



# Spirituality and Attitudes Toward Death Among Older Adults in Rural and Urban China: A Cross-Sectional Study

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## Abstract

The purpose of this study was to investigate spirituality and attitudes toward death among rural and urban elderly. We asked 134 older adults from rural areas and 128 from urban areas to complete a self-administrated questionnaire including the Spiritual Self-assessment Scale and Death Attitude Scale. The fear and anxiety of death, escape acceptance, natural acceptance, approach acceptance, and death avoidance scores of older adults living in rural areas were higher than those living in urban areas. The construction of social infrastructure and medical care should be strengthened in rural areas so as to improve older adults' attitudes toward death.

**Keywords** Spirituality · Attitudes toward death · Rural areas · Urban areas · Older adults

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## Introduction

Death is a natural and universal phenomenon that is inevitable in every individual's life cycle. As the second largest global economy, China is rapidly transforming into an ageing nation (Fang et al., 2015). It is predicted that there will be a large explosion in the older adult population by 2025, with up to 400 million people aged 65+ (26.9% of the total population) and 150 million people aged 80+ (Fang et al., 2015). It is likely that some older people will experience more deaths among older adults around them. The way elderly adults face their own death is an important factor in how they spend the rest of their lives (Nakagi & Tada, 2014). Negative attitudes of older adults toward death will adversely affect their emotional and psychological state (Mohammadpour et al., 2018). In a previous study, a total of 150 people were selected using the convenience sampling method to respond to questionnaires including the Death Attitude Profile-Revised (DAP-R), the Distress Tolerance Scale, and the Aggression Questionnaire. After using the Pearson correlation coefficient and multiple regression analysis, among death attitudes, neutral acceptance, approach acceptance, and incurable acceptance were found to have positive relationships with distress tolerance and negative relationships with anger and aggression (Esnaashari & Kargar, 2018). In another study, a total of 113 older inpatients were recruited for a cross-sectional study to fill out a questionnaire including the Beck Scale for Suicide Ideation (BBS) and DAP-R. From the results of univariate logistic regression analyses, escape acceptance was found to be associated with a higher risk of the wish to die, and a lower level of fear of death was associated with a higher probability of the wish to die among older people (Bonnewyn et al., 2016). We speculate that positive attitudes toward death may help older people spend their final days more peacefully. The COVID-19 pandemic may have changed the attitudes of older adults toward death to some extent. During this pandemic, older adults were found to experience severe death anxiety in China (Khademi et al., 2020), further verifying the necessity for older adults to establish a constructive view of life and death. In the post-pandemic era, there is an urgent need to explore how to alleviate the death anxiety of older adults and establish a positive view of death.

According to the National Bureau of Statistics, nearly 46% of elders live in rural China, approximately 34% live in urban China and the remaining 20% live in towns (Wang, 2022). In terms of the different needs of rural and urban older adults, a previous study found that immediate care should be provided due to inadequate support, especially among older adults living in rural China, as the oldest elderly in rural areas have greater long-term care needs than those in urban areas (Zhang et al., 2020). Furthermore, family and friend networks were found to have significantly different effects on the well-being of older adults in rural and urban China (Zheng & Chen, 2020). All of these factors may lead to a difference in attitudes toward death between rural and urban elderly. Previously, researchers have independently investigated the attitudes toward death of older adults in rural areas, but there is still a lack of research using the same scale to evaluate and

compare the attitudes toward death of older adults from rural and urban areas, which is also a major innovation of this study.

Spiritual health is an important part of older people's health. It has been defined as an inherent state that is closely associated with one individual's understanding of the meaning of life (Forlenza & Vallada, 2018). The same study also revealed that spirituality was positively related to better outcomes in prevention, healing, and treatment of disease. Moreover, researchers found that spirituality enhanced people's satisfaction with life, which in turn contributed to healthier behavior. In terms of spirituality among older adults with dementia, a systematic review concluded that spirituality was conducive to slowing cognitive decline and helping people use appropriate strategies to deal with their disease and ensure better quality of life (Agli et al., 2015).

Interestingly, some relationships were discovered between spirituality and attitudes toward death among elderly adults. For example, one study revealed that age-related changes in social losses, health functioning, and dealing with approaching death could be one of the factors for the cultivation of spirituality (Forlenza & Vallada, 2018). Another study found that when a person goes through good times and tough times, keeping death in mind provides spiritual and moral balance (Esnaashari & Kargar, 2018). There is growing empirical evidence in support of spirituality having positive effects on coping with a terminal disease and reducing death anxiety among older adults (Ellis & Wahab, 2013). Spirituality may interact with our attitudes toward death, which means that we may be able to promote the establishment of a good life and death by promoting spirituality in older people. In the context of COVID-19, it is necessary to study the correlation between spirituality and attitudes toward death again and compare it with previous studies based on the possible impact of the post-pandemic era on people.

This study aimed to determine the spirituality and attitudes toward death of older adults living in rural or urban areas in China during the post-pandemic era. In particular, this study had three aims:

- (1) To compare the spirituality and attitudes toward death of rural and urban older adults.
- (2) To simultaneously examine how spirituality and attitudes toward death vary with sociodemographic factors among rural and urban older adults.
- (3) To examine the correlations between spirituality and attitudes toward death.

To achieve these goals, the following hypotheses were examined:

**Hypothesis 1** The spirituality and attitudes toward death of older adults living in rural or urban areas are affected by where they live.

**Hypothesis 2** The spirituality and attitudes toward death of older adults living in rural or urban areas are influenced by sociodemographic factors.

**Hypothesis 3** The spirituality and attitudes toward death levels of older adults are related to each other.

## Materials and Methods

### Participants

The sample for this cross-sectional study was chosen from Sichuan Province, which is located in the southwest of China. The sample consisted of 262 older adults (68.8% women), 134 (54.5%) of whom lived in rural areas. A majority (rural areas: 54.5%; urban areas: 53.1%) were in the 60- to 69-year age range. Of older adults living in rural areas, 66.4% had primary school or lower education, 70.1% were married, 88.1% lived with their families, 81.3% were peasants, and 55.2% were healthy. (Several options were set up for participants to choose from. Option 1: I am diabetic; Option 2: I have hypertension; Option 3: I have coronary heart disease; Option 4: I have other diseases; Option 5: I do not have any disease. Participants who chose one or more of Options 1–4 were defined as unhealthy. Participants who chose Option 5 were defined as healthy.) Of older adults living in urban areas, 68.8% had primary school or lower education, 64.8% were married, 92.2% lived with their families, 72.7% were peasants, and 51.6% were healthy (Table 1).

The inclusion criteria were being over 60 years of age and having no cognitive, hearing, or communication impairment, measured by the Six-Item Screener, auditory functional assessment, and ACIS-FI (Callahan et al., 2002; Fan et al., 2020; Perrot & Fischer, 2009).

### Descriptive Information Form

This form was developed to collect information about older adults. It included information, such as age, gender, marital status, educational status, marital status, dwelling condition, profession before retirement, health condition, and talking about death.

### Materials

The Spiritual Self-Assessment Scale (SSS) consists of 30 items in five factors: *meaning of life*, *self*, *family*, *people around*, and *the environment* (Yawen, 2012). Answers are selected on a 5-point scale. The scoring of each item ranges from 1 = *strongly disagree* to 5 = *strongly agree*. In a previous study surveying older adults, the Cronbach's  $\alpha$  was 0.84. In this study, Cronbach's  $\alpha$  was 0.914 for total spirituality.

The Death Attitude Scale (Jing, 2012) consists of 25 items in five factors: *fear and anxiety of death*, *escape acceptance* (individuals fear life more than death, seeing death as a way to escape the pain of real life), *natural acceptance* (people

**Table 1** Sociodemographic characteristics of older adults in rural and urban areas

Demographic characteristics		Rural areas		Urban areas	
		N	%	N	%
Age	$\chi^2=0.118; P=0.943$				
60–69		73	54.5	68	53.1
70–79		47	35.1	45	35.2
80 and over		14	10.4	15	11.7
Gender	$\chi^2=5.624; P=0.018$				
Male		61	45.5	40	31.3
Female		73	54.5	88	68.8
Educational status	$\chi^2=18.182; P=0.003$				
Primary school or below		89	66.4	88	68.8
Middle school or above		45	33.6	40	31.2
Marital status	$\chi^2=4.240; P=0.120$				
Single		40	29.9	45	35.2
Married		94	70.1	83	64.8
Dwelling condition	$\chi^2=19.404; P=0.001$				
Live with families		118	88.1	118	92.2
Live alone		16	11.9	10	7.8
Profession before retirement	$\chi^2=4.805; P=0.187$				
Teacher		3	2.2	3	2.3
Worker		16	11.9	28	21.9
Cadre		6	4.5	4	3.1
Peasant		109	81.3	93	72.7
Health condition	$\chi^2=0.353; P=0.553$				
Healthy		74	55.2	66	51.6
Unhealthy		60	44.8	62	48.4
Total		134	100	128	100

who hold this attitude do not fear or accept death but see death as a natural stage in the process of life), *approach acceptance* (individuals believe that there will be a better life after death and regard death as a channel to happiness, so they can easily accept death and even hope that death will come earlier), and *death avoidance* (an individual's avoidance of symbols associated with death that can trigger the fear of death). Answers are selected on a 5-point scale. The scoring of each item ranges from 1 = *strongly disagree* to 5 = *strongly agree*. In a study surveying older adults, the Cronbach's  $\alpha$  was 0.84. In this study, Cronbach's  $\alpha$  was 0.793 for the total score.

## Procedure

Data collection for the study was conducted between February and May 2021. Verbal informed consent was obtained on-site prior to participation. Study measures were individually administered in an interview format by trained research personnel. The study completion time for each participant was approximately 30 min. All the participants were interviewed anonymously.

## Data Analysis

The Statistical Package for the Social Sciences version 25.0 was used for data entry and evaluation. The data are presented as numbers, percentages, and averages. Analysis of variance (ANOVA) and a *t-test* for two independent samples were used to analyse the correlations of spirituality and attitudes toward death with sociodemographic factors. One-way ANOVA was used to compare differences among mean values of three or more independent samples. Post hoc tests (Tukey HSD) were used when one-way ANOVA results differed significantly. We applied a multiple regression analysis to test the sociodemographic factors predicting spirituality and attitudes toward death. Pearson's correlation analysis and multiple regression analysis were used to determine the intercorrelation between the scores of spirituality and attitudes toward death. Statistical significance was set at  $P < 0.05$ .

## Results

### Determination of Living Place with Spirituality and Attitudes Toward Death

The meaning of life ( $t = -4.145$ ,  $P < 0.001$ ) and environment ( $t = -4.588$ ,  $P < 0.001$ ) scores of older adults living in urban areas were higher than the scores of those living in rural areas, while the fear and anxiety of death ( $t = 5.910$ ,  $P < 0.001$ ), escape acceptance ( $t = 0.745$ ,  $P < 0.001$ ), natural acceptance ( $t = 1.547$ ,  $P < 0.001$ ), approach acceptance ( $t = 0.423$ ,  $P < 0.001$ ), and death avoidance ( $t = 4.902$ ,  $P < 0.001$ ) scores of older adults living in rural areas were higher than the scores of those living in urban areas. There was no significant difference in the other subscale scores of spirituality and attitudes toward death between elderly people living in rural and urban areas (Table 2).

### Correlation of Spirituality and Attitudes Toward Death with Sociodemographic Factors

The results indicated that the family ( $t = -2.552$ ,  $P = 0.012$ ), people around ( $t = -5.201$ ,  $P = 0.000$ ), the environment ( $t = -2.629$ ,  $P = 0.010$ ), total spirituality ( $t = -3.799$ ,  $P = 0.000$ ), fear and anxiety of death ( $t = -2.887$ ,  $P = 0.005$ ), escape acceptance ( $t = -3.824$ ,  $P = 0.000$ ), and natural acceptance ( $t = -2.306$ ,

**Table 2** Spirituality and attitudes toward death scores of older adults living in rural and urban areas

Variable	Spirituality							Attitudes toward death			
	Meaning of life	Self	Family	People around	The environment	Total spirituality	Fear and anxiety of death	Escape acceptance	Natural acceptance	Approach acceptance	Death avoidance
Rural areas	22.351 ± 3.508	24.239 ± 3.088	26.164 ± 4.170	20.866 ± 4.078	22.687 ± 3.123	116.310 ± 13.256	15.470 ± 2.326	14.403 ± 2.314	15.015 ± 1.522	14.112 ± 2.154	19.030 ± 2.088
Urban areas	24.281 ± 4.023	23.445 ± 3.527	25.859 ± 3.370	21.016 ± 4.215	24.539 ± 3.411	119.140 ± 14.216	13.625 ± 2.721	13.117 ± 3.262	12.695 ± 2.389	12.180 ± 3.438	17.703 ± 2.291
Statistical analysis	<i>t</i> = -4.145 <b><i>P</i> &lt; 0.001</b>	<i>t</i> = 1.940 <i>P</i> = 0.053	<i>t</i> = 0.652 <i>P</i> = 0.515	<i>t</i> = -0.293 <i>P</i> = 0.770	<i>t</i> = -4.588 <b><i>P</i> &lt; 0.001</b>	<i>t</i> = -1.670 <i>P</i> = 0.096	<i>t</i> = 5.910 <b><i>P</i> &lt; 0.001</b>	<i>t</i> = 0.745 <b><i>P</i> &lt; 0.001</b>	<i>t</i> = 1.547 <b><i>P</i> &lt; 0.001</b>	<i>t</i> = 0.423 <b><i>P</i> &lt; 0.001</b>	<i>t</i> = 4.902 <b><i>P</i> &lt; 0.001</b>
Cohen's <i>D</i>	-0.512	0.240	0.080	-0.036	-0.567	-0.206	0.730	0.456	1.164	0.677	0.606

We bolded the significant results with *P* < 0.05 for the purpose of attracting attention and facilitating readers' search. We italicized the symbols for variable numbers such as *P*, *t*, *B*, *BE*, *β* and Cohen's *D*

$P=0.023$ ) scores of the female elderly living in rural areas were higher than those of males. Furthermore, the meaning of life ( $t = -2.427, P=0.017$ ), self ( $t = -1.286, P=0.046$ ), and people around ( $t = -4.497, P<0.001$ ) scores of the female elderly living in urban areas were higher than those of males.

Moreover, in rural areas, older adults aged 60–69 years had the highest scores on meaning of life ( $F=3.213, P=0.043$ ), people around ( $F=10.830, P<0.001$ ), and total spirituality ( $F=6.668, P=0.002$ ), while those aged 70–79 years had the highest scores on natural acceptance ( $F=8.617, P<0.001$ ). In urban areas, older adults aged 80 years and above had the highest scores on family ( $F=3.149, P=0.046$ ) but the lowest scores on people around ( $F=10.966, P<0.001$ ). Older adults aged 70–79 years had the highest scores on escape acceptance ( $F=3.895, P=0.023$ ), and the score for death avoidance ( $F=4.062, P=0.020$ ) of older adults aged 60–69 years was lower than that of older adults in other age ranges. The results of post hoc tests (Tukey HSD) are shown in Table 3.

According to the educational level, in both rural and urban areas, the score on self ( $t = -3.467, P=0.001; t = -2.668, P=0.009$ ) was higher among those with middle school or higher education. However, older adults living in urban areas who had completed middle school or higher education had a lower score on escape acceptance ( $t=2.053, P=0.042$ ).

As for marital status, the fear and anxiety of death ( $t=2.905, P=0.005$ ) and natural acceptance ( $t=3.126, P=0.002$ ) were higher among the single older adults living in rural areas. Furthermore, in urban areas, the married elderly adults had higher scores on meaning of life ( $t = -2.081, P=0.039$ ), self ( $t = -3.166, P=0.002$ ), people around ( $t = -3.874, P<0.001$ ), the environment ( $t = -2.395, P=0.020$ ), and total spirituality ( $t = -3.050, P=0.003$ ), while natural acceptance ( $t=4.654, P<0.001$ ) and death avoidance ( $t=3.765, P<0.001$ ) were lower among the married elderly than among the single elderly.

With regard to health, healthy elderly in rural areas had higher scores on the meaning of life ( $t=2.575, P=0.012$ ), people around ( $t=2.179, P=0.032$ ), and total spirituality ( $t=2.102, P=0.037$ ) but lower scores on death avoidance ( $t = -3.577, P<0.001$ ). Moreover, the meaning of life ( $t=3.387, P=0.001$ ), self ( $t=2.812, P=0.006$ ), people around ( $t=3.311, P=0.001$ ), the environment ( $t=2.289, P=0.024$ ), and total spirituality ( $t=3.676, P<0.001$ ) scores were lower, while the escape acceptance ( $t = -2.358, P=0.020$ ), natural acceptance ( $t = -3.13, P=0.002$ ), approach acceptance ( $t = -2.349, P=0.020$ ), and death avoidance ( $t = -2.638, P=0.009$ ) scores were higher among the unhealthy elderly adults living in urban areas than among healthy ones (Table 3). As shown in Table 4, gender, age, marital status, educational status, and health condition of older adults in rural and urban areas were entered into a multiple regression model to predict meaning of life, the environment, and each dimension of attitudes toward death.

## The Relationship Between Spirituality and Attitudes Toward Death

In terms of the relationship between the attitudes toward death and spirituality scores, the results revealed that meaning of life had a negative relationship with



**Table 3** Spirituality and attitudes toward death levels of older adults according to sociodemographic characteristics

Sociodemographic characteristics	Spirituality				Attitudes toward death						
	Meaning of life	Self	Family	People around	The environment	Total spirituality	Fear and anxiety of death	Escape acceptance	Natural acceptance	Approach acceptance	Death avoidance
<b>Rural areas</b>											
<i>Gender</i>											
Male (N=61)	21.820±3.854	23.869±2.849	25.148±4.844	19.033±3.697	21.902±3.664	111.771±13.975	14.853±2.072	13.607±2.185	14.689±1.587	14.115±2.074	19.033±2.089
Female (N=73)	22.795±3.149	24.548±3.262	27.014±3.310	22.397±3.756	23.343±2.422	120.096±11.395	15.986±2.412	15.069±2.2191	15.288±1.419	14.110±2.233	19.027±2.101
Statistical analysis	<i>t</i> = -1.612	<i>t</i> = -1.286	<i>t</i> = -2.552	<i>t</i> = -5.201	<i>t</i> = -2.629	<i>t</i> = -3.799	<i>t</i> = -2.887	<i>t</i> = -3.824	<i>t</i> = -2.306	<i>t</i> = 0.014	<i>t</i> = 0.015
<i>Cohen's D</i>	-0.280	-0.220	-0.457	-0.902	-0.472	-0.659	-0.500	-0.663	-0.400	0.002	0.003
<i>P</i>	0.109	0.201	<b>0.012</b>	<b>&lt;0.001</b>	<b>0.010</b>	<b>&lt;0.001</b>	<b>0.005</b>	<b>&lt;0.001</b>	<b>0.023</b>	<b>0.989</b>	<b>0.988</b>
<b>Urban areas</b>											
<i>Gender</i>											
Male (N=40)	23.025±5.031	22.525±3.226	26.675±1.992	18.700±3.188	24.625±3.160	115.550±9.506	13.750±2.696	13.400±2.706	13.175±2.438	11.975±2.236	17.825±1.960
Female (N=88)	24.852±3.351	23.864±3.595	25.489±3.787	22.068±4.218	24.500±3.536	120.773±15.681	13.568±2.745	12.989±3.492	12.477±2.349	12.273±3.871	17.648±2.436
Statistical analysis	<i>t</i> = -2.427	<i>t</i> = -1.286	<i>t</i> = 1.865	<i>t</i> = -4.497	<i>t</i> = 0.191	<i>t</i> = -1.948	<i>t</i> = 0.349	<i>t</i> = 0.725	<i>t</i> = 1.540	<i>t</i> = -0.548	<i>t</i> = 0.404
<i>Cohen's D</i>	-0.463	-0.384	0.355	-0.857	0.037	-0.371	0.067	0.126	0.294	-0.086	0.077
<i>P</i>	<b>0.017</b>	<b>0.046</b>	0.065	<b>&lt;0.001</b>	0.848	0.054	0.727	0.470	0.126	0.585	0.687

**Table 3** (continued)

Sociodemographic characteristics	Spirituality		Attitudes toward death									
	Meaning of life	Spirituality	Self	Family	People around	The environment	Total spirituality	Fear and anxiety of death	Escape acceptance	Natural acceptance	Approach acceptance	Death avoidance
Rural Areas	22.986 ± 3.298	24.356 ± 3.268	24.356 ± 3.268	26.808 ± 3.143	22.178 ± 4.043	23.329 ± 2.958	119.658 ± 13.631	15.480 ± 2.340	14.685 ± 2.185	14.808 ± 1.381	14.452 ± 2.122	18.863 ± 2.250
Age 60–69 (N = 73)												
(A)												
70–79 (N = 47)	21.830 ± 3.266	24.340 ± 2.958	25.468 ± 5.047	19.723 ± 3.652	19.723 ± 3.652	22.255 ± 3.018	113.617 ± 11.035	15.468 ± 2.330	13.894 ± 2.513	15.638 ± 1.566	13.702 ± 2.330	19.319 ± 1.990
(B)												
80 and above (N = 14)	20.786 ± 4.693	23.286 ± 2.525	25.143 ± 5.275	17.857 ± 2.878	17.857 ± 2.878	20.786 ± 3.490	107.857 ± 13.102	15.429 ± 2.409	14.643 ± 2.134	14.000 ± 1.301	13.714 ± 1.383	18.929 ± 1.439
(C)												
Statistical analysis	$F = 3.213$	$F = 0.742$	$F = 1.974$	$F = 10.830$	$F = 4.852$	$F = 6.668$	$F = 0.003$	$F = 1.776$	$F = 8.617$	$F = 2.029$	$F = 0.697$	
Post hoc tests	$P = 0.043$	$P = 0.478$	$P = 0.143$	$P < 0.001$	$P = 0.009$	$P = 0.002$	$P = 0.997$	$P = 0.173$	$P < 0.001$	$P = 0.136$	$P = 0.500$	
$\eta^2$	0.047	0.011	0.029	0.142	0.069	0.092	0.000	0.026	0.116	0.030	0.011	
				A > B; A > C	A > B; A > C	A > B; A > C			A < B; B > C			

**Table 3** (continued)

Sociodemographic characteristics	Spirituality			Attitudes toward death							
	Meaning of life	Family	People around	The environment	Total spirituality	Fear and anxiety of death	Escape acceptance	Natural acceptance	Approach acceptance	Death avoidance	
Urban areas											
60–69 (N = 68) (A)	24.412 ± 3.802	24.000 ± 3.863	25.206 ± 3.972	22.118 ± 4.245	24.397 ± 3.558	120.132 ± 16.561	13.132 ± 2.676	12.382 ± 3.315	12.338 ± 2.367	12.088 ± 3.847	17.265 ± 2.501
70–79 (N = 45) (B)	24.556 ± 4.688	23.178 ± 3.032	26.400 ± 2.359	20.711 ± 3.684	25.178 ± 3.359	120.022 ± 11.218	14.044 ± 2.860	14.022 ± 3.306	12.889 ± 2.656	12.311 ± 3.103	17.933 ± 1.888
80 and above (N = 15) (C)	22.867 ± 2.475	21.733 ± 2.764	27.200 ± 2.242	16.933 ± 2.865	23.267 ± 2.520	112.000 ± 7.964	14.600 ± 2.098	13.733 ± 1.981	13.733 ± 0.961	12.200 ± 2.455	19.000 ± 1.890
Statistical analysis	<i>F</i> = 1.069 <i>P</i> = 0.347	<i>F</i> = 2.816 <i>P</i> = 0.064	<i>F</i> = 3.149 <b><i>P</i> = 0.046</b>	<i>F</i> = 10.966 <b><i>P</i> &lt; 0.001</b>	<i>F</i> = 1.919 <i>P</i> = 0.151	<i>F</i> = 2.184 <i>P</i> = 0.117	<i>F</i> = 2.682 <i>P</i> = 0.072	<i>F</i> = 3.895 <b><i>P</i> = 0.023</b>	<i>F</i> = 2.373 <i>P</i> = 0.097	<i>F</i> = 0.056 <i>P</i> = 0.945	<i>F</i> = 4.062 <b><i>P</i> = 0.020</b>
Post hoc tests		<i>A</i> < <i>C</i>	<i>A</i> < <i>C</i>	<i>A</i> > <i>C</i> ; <i>B</i> > <i>C</i>				<i>A</i> < <i>B</i>			<i>A</i> < <i>C</i>
η <sup>2</sup>	0.017	0.043	0.048	0.149	0.030	0.034	0.041	0.059	0.037	0.001	0.061

**Table 3** (continued)

Sociodemographic characteristics	Spirituality		Attitudes toward death									
	Meaning of life	Spirituality	Self	Family	People around	The environment	Total spirituality	Fear and anxiety of death	Escape acceptance	Natural acceptance	Approach acceptance	Death avoidance
<b>Rural areas</b>												
<i>Educational status</i>												
Primary school or below (N=89)	22.034 ± 3.550	23.607 ± 3.197	25.966 ± 4.241	20.832 ± 3.724	23.000 ± 2.872	115.438 ± 13.561	15.270 ± 2.104	14.393 ± 2.076	15.180 ± 1.512	14.292 ± 2.227	19.124 ± 2.285	
Middle school or above (N=45)	22.978 ± 3.374	25.489 ± 2.446	26.556 ± 4.043	20.933 ± 4.745	22.067 ± 3.519	118.022 ± 12.601	15.867 ± 2.693	14.422 ± 2.751	14.689 ± 1.505	13.756 ± 1.979	18.844 ± 1.637	
Statistical analysis	<i>t</i> = -1.478	<i>t</i> = -3.467	<i>t</i> = -0.771	<i>t</i> = -0.126	<i>t</i> = 1.539	<i>t</i> = -1.066	<i>t</i> = -1.300	<i>t</i> = -0.062	<i>t</i> = 1.778	<i>t</i> = 1.366	<i>t</i> = 0.812	
<i>Cohen's D</i>	<i>P</i> = 0.142	<b><i>P</i> = 0.001</b>	<i>P</i> = 0.442	<i>P</i> = 0.900	<i>P</i> = 0.128	<i>P</i> = 0.288	<i>P</i> = 0.198	<i>P</i> = 0.951	<i>P</i> = 0.078	<i>P</i> = 0.174	<i>P</i> = 0.419	
	-0.270	-0.634	-0.141	-0.025	0.301	-0.195	-0.258	-0.012	0.325	0.250	0.134	
<b>Urban areas</b>												
<i>Educational status</i>												
Primary school or below (N=88)	24.705 ± 3.364	22.898 ± 3.720	25.580 ± 3.735	20.955 ± 3.841	24.477 ± 3.562	118.614 ± 14.572	13.682 ± 2.719	13.511 ± 3.366	12.955 ± 2.518	12.398 ± 3.737	17.864 ± 2.393	
Middle school or above (N=40)	23.350 ± 5.117	24.650 ± 2.732	26.475 ± 2.298	21.150 ± 4.990	24.675 ± 3.092	120.300 ± 13.506	13.500 ± 2.755	12.250 ± 2.871	12.125 ± 1.990	11.700 ± 2.643	17.350 ± 2.032	
Statistical analysis	<i>t</i> = 1.781	<i>t</i> = -2.668	<i>t</i> = -1.399	<i>t</i> = -0.220	<i>t</i> = -0.303	<i>t</i> = -0.621	<i>t</i> = 0.349	<i>t</i> = 2.053	<i>t</i> = 1.838	<i>t</i> = 1.209	<i>t</i> = 1.177	
<i>Cohen's D</i>	<i>P</i> = 0.077	<b><i>P</i> = 0.009</b>	<i>P</i> = 0.164	<i>P</i> = 0.827	<i>P</i> = 0.762	<i>P</i> = 0.536	<i>P</i> = 0.727	<b><i>P</i> = 0.042</b>	<i>P</i> = 0.068	<i>P</i> = 0.230	<i>P</i> = 0.241	
	0.340	-0.509	-0.267	-0.046	-0.058	-0.118	0.067	0.392	0.351	0.203	0.225	

**Table 3** (continued)

Sociodemographic characteristics	Spirituality		Attitudes toward death								
	Meaning of life	Spirituality	People around	The environment	Total spirituality	Fear and anxiety of death	Escape acceptance	Natural acceptance	Approach acceptance	Death avoidance	
<b>Rural</b>											
<i>Marital status</i>											
areas	21.925 ± 4.147	24.100 ± 4.144	26.750 ± 4.743	19.950 ± 4.935	22.650 ± 3.409	115.375 ± 17.094	16.500 ± 2.961	14.400 ± 2.570	15.625 ± 1.564	13.750 ± 2.295	19.350 ± 2.082
Single (N = 40)											
Married (N = 94)	22.532 ± 3.205	24.298 ± 2.535	25.915 ± 3.901	21.255 ± 3.6133	22.702 ± 3.012	116.702 ± 11.324	15.032 ± 1.846	14.404 ± 2.211	14.755 ± 1.434	14.266 ± 2.085	18.894 ± 2.087
Statistical analysis	$t = -0.916$ $P = 0.361$	$t = -0.281$ $P = 0.780$	$t = 1.061$ $P = 0.290$	$t = -1.708$ $P = 0.090$	$t = -0.088$ $P = 0.930$	$t = -0.529$ $P = 0.598$	$t = 2.905$ $P = 0.005$	$t = -0.010$ $P = 0.992$	$t = 3.126$ $P = 0.002$	$t = -1.272$ $P = 0.206$	$t = 1.159$ $P = 0.248$
Cohen's D	-0.173	-0.064	0.200	-0.322	-0.017	-0.100	0.657	-0.002	0.590	-0.240	0.219
<b>Urban</b>											
<i>Marital status</i>											
areas	23.289 ± 3.527	22.022 ± 4.131	25.444 ± 4.874	19.156 ± 4.242	23.444 ± 4.304	113.356 ± 18.039	13.933 ± 2.700	13.778 ± 3.704	13.933 ± 2.115	12.467 ± 3.733	18.689 ± 2.183
Single (N = 45)											
Married (N = 83)	24.819 ± 4.191	24.217 ± 2.897	26.084 ± 2.165	22.024 ± 3.863	25.133 ± 2.658	122.277 ± 10.492	13.458 ± 2.733	12.759 ± 2.957	12.024 ± 2.268	12.024 ± 3.280	17.169 ± 2.180
Statistical analysis	$t = -2.081$ $P = 0.039$	$t = -3.166$ $P = 0.002$	$t = -0.837$ $P = 0.406$	$t = -3.874$ $P < 0.001$	$t = -2.395$ $P = 0.020$	$t = -3.050$ $P = 0.003$	$t = 0.944$ $P = 0.347$	$t = 1.700$ $P = 0.092$	$t = 4.654$ $P < 0.001$	$t = 0.694$ $P = 0.489$	$t = 3.765$ $P < 0.001$
Cohen's D	-0.385	-0.650	-0.190	-0.717	-0.508	-0.655	0.175	0.315	0.862	0.129	0.697

**Table 3** (continued)

Sociodemographic characteristics	Attitudes toward death																																
	Spirituality		Meaning of life		Self		Family		People around		The environment		Total spirituality		Fear and anxiety of death		Escape acceptance		Natural acceptance		Approach acceptance		Death avoidance										
<b>Rural Health condition</b>																																	
areas																																	
Healthy (N = 74)	23.068 ± 2.696	24.581 ± 2.416	26.460 ± 3.413	21.568 ± 3.445	22.770 ± 2.656	118.446 ± 9.993	15.460 ± 2.028	14.405 ± 2.369	14.824 ± 1.254	14.068 ± 1.975	18.473 ± 1.706	23.068 ± 2.696	24.581 ± 2.416	26.460 ± 3.413	21.568 ± 3.445	22.770 ± 2.656	118.446 ± 9.993	15.460 ± 2.028	14.405 ± 2.369	14.824 ± 1.254	14.068 ± 1.975	18.473 ± 1.706	23.068 ± 2.696	24.581 ± 2.416	26.460 ± 3.413	21.568 ± 3.445	22.770 ± 2.656	118.446 ± 9.993	15.460 ± 2.028	14.405 ± 2.369	14.824 ± 1.254	14.068 ± 1.975	18.473 ± 1.706
Unhealthy (N = 60)	21.467 ± 4.160	23.817 ± 3.735	25.800 ± 4.953	20.000 ± 4.629	22.583 ± 3.637	113.667 ± 16.116	15.483 ± 2.665	14.400 ± 2.264	15.250 ± 1.782	14.167 ± 2.373	19.717 ± 2.315	21.467 ± 4.160	23.817 ± 3.735	25.800 ± 4.953	20.000 ± 4.629	22.583 ± 3.637	113.667 ± 16.116	15.483 ± 2.665	14.400 ± 2.264	15.250 ± 1.782	14.167 ± 2.373	19.717 ± 2.315	21.467 ± 4.160	23.817 ± 3.735	25.800 ± 4.953	20.000 ± 4.629	22.583 ± 3.637	113.667 ± 16.116	15.483 ± 2.665	14.400 ± 2.264	15.250 ± 1.782	14.167 ± 2.373	19.717 ± 2.315
Statistical analysis	<i>r</i> = 2.575	<i>r</i> = 1.370	<i>r</i> = 0.876	<i>r</i> = 2.179	<i>r</i> = 0.343	<i>r</i> = 2.102	<i>r</i> = -0.057	<i>r</i> = 0.013	<i>r</i> = -1.563	<i>r</i> = -0.264	<i>r</i> = -3.577	<i>r</i> = 2.575	<i>r</i> = 1.370	<i>r</i> = 0.876	<i>r</i> = 2.179	<i>r</i> = 0.343	<i>r</i> = 2.102	<i>r</i> = -0.057	<i>r</i> = 0.013	<i>r</i> = -1.563	<i>r</i> = -0.264	<i>r</i> = -3.577	<i>r</i> = 2.575	<i>r</i> = 1.370	<i>r</i> = 0.876	<i>r</i> = 2.179	<i>r</i> = 0.343	<i>r</i> = 2.102	<i>r</i> = -0.057	<i>r</i> = 0.013	<i>r</i> = -1.563	<i>r</i> = -0.264	<i>r</i> = -3.577
<i>Cohen's D</i>	<b><i>P</i> = 0.012</b>	<i>P</i> = 0.174	<i>P</i> = 0.383	<b><i>P</i> = 0.032</b>	<i>P</i> = 0.732	<b><i>P</i> = 0.037</b>	<i>P</i> = 0.954	<i>P</i> = 0.989	<i>P</i> = 0.121	<i>P</i> = 0.792	<b><i>P</i> &lt; 0.001</b>	<b><i>P</i> = 0.012</b>	<i>P</i> = 0.174	<i>P</i> = 0.383	<b><i>P</i> = 0.032</b>	<i>P</i> = 0.732	<b><i>P</i> = 0.037</b>	<i>P</i> = 0.954	<i>P</i> = 0.989	<i>P</i> = 0.121	<i>P</i> = 0.792	<b><i>P</i> &lt; 0.001</b>	<b><i>P</i> = 0.012</b>	<i>P</i> = 0.174	<i>P</i> = 0.383	<b><i>P</i> = 0.032</b>	<i>P</i> = 0.732	<b><i>P</i> = 0.037</b>	<i>P</i> = 0.954	<i>P</i> = 0.989	<i>P</i> = 0.121	<i>P</i> = 0.792	<b><i>P</i> &lt; 0.001</b>
<i>Cohen's D</i>	0.467	0.248	0.158	0.390	0.060	0.365	0.175	0.301	0.874	0.125	0.697	0.467	0.248	0.158	0.390	0.060	0.365	0.175	0.301	0.874	0.125	0.697	0.467	0.248	0.158	0.390	0.060	0.365	0.175	0.301	0.874	0.125	0.697
<b>Urban Health condition</b>																																	
areas																																	
Healthy (N = 66)	25.424 ± 2.341	24.273 ± 3.251	26.409 ± 2.212	22.167 ± 3.773	25.197 ± 2.840	123.470 ± 9.918	13.242 ± 2.893	12.470 ± 3.168	12.076 ± 2.329	11.500 ± 3.643	17.197 ± 2.121	25.424 ± 2.341	24.273 ± 3.251	26.409 ± 2.212	22.167 ± 3.773	25.197 ± 2.840	123.470 ± 9.918	13.242 ± 2.893	12.470 ± 3.168	12.076 ± 2.329	11.500 ± 3.643	17.197 ± 2.121	25.424 ± 2.341	24.273 ± 3.251	26.409 ± 2.212	22.167 ± 3.773	25.197 ± 2.840	123.470 ± 9.918	13.242 ± 2.893	12.470 ± 3.168	12.076 ± 2.329	11.500 ± 3.643	17.197 ± 2.121
Unhealthy (N = 62)	23.065 ± 4.995	22.565 ± 3.620	25.274 ± 4.212	19.790 ± 4.342	23.839 ± 3.829	114.532 ± 16.556	14.032 ± 2.483	13.807 ± 3.243	13.355 ± 2.291	12.903 ± 3.071	18.242 ± 2.359	23.065 ± 4.995	22.565 ± 3.620	25.274 ± 4.212	19.790 ± 4.342	23.839 ± 3.829	114.532 ± 16.556	14.032 ± 2.483	13.807 ± 3.243	13.355 ± 2.291	12.903 ± 3.071	18.242 ± 2.359	23.065 ± 4.995	22.565 ± 3.620	25.274 ± 4.212	19.790 ± 4.342	23.839 ± 3.829	114.532 ± 16.556	14.032 ± 2.483	13.807 ± 3.243	13.355 ± 2.291	12.903 ± 3.071	18.242 ± 2.359
Statistical analysis	<i>r</i> = 3.387	<i>r</i> = 2.812	<i>r</i> = 1.891	<i>r</i> = 3.311	<i>r</i> = 2.289	<i>r</i> = 3.676	<i>r</i> = -1.653	<i>r</i> = -2.358	<i>r</i> = -3.13	<i>r</i> = -2.349	<i>r</i> = -2.638	<i>r</i> = 3.387	<i>r</i> = 2.812	<i>r</i> = 1.891	<i>r</i> = 3.311	<i>r</i> = 2.289	<i>r</i> = 3.676	<i>r</i> = -1.653	<i>r</i> = -2.358	<i>r</i> = -3.13	<i>r</i> = -2.349	<i>r</i> = -2.638	<i>r</i> = 3.387	<i>r</i> = 2.812	<i>r</i> = 1.891	<i>r</i> = 3.311	<i>r</i> = 2.289	<i>r</i> = 3.676	<i>r</i> = -1.653	<i>r</i> = -2.358	<i>r</i> = -3.13	<i>r</i> = -2.349	<i>r</i> = -2.638
<i>Cohen's D</i>	<b><i>P</i> = 0.001</b>	<b><i>P</i> = 0.006</b>	<i>P</i> = 0.062	<b><i>P</i> = 0.001</b>	<b><i>P</i> = 0.024</b>	<b><i>P</i> &lt; 0.001</b>	<i>P</i> = 0.101	<b><i>P</i> = 0.020</b>	<b><i>P</i> = 0.002</b>	<b><i>P</i> = 0.020</b>	<b><i>P</i> = 0.009</b>	<b><i>P</i> = 0.001</b>	<b><i>P</i> = 0.006</b>	<i>P</i> = 0.062	<b><i>P</i> = 0.001</b>	<b><i>P</i> = 0.024</b>	<b><i>P</i> &lt; 0.001</b>	<i>P</i> = 0.101	<b><i>P</i> = 0.020</b>	<b><i>P</i> = 0.002</b>	<b><i>P</i> = 0.020</b>	<b><i>P</i> = 0.009</b>	<b><i>P</i> = 0.001</b>	<b><i>P</i> = 0.006</b>	<i>P</i> = 0.062	<b><i>P</i> = 0.001</b>	<b><i>P</i> = 0.024</b>	<b><i>P</i> &lt; 0.001</b>	<i>P</i> = 0.101	<b><i>P</i> = 0.020</b>	<b><i>P</i> = 0.002</b>	<b><i>P</i> = 0.020</b>	<b><i>P</i> = 0.009</b>
<i>Cohen's D</i>	0.611	0.497	0.340	0.586	0.405	0.660	-0.292	-0.417	-0.554	-0.415	-0.467	0.611	0.497	0.340	0.586	0.405	0.660	-0.292	-0.417	-0.554	-0.415	-0.467	0.611	0.497	0.340	0.586	0.405	0.660	-0.292	-0.417	-0.554	-0.415	-0.467

We bolded the significant results with *P* < 0.05 for the purpose of attracting attention and facilitating readers' search. We italicized the symbols for variable numbers such as *P*, *t*, *B*, *BE*, *β* and Cohen's *D*

**Table 4** Multiple regression analysis with sociodemographic factors predicting spirituality and attitudes toward death

Dependent variable	Independent variable	Rural areas				Urban areas					
		B	BE	$\beta$	t	Sig.	B	BE	$\beta$	t	Sig.
Meaning of life	Gender	.491	.660	.070	.743	.459	2.514	.760	.291	3.307	<b>.001</b>
	Age	-.881	.481	-.170	-1.834	.069	.812	.539	.140	1.506	.135
	Marital status	-.242	.348	-.063	-.698	.487	-1.207	.385	-.288	-3.131	<b>.002</b>
	Educational status	1.122	.632	.152	1.774	.079	-2.011	.719	-.233	-2.797	<b>.006</b>
The environment	Health condition	1.058	.631	.151	1.678	.096	2.661	.656	.332	4.054	<b>.000</b>
	Gender	1.266	.585	.203	2.163	<b>.032</b>	.514	.701	.070	.733	.465
	Age	-.918	.426	-.199	-2.154	<b>.033</b>	.565	.497	.115	1.137	.258
	Marital status	-.124	.308	-.036	-.402	.689	-.978	.356	-.275	-2.750	<b>.007</b>
Fear and anxiety of death	Educational status	-.749	.560	-.114	-1.337	.183	-.418	.663	-.057	-.630	.530
	Health condition	-.424	.559	-.068	-.759	.449	1.266	.605	.186	2.092	<b>.039</b>
	Gender	.822	.434	.177	1.895	.060	.090	.572	.015	.157	.876
	Age	-.013	.316	-.004	-.043	.966	.750	.406	.191	1.848	.067
Escape acceptance	Marital status	.592	.228	.234	2.593	<b>.011</b>	-.026	.290	-.009	-.091	.928
	Educational status	.459	.415	.094	1.105	.271	.010	.541	.002	.019	.985
	Health condition	-.029	.414	-.006	-.070	.944	-.637	.494	-.117	-1.290	.200
	Gender	1.709	.433	.369	3.945	<b>.000</b>	-.448	.670	-.064	-.669	.505
Escape acceptance	Age	.048	.315	.014	.153	.879	.651	.475	.138	1.370	.173
	Marital status	-.294	.228	-.117	-1.291	.199	.163	.340	.048	.480	.632
	Educational status	-.001	.415	.000	-.001	.999	-.995	.634	-.142	-1.570	.119
	Health condition	-.412	.414	-.089	-.995	.321	-1.014	.579	-.156	-1.752	.082

**Table 4** (continued)

Dependent variable	Independent variable	Rural areas				Urban areas					
		B	BE	$\beta$	t	Sig.	B	BE	$\beta$	t	Sig.
Natural acceptance	Gender	.558	.282	.183	1.980	.050	-1.309	.449	-.255	-2.917	<b>.004</b>
	Age	.054	.205	.024	.261	.794	-.233	.318	-.068	-.731	.466
	Marital status	.338	.148	.204	2.284	<b>.024</b>	.995	.228	.399	4.372	<b>.000</b>
Approach acceptance	Educational status	-.574	.270	-.179	-2.128	<b>.035</b>	-.349	.425	-.068	-.823	.412
	Health condition	-.394	.269	-.129	-1.466	.145	-1.042	.388	-.219	-2.688	<b>.008</b>
	Gender	.003	.419	.001	.007	.995	.058	.726	.008	.081	.936
Death avoidance	Age	-.483	.305	-.152	-1.584	.116	-.079	.515	-.016	-.154	.878
	Marital status	-.223	.220	-.095	-1.014	.313	.071	.368	.020	.193	.848
	Educational status	-.375	.401	-.083	-.936	.351	-.400	.687	-.054	-.582	.562
Health condition	Health condition	-.336	.400	-.078	-.841	.402	-1.325	.627	-.193	-2.114	<b>.037</b>
	Gender	.199	.395	.048	.503	.616	-.345	.456	-.070	-.755	.451
	Age	-.027	.287	-.009	-.095	.924	.334	.324	.101	1.033	.304
Marital status	Marital status	.100	.208	.044	.479	.633	.622	.231	.260	2.688	<b>.008</b>
	Educational status	-.252	.378	-.057	-.665	.507	-.067	.432	-.014	-.155	.877
	Health condition	-1.255	.377	-.300	-3.327	<b>.001</b>	-.787	.394	-.172	-1.997	<b>.048</b>

We bolded the significant results with  $P < 0.05$  for the purpose of attracting attention and facilitating readers' search. We italicized the symbols for variable numbers such as  $P$ ,  $t$ ,  $B$ ,  $BE$ ,  $\beta$  and Cohen's  $D$



escape acceptance ( $-0.125^*$ ), natural acceptance ( $-0.185^{**}$ ), approach acceptance ( $-0.146^*$ ), and death avoidance ( $-0.224^{**}$ ). Self was negatively correlated with natural acceptance ( $-0.129^*$ ), approach acceptance ( $-0.151^*$ ), and death avoidance ( $-0.259^{**}$ ). Family was also negatively correlated with death avoidance ( $-0.122^*$ ). People around showed a negative relationship with all the subscales of attitudes toward death, including fear and anxiety of death ( $-0.157^*$ ), escape acceptance ( $-0.203^{**}$ ), natural acceptance ( $-0.293^{**}$ ), approach acceptance ( $-0.154^*$ ), and death avoidance ( $-0.310^{**}$ ). The environment had a negative relationship with natural acceptance ( $-0.236^{**}$ ) and death avoidance ( $-0.250^{**}$ ). As the total spirituality score increased, the escape acceptance ( $-0.165^{**}$ ), natural acceptance ( $-0.219^{**}$ ), approach acceptance ( $-0.170^{**}$ ), and death avoidance ( $-0.314^{**}$ ) scores decreased (Table 5). As shown in Table 6, a multiple regression analysis was performed according to the association between spirituality and death attitudes from Table 5.

## Discussion

The aim of this study was to determine the spirituality and attitudes toward death of older adults living in rural and urban areas in post-pandemic China. The results were in agreement with Hypothesis 1. Based on the subdimension of spirituality, the meaning of life and environment scores of older adults living in urban areas were higher than the scores of those living in rural areas. A previous study showed that communities in urban areas were more developed, well managed, and equipped with more infrastructure than villages in rural China (Wang et al., 2018). Moreover, the rural elderly often live farther away from the nearest exercise facility and exercise less in their leisure time compared with their urban counterparts. They were also found to be less satisfied with the public sports service system and local exercise facility (Zheng & An, 2015). This meant that the environment in urban areas is more convenient and comfortable, and older adults are more satisfied with it. In China, sufficient social support and health providers are unavailable for residents dwelling in rural areas. They also suffer from extended travel to health care facilities and lower income to cover medical costs (Guo et al., 2020; Hu et al., 2018; Ying et al., 2020). Due to the disparity in infrastructure and medical services between urban and rural China, older adults residing in urban areas have better living security and thus tend to engage more in the pursuit of spiritual improvement, which makes their life fuller and more meaningful. Furthermore, we found that the fear and anxiety of death and escape acceptance scores of elderly adults living in rural areas were higher than those of elderly adults living in urban areas. As mentioned above, medical services are not sufficient in rural China (Guo et al., 2020; Ying et al., 2020). For some elderly adults who have been diagnosed with severe diseases, access to good treatment is limited, and related health education is comparatively lacking. On the one hand, this may result in older adults becoming more anxious about their health and more fearful of death. On the other hand, they may fear the unbearable pain from illness more than death due to the worse treatment compared to urban areas. Meanwhile, older adults living in rural areas were found to have higher score

**Table 5** Correlation between the levels of spirituality and attitudes toward death scores of older adults

	Meaning of Life	Self	Family	People around	The environment	Fear and anxiety of death	Escape acceptance	Natural acceptance	Approach acceptance	Death avoidance	Total spirituality
Meaning of life	1										
Self	0.428**	1									
Family	0.415**	0.524**	1								
People around	0.453**	0.485**	0.384**	1							
The environment	0.360**	0.403**	0.361**	0.583**	1						
Fear and anxiety of death	-0.105	0.026	0.064	-0.157*	-0.076	1					
Escape acceptance	-0.125*	-0.107	-0.058	-0.203**	-0.110	0.654**	1				
Natural acceptance	-0.185**	-0.129*	0.038	-0.293**	-0.236**	0.387**	0.388**	1			
Approach acceptance	-0.146*	-0.151*	-0.066	-0.154*	-0.113	0.504**	0.528**	0.414**	1		
Death avoidance	-0.224**	-0.259**	-0.122*	-0.310**	-0.250**	0.329**	0.340**	0.442**	0.463**	1	
Total spirituality	0.724**	0.751**	0.723**	0.794**	0.719**	-0.072	-0.165**	-0.219**	-0.170**	-0.314**	1

\*\*\* $P < 0.01$ . \* $P < 0.05$

**Table 6** Relationship of death avoidance with dimensions of spirituality

	Dimensions of spirituality	<i>B</i>	<i>BE</i>	$\beta$	<i>t</i>	<i>Sig.</i>
Death avoidance	Meaning of life	0.053	0.066	0.091	0.808	0.420
	Self	0.002	0.074	0.003	0.029	0.977
	Family	0.159	0.063	0.264	2.532	0.012
	The environment	0.045	0.079	0.067	0.571	0.568
	Total spirituality	-0.103	0.043	-0.621	-2.369	0.019

on natural acceptance, approach acceptance, and death avoidance than their urban counterparts. Based on an exploratory study, the Chinese elderly adults in Singapore (urban area) were also found not to be averse to talking about death and death preparation (Chan & Yau, 2009). Our results are in accordance with the previous research. Residents of urban areas have more opportunity to be influenced by advanced and cutting-edge ideas than those living in rural areas have. By contrast, older adults residing in rural China are much more inclined to be influenced by old ideas and superstitions, to think it unlucky to talk about death, and to believe that people can have a better life after death. For the above reasons, the meaning of life and environment scores of older adults living in urban areas were higher than the scores of those living in rural areas, while the fear and anxiety of death, escape acceptance, natural acceptance, approach acceptance, and death avoidance scores of older adults living in rural areas were higher than the scores of those living in urban areas.

In addition, our study tested the correlations of spirituality and attitudes toward death with sociodemographic factors. The results were in line with Hypothesis 2. In terms of gender differences, female elderly adults were found to have higher scores on family, people around, the environment, and total spirituality in rural areas. These results might be supported by previous studies (Bailly et al., 2018; Curran et al., 2020; Kwak, 2020; Nakagi & Tada, 2014; Vitorino et al., 2019). Furthermore, among older adults living in rural areas, women showed higher scores on fear and anxiety of death, escape acceptance, and natural acceptance. Although the female elderly may have more strongly believed that death was an inevitable thing in life and that it may be an escape from the pain of this life, they were still more afraid, anxious, and evasive with regard to death. Meanwhile, the meaning of life, self, and people around scores of the female elderly were higher than those of male elderly in urban areas. In rural and urban areas, the dimensions of spirituality and attitudes toward death were also affected by age, educational status, marital status, and health condition, which is supported by previous studies (Aydın et al., 2020; Garbaccio et al., 2018; Hirakawa et al., 2019; Kwak, 2020; Liu et al., 2015; MacLeod et al., 2019; Ohrnberger et al., 2017; Rababa et al., 2021; Stokes & Moorman, 2018; Su et al., 2017; Zadworna-Cieslak, 2020; Zhou et al., 2018).

According to Table 4, in rural areas, the level of the environment was influenced by gender and age, fear and anxiety of death was affected by marital status, escape acceptance was associated with gender, and natural acceptance was influenced by

marital status and educational status. The results also revealed that health condition could predict the level of death avoidance. By contrast, in urban areas, the meaning of life was influenced by gender, marital status, educational status and health condition; the environment and death avoidance were associated with marital status and health condition; natural acceptance was affected by gender, marital status and health condition; health condition could predict the level of approach acceptance. In summary, the demographic reasons for the differences in the dimensions of spirituality and attitudes toward death of rural and urban elderly were different.

Our finding also revealed that death avoidance had a negative relationship with total spirituality and all of its subscales (meaning of life, self, family, people around, and the environment), which was in accordance with Hypothesis 3. A previous study reported a significant negative association between spiritual well-being and death anxiety (Solaimanizadeh et al., 2020). Another study showed that older adults with higher levels of spirituality had significantly less fear of death (Kwak, 2020). MacLeod et al. (2019) also concluded that people with strong spiritual beliefs showed strong convictions and beliefs in the afterlife, which facilitated a lower level of death anxiety compared to those with strong religious beliefs. Another study that aimed to figure out the relationship between meaning in life and death anxiety in older adults revealed that meaning in life was negatively correlated with death anxiety among older adults (Zhang et al., 2019). A researcher described Vietnamese cancer patients' lived experience with death acceptance, finding that participants assumed that death would be positive because it freed both themselves and their families from pain and burdens (Long et al., 2018). As for predictors of death anxiety among patients with heart disease, another study showed that if patients were supported financially by their family, friends, or the government, they may feel less worried about their health care and medical expenses and therefore experience less death anxiety in general (Soleimani et al., 2020). Although the results of our study did not show a significant association between fear and anxiety of death and total spirituality and its subscales (except people around), a significant positive correlation was found between death anxiety and death avoidance (Tao et al., 2017). We may infer that fear and anxiety of death cause less willingness to think or talk about death among older adults. Thus, the present study may be supported by the results mentioned above. Moreover, based on the results of *multiple regression analysis*, the higher the level of spirituality and family, the lower the level of death avoidance, which means that we can reduce the avoidance of death in older people by improving their self-awareness and promoting harmony among family members in both rural and urban areas.

Our study used the same set of scales as in Jing's study (Jing, 2012). Jing selected 160 older adults who did morning exercise in parks in downtown Tianjin or were treated in community health service centers as the research subjects to evaluate older adults' attitudes toward death (Jing, 2012). The scores on fear and anxiety of death, escape acceptance, approach acceptance, and death avoidance were higher than those in Jing's study, whereas the scores on natural acceptance were lower than those in that study (Jing, 2012). This result may have been partly caused by regional and cultural differences. Tianjin is located in the north, close to the capital Beijing, and has a much higher level of economic development and cultural openness than

Chengdu in the southwest (the source of this research sample). Therefore, people may have more opportunities to receive death education and have more mature attitudes toward death. In addition, it may be because this study was conducted during the post-pandemic period, which caused the difference in results. An early study tested and compared the level of death anxiety in the first month and third month of the COVID-19 outbreak in China, finding that people were more anxious about death 3 months after the outbreak (Zhang et al., 2021). Adults above the age of 60 years suffer from a much higher fatality of COVID-19 infection than younger adults according to National Health Commission of China (NHC) (Baloch et al., 2020). Moreover, older people were more vulnerable to anxiety, stress, agitation, sleep difficulties, and behavioral problems (Sano et al., 2020). This may contribute to more death anxiety among older adults. Long-term isolation and changes in the social environment may both also cause older adults to panic about COVID-19-related death and even fear everyday life more than death itself, which may explain the rise in the level of “escape acceptance” over the past few years (Khademi et al., 2020). Furthermore, the COVID-19 pandemic came suddenly, making it hard for elderly adults to accept the death related to the pandemic in a short period of time, thus, they had a lower level of natural acceptance and higher death avoidance in the post-pandemic period than previously. The daily life of Chinese people has been affected by superstition in various ways for around 5000 years (Huang & Teng, 2009), with the desire for a better life after death being an important part of this. During the post-pandemic era, older adults may tend to regard death as a source of joy and happiness, which may alleviate their fear and anxiety of death to some extent. This may be one of the reasons their level of approach acceptance has increased compared to that before the pandemic. Based on the above factors, the scores on fear and anxiety of death, escape acceptance, approach acceptance, and death avoidance were higher, while the scores on natural acceptance were lower, than those in the previous study.

## Limitations

This study has several limitations. First, it was a cross-sectional study that used convenience sampling for the sampling selection. If conditions permit, we will try our best to use random sampling in future studies of the same type to bring the research more in line with the principle of randomness. Second, China consists of 34 provincial-level administrative regions, however, we only collected data from Sichuan Province. Additionally, the status of elderly people living in rural and urban China cannot be generalized to other populations. In future studies, we will try to collect samples from other regions to make the results more generalizable. Finally, due to the pandemic, the flow of people has been restricted to a certain extent, thus, the sample size of this study was not very large. We will increase the sample size when the pandemic is over and people are no longer restricted from traveling.

## Conclusions

Several practical implications can be derived from the findings of this study. First, our results highlight the importance of finding ways to improve the recreational and exercise facilities and other infrastructure in rural China so that the lives of older adults can be enriched by entertainment. In rural areas, health care systems need to be established to narrow the gap between rural and urban medical conditions, for example, by reducing the distance to health care facilities and increasing home visits. According to our findings, older people in rural areas may be more anxious about death and more susceptible to traditional beliefs such as superstitions, as a result, older persons living in rural areas are in more urgent need of death education from relevant health educators than their urban counterparts. Older people tend to be somewhat reticent about the topic of death, making it difficult to collect data on the topic. Since this study concluded that we could improve the outlook on life and death of older adults by improving their spiritual health, we suggest that researchers study the spiritual health of older adults and put forward targeted measures to improve their spiritual health level, thus improving their attitudes toward death. We also recommended conducting qualitative research. Furthermore, as COVID-19 still has a certain impact on older adults' attitudes toward death, we suggest that relevant personnel take measures such as psychological counselling to eliminate older adults' misunderstandings about the pandemic and reduce their anxiety about death.

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## Declarations

**Conflict of interest** The authors have no relevant financial or non-financial interests to disclose.

**Ethical Approval** This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Pidu District People's Hospital on September 7th, 2021. Verbal informed consent was obtained on-site prior to participation.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

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