension of death attitudes demonstrated a significant positive correlation, with a correlation coefficient significant at $P < 0.01$ and greater than zero.

Conversely, palliative care attitudes showed a significant negative correlation with the "death avoidance" and "fear of death" dimensions of death attitudes. In both cases, the correlation coefficients were significant at $P < 0.05$ and were less than zero.

6. The Influence of Palliative Care Knowledge and Death Attitudes on Palliative Care Attitudes

6.1 Overall Influencing Factors on Palliative Care

Attitudes

Based on the correlation analysis in the previous section, we found significant correlations between palliative care attitudes, palliative care knowledge, and death attitudes. To further investigate the impact of palliative care knowledge and death attitudes on palliative care attitudes, a linear regression analysis was conducted.

In the regression analysis, overall palliative care knowledge and the different dimensions of death attitudes were used as independent variables, while overall palliative care attitude was the dependent variable. Other demographic factors were controlled for. The results are shown in Table 3, and the key findings are as follows:

Model Fit: The model demonstrated a good fit, with an adjusted R^2 of 0.209, indicating that the independent variables in the model accounted for 20.9% of the variation in the dependent variable (palliative care attitudes). This suggests that the model successfully identified key factors influencing palliative care attitudes.

Model Significance: The regression model was statistically significant ($F = 10.345$, $P < 0.001$), meaning that at least one of the six independent variables had a significant impact on the dependent variable (palliative care attitudes). After examining the regression coefficients of the six variables, the following conclusions were drawn:

Natural Acceptance had a significant positive effect on palliative care attitudes, with a coefficient of 0.124 ($T = 5.637$, $P < 0.01$). This means that the higher the level of natural acceptance, the higher the score on palliative care attitudes. Quantitatively, for every 1-point increase in natural acceptance, the palliative care attitude score increases by 0.124 points.

Escape Acceptance had a significant negative effect on palliative care attitudes, with a coefficient of -0.057 ($T = -2.447$, $P = 0.015 < 0.05$). This indicates that the higher the level of escape acceptance, the lower the palliative care attitude score. Quantitatively, for every 1-point increase in escape acceptance, the palliative care attitude score decreases by 0.057 points.

Fear of Death also had a significant negative effect on palliative care attitudes, with a coefficient of -0.08 ($T = -3.317$, $P = 0.001 < 0.01$). This shows that higher levels of fear of death are associated with lower palliative care attitude scores. For every 1-point increase in fear of death, the palliative care attitude score decreases by 0.08 points.

Additionally, Approach Acceptance, Death Avoidance, and overall Palliative Care Knowledge were not found to be significant predictors of palliative care attitudes, as their regression coefficients did not pass the significance test at the 0.05 level.

The final linear regression equation is as follows:

Palliative Care Attitude = 2.989+0.124×Natural Acceptance − 0.057 × Escape Acceptance−0.08×Fear of Death

Table 3: Analysis of Factors Influencing Attitude Towards Palliative Care

		(B)	(β)	t	P	VIF
Constant		2.989		33.899	0.000**	
IV	EA	-0.057	-0.194	-2.447	0.015*	2.524
	ApA	0.028	0.08	0.925	0.355	2.991
	NA	0.124	0.331	5.637	0.000**	1.386
	DA	-0.007	-0.02	-0.307	0.759	1.785
	DF	-0.08	-0.234	-3.317	0.001**	2.007
	K	0.004	0.073	1.407	0.16	1.097
Adjusted R^2				0.209		
F				10.345		
P				<.001		
DW				2		

Dependent Variable: Attitude Towards Palliative Care

B: Unstandardized Coefficients
β: Standardized Coefficients
IV: Independent Variable

The VIF values for all six independent variables were below 5, indicating no multicollinearity between the variables. Additionally, the DW value was approximately 2, suggesting no autocorrelation among the data. Therefore, the conclusions drawn from this regression model are valid and reliably reflect the causal relationship between palliative care attitudes and death attitudes.

6.2 Influencing Factors on Different Dimensions of Palliative Care Attitudes

(1) Influencing Factors on the Positive Attitude Toward Caring for Terminal Patients Dimension

Based on the conclusions in Section 6.1, we identified the overall factors influencing palliative care attitudes. To further explore the specific factors affecting each dimension, we examined the impact of the different dimensions of palliative care knowledge and death attitudes on the positive attitude toward caring for terminal patients. Since the scoring method for palliative care knowledge could influence the results, all data were standardized. A linear regression analysis was conducted, using the various dimensions of palliative care knowledge and death attitudes as independent variables, and the positive attitude toward caring for terminal patients as the dependent variable, with other demographic variables as control factors. The results are shown in Table 4.

Table 4: Analysis of Factors Influencing Positive Attitude Towards Caring for Terminal Patients

		B	β	t	P	VIF
Constant		-0.121	-	-1.429	0.154	-
IV	EA	-0.199	-0.199	-2.5	0.013*	2.525
	ApA	0.139	0.139	1.61	0.108	2.992
	NA	-0.041	-0.041	-0.693	0.489	1.419
	DA	-0.106	-0.106	-1.578	0.116	1.801
	DF	-0.36	-0.36	-5.039	0.000**	2.034
	PSM	0.086	0.086	1.187	0.236	2.09
	PSSS	-0.047	-0.047	-0.75	0.454	1.579
	PPC	-0.059	-0.059	-0.82	0.413	2.073
Adjusted R^2				0.201		
F				8.283		
P				<.001		
DW				1.864		

Dependent Variable: Positive Attitude Towards Caring for Terminal Patients

The adjusted R^2 was 0.201, indicating that the model had a good fit and that the independent variables accounted for 20.1% of the variance in the dependent variable. This suggests that the model was effective in identifying factors influencing the positive attitude toward caring for terminal patients.

The linear regression model was significant ($F = 8.283$, $P < 0.001$), with two independent variables showing a significant influence on the dependent variable (palliative care attitude). Both escape acceptance and fear of death had significant negative effects on the positive attitude toward caring for terminal patients. None of the other dimensions of death attitudes or palliative care knowledge significantly influenced this dimension of palliative care attitude. The regression equation is as follows:

Positive Attitude Toward Caring for Terminal Patients $= -0.121 - 0.199 \times$ Escape Acceptance$-0.36\times$Fear of Death

The VIF values for all eight independent variables were below 5, indicating no multicollinearity among the variables. The Durbin-Watson (DW) statistic was 1.864, which is close to 2, suggesting no autocorrelation in the data. Therefore, the conclusions drawn from this regression model are reliable and accurately reflect the causal relationship between death attitudes and the positive attitude toward caring for terminal patients in palliative care attitudes.

Abbreviation Notes:

Pain and Symptom Management (PSM): Pain and Symptom Management Dimension of the Palliative Care Knowledge Scale
Psychosocial and Spiritual Support (PSSS): Psychosocial and Spiritual Support Dimension of the Palliative Care Knowledge Scale
Philosophy and Principles of Palliative Care (PPC): Philosophy and Principles of Palliative Care Dimension of the Palliative Care Knowledge Scale

(2) Influencing Factors on the Holistic Care Awareness Dimension

To further investigate the impact of different dimensions of palliative care knowledge and death attitudes on the holistic care awareness dimension of palliative care attitudes, we standardized all data due to the potential influence of palliative care knowledge scoring. A linear regression analysis was performed, using the various dimensions of palliative care knowledge and death attitudes as independent variables, and holistic care awareness as the dependent variable, with other demographic variables controlled. The results are shown in Table 5.

Table 5: Analysis of Factors Influencing Holistic Care Awareness

		B	β	t	p	VIF
	Constant	-0.366	-	-0.968	0.334	-
IV	EA	-0.036	-0.036	-0.49	0.625	2.589
	ApA	-0.052	-0.052	-0.652	0.515	3.08
	NA	0.508	0.508	9.26	0.000**	1.45
	DE	0.093	0.093	1.52	0.13	1.821
	DF	0.114	0.114	1.744	0.082	2.059
	PSM	-0.002	-0.002	-0.03	0.976	2.122
	PSSS	-0.02	-0.02	-0.345	0.73	1.582
	PPC	0.118	0.118	1.791	0.074	2.107
	Adjusted R^2			0.339		
	F			11.884		
	p			<0.01		
	DW			1.8		

The adjusted R^2 was 0.339, indicating that the model had a good fit, with the independent variables explaining 33.9% of the variance in the dependent variable. This suggests that the regression model successfully identified factors influencing holistic care awareness.

The linear regression model was significant ($F = 11.884$, $P < 0.001$), and one independent variable was found to significantly influence holistic care awareness. Natural Acceptance had a significant positive effect on the holistic care awareness dimension, while the other dimensions of death attitudes and palliative care knowledge did not show a significant influence on the attitude toward caring for terminal patients.

The regression equation is as follows:
Holistic Care Awareness$=-0.366+0.508\times$Natural Acceptance

The VIF values for all eight independent variables were below 5, indicating no multicollinearity. The Durbin-Watson (DW) statistic was 1.800, close to 2, suggesting no autocorrelation among the data. Therefore, the conclusions drawn from this regression model are valid and reliably reflect the causal relationship between holistic care awareness in palliative care attitudes and death attitudes.

7. Conclusion

This study explored the relationships between palliative care knowledge, death attitudes, and palliative care attitudes among vocational nursing students. The findings revealed that palliative care attitudes are significantly influenced by both palliative care knowledge and various dimensions of death attitudes. Specifically, natural acceptance was found to positively impact both overall palliative care attitudes and the holistic care awareness dimension, while escape acceptance and fear of death negatively influenced attitudes toward caring for terminal patients.

The regression models demonstrated good fit, with meaningful insights into the factors that shape nursing students' attitudes toward palliative care. These results suggest that promoting a natural acceptance of death could foster more positive attitudes toward palliative care, ultimately improving the quality of end-of-life care provided by future healthcare professionals. Further interventions and educational programs could focus on addressing fears and avoidance of death to enhance palliative care attitudes.

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