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Factors affecting attitudes towards end-of-life care among medical students in China: a cross-sectional study

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Abstract. End-of-life care is regarded as a special kind of palliative care service. At present, people in our country are still relatively unfamiliar with end-of-life care. As a future medical worker whose work is about human life, health, disease, and death, their attitudes towards end-of-life of medical students affects all aspects of their medical behavior. The purpose of our research is to identify and describe factors associated with medical students' attitudes towards end-of-life care. Ninety-one medical students chosen by stratified random sampling at School of Medicine, Xi'an Jiaotong University completed several questionnaires focused on attitudes towards end-of-life care. The scores of end-of-life care attitudes of nursing major (133.3 ± 9.6) is higher than clinical; grade 1 (132.3 ± 9.8) is higher than grade 2, 3 or 4; "Calm and open atmosphere" in discussing the death situation at home (132.4 ± 9.8) was higher than "never discussed death" and other situations; who had never suffered from serious illness (131.8 ± 9.5) was higher than that of those who had suffered. The differences were statistically significant ($P<0.05$). The correlations coefficient between meaning of life ($r=0.47$), between the death fear dimension ($r=-0.35$), death escape dimension ($r=-0.27$), natural acceptance dimension ($r=0.34$), approach acceptance dimension ($r=-0.21$), escape acceptance dimension ($r=-0.24$), adolescent life events ($r=0.19$) and end-of-life care attitudes were significant correlation ($P<0.01$). After controlling of demographic sociological variables, psychological factors have made new contributions to hospice care attitudes, and the explained variance has increased by 32.0%. Medical students with different characteristics have significant differences in end-of-life care attitudes, which suggesting the lack of education in end-of-life care in our country, and the failure of education to enable medical students of different backgrounds to establish a scientific, rational and humanistic care attitude.

Keywords. End-of-life care attitude, medical students, end-of-life care education

Introduction

Since the 1960s, a special palliative medical service project represented by the United Kingdom has emerged in the world. The end-of-life care team composed of multi-disciplinary and multi-faceted professionals provides comprehensive soothing care for dying patients who have no hope of cure under current conditions, especially advanced cancer patients, and maintains the dignity of dying patients, so as to protect cancer patients. The pain can be relieved and the last journey of life can be spent comfortably and peacefully. This is "end-of-life care" (Xianwu Meng, 2003). Dr. Sanders founded St. Christopher's end-of-life care institution in the

1960s, marking the establishment of modern end-of-life care, from which countries around the world have successively launched end-of-life care campaigns (Tianzhong Huang, 1992). At present, people in our country are still relatively unfamiliar with end-of-life care. Many students may have limited opportunities in the course of their clinical placements to experience end of life care provision; or may be denied access by their peers who act as gatekeepers to the most unwell patients (Bowden J, Dempsey K, et al, 2013). As a future medical worker whose work is about human life, health, disease, and death, their attitudes towards end-of-life of medical students affects all aspects of their medical behavior.

The purposes of this article were to investigate the attitudes of medical students in China to end-of-life care and analyze the factors affecting their attitudes towards end-of-life care, to provide basic data for medical students, educators, education managers and the public to understand the present situation of medical students' end-of-life care attitudes, and to provide a reference for the further development of end-of-life care education.

Objects and Methods

Stratified random sampling was used. Medical students (clinical and nursing major) in the first to fourth grades of the School of Medicine, Xi'an Jiaotong University during October 2020 were included in the survey. Randomly sampled 25 students in each grade between grade one to grade four. Participation in the study was entirely voluntary and oral consent was obtained from each student prior to the study commencing.

To measure student attitudes towards end-of-life care, participants were asked to complete several questionnaires. The survey objects were handed out the questionnaires by investigator and complete it separately. Basic personal information includes gender, major, grade, conscious physical condition, discussing the death situation at home, reading death information, attending a funeral, whether there is seriously ill members in the family or not, and whether self had been seriously ill or not.

Prepare survey manuals, train investigators, and conduct pre-surveys before testing. All questionnaires were completed in a relatively concentrated time. The testing process is strictly in accordance with the procedures of psychological testing. Parallel double entry is implemented during data entry.

Questionnaires

End-of-Life Care Attitudes Questionnaire: The end-of-life care service attitude questionnaire compiled by Yueping Zheng (Ping Yue, 2008). It includes seven aspects: attitude towards death and near-death of self, attitude towards death and near-death of patients, attitude towards patients and their families implementing end-of-life care, self-assessment of end-of-life care knowledge, support for end-of-life care, attitude towards death education and end-of-life care education and views on the current situation of end-of-life care in hospitals. There are a total of 38 items, including 26 positive questions and 12 negative questions. This questionnaires are used Likert's 5-level scoring. For positive questions: 5 points for "strongly agreement", 4 points for "agreement", 3 points for "unsure", 2 points for "disagreement", and 1 point for "strongly disagreement". For negative questions: 1 point for "Strongly agreement", 2 points for "agreement", 3 points for "unsure", 4 point for "disagreement", 5 points for "Strongly disagreement". The higher the score, the more likely to accept end-of-life care.

Death Attitudes Questionnaire: The revised version of depiction of death attitude compiled by Wong et al (Wong FTP, Reker GT, et al, 1994). There are five dimensions of death fear, death avoidance, natural acceptance, approaching acceptance, and escape acceptance, including 32 questions which are used Likert's 5-level scoring (1= strongly disagree, 2=disagree,

3=ordinary , 4=agree, 5=strongly agree). The total scale was not counted, the higher the score in the dimension, the more the respondent's attitude toward this dimension.

Meaning of Life Questionnaire: The meaning of life questionnaire compiled by Zhengqun Sheng et al (Zhengqun Sheng, 2007). There are 46 questions which are used Likert's 7-level scoring(1=very non-conforming, 2=some non-conforming, 3=a little non-conforming, 4=not very clear, 5=somewhat conforming, 6=some conforming, 7=very conforming). The higher the total score, the stronger the sense of meaning in life .

Adolescent Self-evaluation Life Events Scale (Xiancheng Liu, Lianqi Liu, et al, 1997): There are 6 items: interpersonal relationship, learning pressure, punishment, loss of relatives and property, health and adaptation problems, and others; including 27 negative life events which are used Likert's 5-level scoring to evaluate the influence to life(1=no effect, 2=mild, 3=moderate, 4=severe, 5=extremely severe). The higher the score, the higher the frequency of negative events or the larger amount of stimulation.

Psychological scale: Rosenberg Self-esteem Scale, Internal and External Control Personality Traits Scale, Eysenck Personality Questionnaire, General Self-efficacy Scale.

Data collection and analysis

Data was analysed using the SPSS (IBM, v22.0) statistical package. The statistical description of the measurement data is represented by $(\bar{x} \pm s)$. The two groups of data are compared by t test, and the multiple groups of data are compared by analysis of variance. Pearson correlation analysis was used to evaluate correlation between two variables. Hierarchical regression analysis was used to assess the factors affecting death attitude. $P < 0.05$ was considered significant.

Results

100 questionnaires were distributed, 100 were recovered, valid questionnaires were 91, and the effective rate was 91%. Among the 91, 31.8% are males and 69.2% are females; the main specialty is clinical; most students are in good health and have participated in funerals; most of the students have no seriously ill members in their homes, and they have not suffered from serious illnesses themselves (Table 1).

Table 1. Basic situation of respondents (n(%))

Characteristics	n(%)	Characteristics	n(%)
Gender		Discussing the death situation at home	
Female	63(69.2)	Never discussed	19(20.8)
Male	28(31.8)	Try to avoid discussion	21(23.1)
		Talk when necessary	16(17.6)
		Unnatural atmosphere	14(15.4)
		Calm and open atmosphere	21(23.1)
Major		There is seriously ill members in the family	
Clinical	68(74.7)	Yes	15(16.5)
Nursing	23(25.3)	No	76(83.5)
Grade		Self had been seriously ill or not	
Grade 1	23(25.3)	Yes	10(11.0)
Grade 2	23(25.3)	No	81(89.0)
Grade 3	22(24.1)		
Grade 4	23(25.3)		

Attending funeral	a
Yes	68(74.7)
No	23(25.3)

The scores of end-of-life care attitudes, meaning of life, adolescent life events and death attitudes of respondents

Nursing major is higher than clinical; grade 1 is higher than grade 2, 3 or 4; "Calm and open atmosphere" in discussing the death situation at home was higher than "never discussed death" and other situations; the score of who have never suffered from serious illness was higher than that of those who had suffered. The differences were statistically significant ($P < 0.05$) (Table 2).

There were significant differences of the scores of meaning of life among major, grade, attending funerals or not, situation of discussing the death at home, there were serious illness members in the family or not, and they had suffered serious illnesses or not ($P < 0.05$) (Table 2).

There were significant differences of the scores of adolescent life events among grade, situation of discussing the death at home, there were serious illness members in the family or not, and they had suffered serious illnesses or not ($P < 0.05$) (Table 2).

Table 2. The scores of end-of-life care attitudes, meaning of life and adolescent life events of respondents

Characteristics	The scores of end-of-life care attitudes		The scores of meaning of life		The scores of adolescent life events	
	$\bar{x} \pm s$	P	$\bar{x} \pm s$	P	$\bar{x} \pm s$	P
Gender		0.42		0.13		0.30
Female	129.1±9.4		55.6±9.5		2.8±0.7	
Male	129.3±7.8		57.3±7.3		2.9±0.8	
Major		<		0.03		0.89
Clinical	130.3±8.9	0.01	55.7±8.5		2.9±0.8	
Nursing	133.3±9.6		57.9±7.2		2.9±1.1	
Grade		<		0.01		<
Grade 1	132.3±9.8	0.01	57.8±7.4		2.9±1.1	0.01
Grade 2	130.3±9.7		57.3±7.6		2.7±0.8	
Grade 3	130.5±8.6		56.7±8.5		2.6±0.6	
Grade 4	127.6±9.7		56.1±9.1		2.7±0.6	
Attending a funeral		0.18		<		0.23
Yes	132.4±8.7		57.6±8.8	0.01	2.6±0.9	
No						

	130.5±		55.8±		2.7±0.	
	6.3		8.6		7	
Discussing the death situation at home		<		<		<
Never discussed	125.2±	0.01	56.6±	0.01	2.6±0.	0.01
Try to avoid discussion	9.4		9.3		7	
Talk when necessary	127.1±		54.9±		2.8±0.	
Unnatural atmosphere	9.8		9.1		9	
Calm and open atmosphere	131.6±		56.9±		2.8±0.	
	9.6		9.2		7	
	130.8±		55.7±		2.8±0.	
	9.5		9.3		7	
	132.4±		59.5±		2.5±0.	
	9.8		8.2		6	
There is seriously ill members in the family		0.057		<		<
Yes	127.8±		54.8±	0.01	2.9±0.	0.01
No	9.7		9.8		7	
	131.3±		56.2±		2.6±0.	
	9.1		9.1		8	
Self had been seriously ill or not		<		<		<
Yes	126.8±	0.01	55.6±	0.01	2.9±0.	0.01
No	9.3		9.7		7	
	131.8±		56.8±		2.7±0.	
	9.5		8.9		9	

The score of death avoidance of males were higher than that of females ($P<0.01$); the score of natural acceptance of nursing major is higher than that of clinical major; the score of fear of death of grade 1 and with general health is higher than that of grade 2, 3, or 4 and with good health ($P<0.05$); the score of death avoidance for those who have participated in the funeral experience and currently have severely ill members in the family was higher than those who have not participated in the funeral and have no severely ill members ($P<0.05$); the score of death attitudes between five dimensions of discussing the death situation in different families are statistically significant ($P<0.05$) (Table 3).

Table 3. The scores of death attitudes of respondents

Characteristics	Death attitudes				
	death fear	death avoidance	natural acceptance	approaching acceptance	escape acceptance
Gender					
Female	2.6±0.8	2.7±0.8	3.6±0.7	2.4±0.7	2.4±0.9
Male	2.6±0.7	2.5±0.7*	3.6±0.6	2.3±0.6*	2.2±0.7*
Major					
Clinical	2.6±0.8	2.6±0.7	3.5±0.6	2.3±0.7	2.3±0.8
Nursing	2.5±0.8	2.6±0.8	3.7±0.6*	2.3±0.8	2.2±0.7*
Grade					
Grade 1	2.5±0.7	2.6±0.7	3.8±0.6	2.4±0.5	2.2±0.8
Grade 2	2.7±0.6	2.5±0.8	3.7±0.8	2.1±0.7	2.1±0.7
Grade 3	2.6±0.7	2.6±0.8	2.5±0.9	2.4±0.6	2.4±0.7



Grade 4	2.7±0.8	2.5±0.8	3.6±0.7*	2.4±0.7*	2.4±0.8*
Attending a funeral					
Yes	2.6±0.7	2.6±0.7	3.6±0.7	2.4±0.6	2.3±0.7
No	2.5±0.6	2.5±0.8*	3.8±0.7*	2.3±0.7*	2.1±0.9*
Discussing the death situation at home					
Never discussed	2.7±0.7	2.7±0.7	3.7±0.6	2.4±0.6	2.4±0.7
Try to avoid discussion	2.7±0.7	2.9±0.7	3.7±0.6	2.3±0.6	2.3±0.8
Talk when necessary	2.6±0.6	2.5±0.6	3.8±0.6	2.3±0.7	2.3±0.8
Unnatural atmosphere	2.7±0.7	2.6±0.7	3.7±0.6	2.5±0.6	2.3±0.7
Calm and open atmosphere	2.4±0.7*	2.4±0.7*	3.9±0.7*	2.2±0.6*	2.1±0.9*
There is seriously ill members in the family					
Yes	2.7±0.7	2.8±0.8	3.7±0.8	2.3±0.8	2.3±0.8
No	2.6±0.7	2.6±0.7*	3.9±0.7*	2.3±0.7	2.2±0.7*
Self had been seriously ill or not					
Yes	2.7±0.7	2.5±0.7	3.8±0.6	2.3±0.5	2.4±0.7
No	2.6±0.7	2.6±0.7	3.8±0.7	2.3±0.6	2.3±0.7

*P<0.05

The correlation of meaning of life, death attitudes, adolescent life events and end-of-life care attitudes

The correlation coefficient between meaning of life and end-of-life care attitudes was 0.47, and there was a significant correlation (P<0.05).

The correlation coefficients between the death fear dimension, death escape dimension, natural acceptance dimension, approach acceptance dimension, escape acceptance dimension and end-of-life care attitudes were -0.35, -0.27, 0.34, -0.21, -0.24, and there were significantly correlated (P<0.05).

The correlation coefficient between adolescent life events and end-of-life care attitudes was 0.19, and there was a significant correlation (P<0.05).

The hierarchical regression analysis of psychological factors and end-of-life care attitudes

After controlling of demographic sociological variables, psychological factors have made new contributions to hospice care attitudes, and the explained variance has increased by 32.0%, which means psychological factors can independently influence end-of-life care attitudes and have significant predictions for end-of-life care attitudes (Table 4).

Table 4. The hierarchical regression analysis of psychological factors and end-of-life care attitudes

Variables	end-of-life care attitudes	
	First step	Second step
Control variable		
Gender	0.02	-0.01
Major	-0.01	0.01
Grade	-0.19*	-0.11*
Attending a funeral	0.08*	-0.02
Discussing the death situation at home	-0.04	-0.03
There is seriously ill members in the family	0.03	-0.01
Self had been seriously ill or not	0.04	0.06*
psychological factors		
Meaning of life		0.20*
Self-esteem		0.15*
Internal and external control		0.07*
personality		0.04
Eysenck E dimension		-0.06*
Eysenck N dimension		-0.05
Eysenck P dimension		0.09*
Self-efficacy		0.00
Life event		
Death Attitudes		-0.16*
death fear		-0.09*
death avoidance		0.12*
natural acceptance		-0.01
approaching acceptance		0.04
escape acceptance		
R ²		0.43*
ΔR ²		0.32*
F		33.97*

*P<0.05

Discussion

This study found that the nursing students end-of-life care attitudes score was significantly higher than clinical students, which was consistent the growing body of literature (Yueping Zheng, 2008; Yueping Zheng, Yinglan Li, Yang Zhou, 2008; Yueping Zheng, Yinglan Li, Yang Zhou, 2010). Some scholars analyzed that the professional role of nurses determined that their end-of-life care attitudes were more positive than that of doctors, because nursing and care are the connotation of nurses' work and embody the humanistic connotation of end-of-life care. End-of-life care for patients is the source of nurses' sense of accomplishment, but doctors regard the death of the patient as a failure of their work (Ping Wang, Haiyan Li, 2005; Jin Qiu, 2005). Our study found that the discussion of death at home had a significant impact on attitudes towards end-of-life care, which suggesting talking about death under the easily and frankly atmosphere can make people treat death and dying patients with a normal and objective attitude. This study also found that the scores in end-of-life care

attitudes of lower grade medical students were higher than those in higher grades. This may be the reason that grade 1 students have a more optimistic attitude towards medicine due to their new exposure to medical education, as the grade grew, they found many diseases especially some terminal illnesses such as malignant tumors cannot be solved well in modern medicine, which had resulted in a more negative attitude of end-of-life care. In addition, our study found that the scores of those who had never suffered from serious illnesses were higher than those who had suffered from serious illnesses. It may be that those who have suffered from serious illnesses experience the despair of being diseased, which led to a more resistant attitude towards end-of-life care. In summary, it was suggested that personal background variables, environment and empirical factors can affect the individual's attitude towards hospice care.

The correlation analysis found that there were correlations between the end-of-life care attitudes and death attitudes in all dimensions. The natural acceptance dimension was positively correlated, and the other four dimensions were negatively correlated, which suggesting that a rational understanding of death can help improve the attitude of end-of-life care. This study also found that end-of-life care attitudes were positively correlated with self-esteem, Eysenck personality E dimension, and general self-efficacy, and was negatively correlated with the overall situation of life events. Further hierarchical regression analysis found that after controlling the influence of demographic sociological variables on psychological factors, psychological factors had a significant impact on attitudes towards end-of-life care. In summary, it was suggested that psychological factors are an important aspect that affects the attitude of end-of-life care.

Hospice care is a manifestation of social progress. The future professional role of medical students determines their attitude towards end-of-life care. At present, Humanities quality education, medical ethics education, and doctor-patient communication education are included as the basic requirements for the training of medical students in the three main medical education standards in the world (the minimum basic requirements for global medical education (Qinda Zhang, Tongfu Zhou, 2002), the World Health Organization's Western Pacific Region Medical Education Quality Assurance Guidelines (World Health Organization Western Pacific Regional Office, 2001), the International Standards of the World Medical Education Federation (Cheng Zeng, Xuehong Wan, et al, 2002) and our country undergraduate medical education standards-clinical medicine (Trial) (Ministry of Education, Ministry of Health, 2008). General Secretary Jinping Xi pointed out the direction of cultivating talents for Lide in the ideological and political work conference of colleges and universities. For medical students, Lide must be reflected in medical ethics, and the attitude of end-of-life care is the connotation of medical ethics. Establishing a scientific and rational end-of-life care attitude can improve the humanistic medical literacy of medical staff, and can ease the current tense doctor-patient relationship. The results of this study can provide basic information for relevant departments to find existing problems, and provide a reference for the further development of end-of-life care education.

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