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Assessing oncology nurses' attitudes towards death and the prevalence of burnout: A cross-sectional study

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ABSTRACT

Purpose: Burnout in nursing is a global phenomenon. Caring for dying patients could increase nurses' death anxiety. However, minimal information about oncology nurses' burnout and attitudes towards death in Chinese culture has been reported. This study aims to assess Chinese oncology nurses' burnout, and its relationship with attitudes towards death.

Method: A cross-sectional design was used. A total of 279 oncology nurses from a cancer hospital in northern China were recruited using convenience sampling, and completed a survey containing a demographic form, the Death Attitudes Profile Scale and the Maslach Burnout Inventory. Descriptive statistics, independent *t*-test and one-way ANOVA, Pearson correlation analysis and multiple regression analysis were conducted to analyze data.

Results: An average of 73.1%–86.9% of oncology nurses reported moderate to high levels of burnout. Specifically, 48.7%, 45.4% and 65.1% of oncology nurses reported high levels of emotional exhaustion, depersonalization and personal accomplishment, respectively. Multiple regression analysis showed that fear of death, escape acceptance, younger age and participation of death education/training were significantly associated with emotional exhaustion ($p < 0.01$), accounting for 22.0% of the variance; fear of death, escape acceptance, and neutral acceptance in total explained 17.8% of depersonalization; fear of death, escape acceptance and neutral acceptance accounted for 8.5% of personal accomplishment.

Conclusions: Oncology nurses with more positive attitudes towards death experience less burnout. Death education and death related training including discussion of personal attitudes towards death should be part of nursing education programs, which would in turn prevent oncology nurses from burnout.

1. Introduction

Consisting with the global trend, cancer mortality in China is continuously increasing, and there will be nearly 3,500,000 deaths in 2030 (Dai et al., 2012). Effective and compassionate end-of-life care will become more and more important (Beckstrand et al., 2012; Duarte and Pinto-Gouveia, 2017). However, caring for patients with cancer is extremely stressful because of the life-threatening nature of most cancers, complex treatment and decision making, its association with death, and the sense of failure and futility that nurses experience when cancer cannot be cured (Najjar et al., 2009; Samson; Shvartzman, 2018). Those nurses who repeatedly observe cancer patients in unrelieved pain or witness the suffering of patients experience constant and sometimes overwhelming emotional stress, thus are at high risk for burnout (Barnard et al., 2006; Duarte and Pinto-Gouveia, 2017; Medland et al., 2004).

Burnout is a state of physical, emotional, and mental exhaustion caused by a depletion of the ability to cope with one's environment, particularly the work environment (Maslach, 1982). It has detrimental effects on patients, nurses, and healthcare organizations (Schroeder and Lorenz, 2018; Tuna and Baykal, 2014). Studies revealed that nurse burnout has a negative impact on patient satisfaction and patient safety as well as the quality of care provided to patients (Garman et al., 2002; Halbesleben et al., 2008; Van Bogaert et al., 2013; Russell, 2016). High burnout among nurses is associated with a subjective lack of well-being, feeling incapable of performing the job well (Ringrose et al., 2009), and leads to lower productivity and effectiveness (Leiter and Maslach, 2009). The phenomenon of burnout is also significant for healthcare organizations because of its demonstrated correlations to nurse retention and turnover (Garman et al., 2002; Halbesleben et al., 2008; Tuna

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and Baykal, 2014). Avoiding nursing burnout has been identified as a key to retaining qualified nurses (Jiang et al., 2016; Samson; Shvartzman, 2018).

Caring for dying patients has been found to be especially difficult and demanding for nurses as it requires that they face their own mortality, thereby often increasing their feelings of anxiety (Barnett et al., 2019; Dong et al., 2016; Redinbaugh et al., 2001). Research demonstrated that positive attitudes towards death had a positive influence on the care of the dying (Deffner and Bell, 2005; Lange et al., 2008; Schroeder and Lorenz, 2018). However, influenced by the death-taboo culture, Chinese nurses hardly talk about death and dying with their patients, and education and training programs on death, dying and end-of-life care are insufficient (Dong et al., 2016; Zheng et al., 2015). In order to ensure that oncology nurses could provide quality care to the dying, they need to recognize and confront their own attitudes towards death and be aware of how potential negative attitudes can affect them and the care they give to patients (Göriş et al., 2017). However, minimal information about Chinese oncology nurses' attitudes towards death has been reported.

A substantial part of the stress experienced by nurses comes from the contact with patients who are dying, and they often feel inadequate in providing care to dying patients and relieving patient suffering (Beckstrand and Kirchhoff, 2005; Cohen et al., 2010; Zheng et al., 2018). Therefore, oncology nurses frequently do not sufficiently care for themselves as they are involved in caring for their patients, probably resulting in nurses experiencing burnout (Russell, 2016; Tuna and Baykal, 2014). Although studies have shown that Chinese nurses experienced moderate to high levels of burnout (Xie et al., 2011; Liu et al., 2012), those studies have mainly focused on nurses working in general wards (Xie et al., 2011; You et al., 2013; Lu et al., 2015), the emergency department (Wu et al., 2012), and neurology wards (Jiang et al., 2016), burnout among Chinese oncology nurses was rarely studied. Therefore, the purpose of this study was to assess the occurrence and severity of burnout manifested by Chinese oncology nurses, and also to examine its relationship with their attitudes towards death.

2. Methods

2.1. Design, setting and sample

A cross-sectional design using a survey was employed in this study. This study was conducted at a 2400-bed cancer hospital in Northern China between November 2018 and February 2019. The participating hospital has a nation-wide reputation in cancer treatment and provides medical, surgical, radiologic, biological and palliative care services to patients from all parts of mainland China. Study participants were recruited using convenience sampling. To be eligible, participants had to be older than 18, able to speak and read Chinese, worked as a full-time registered nurse in the participating hospital, and be willing to participate in the study.

A power analysis was conducted to determine the appropriate number of participants needed for this survey. According to the formula equation which is used to calculate the sample size of cross-sectional study (SurveyMonkey, 2019), with a population size of 1100 oncology nurses from the hospital where this study was conducted, a confidence level of 95%, and a margin of error of 5%, the estimated sample size for this survey was at least 285, which should be able to detect the expected effect sizes with sufficient statistical power.

2.2. Instruments

2.2.1. Demographic characteristics

Demographic information was collected through a self-designed questionnaire consisting of questions regarding personal variables, such as age, gender, marital status, religious belief and education; and questions on experience in caring for dying patients and educational training, such as years of working, frequency of discussing death with colleagues, frequency of care of dying patients, participation of death education/training, and the need for death education/training. Because of the fact that Chinese nurses seldom talk about death with their patients (Zheng et al., 2014), we did not include the question asking them the frequencies of discussing death with patients.

2.2.2. Chinese version of the Maslach Burnout Inventory

Nurses' burnout was measured by the Maslach Burnout Inventory (MBI), which is a 22-item questionnaire designed to assess the presence of burnout in health care providers (Maslach et al., 1996). It contains three subscales: 1) emotional exhaustion (EE) (9 items), a job-related exhaustion and depletion of one's emotional resources to deal with the situations arising at work; 2) depersonalization (DP) (5 items), is defined as cynical, negative attitudes that may result in callous and non-caring conduct; and 3) personal accomplishment (PA) (8 items), reflecting the extent to which one recognizes the value of its own work (Maslach et al., 1996). Participants were asked to rate their experience with each item on a seven-point scale, ranging from 0 (never) to 6 (every day). The three subscale scores were calculated separately and categorized as low, moderate or high levels of burnout (EE, low: ≤ 18, moderate: 19 to 26, high: ≥ 27; DP, low: ≤ 5, moderate: 6 to 9, high: ≥ 10; PA, low: ≤ 33, moderate: 34 to 39, high: ≥ 40). Higher scores on EE and DP and lower scores on PA indicate higher levels of burnout. The Chinese version of the MBI has demonstrated satisfactory reliability and validity. Cronbach's alpha for the whole questionnaire is 0.84. Cronbach's alpha for EE, DP, and PA is 0.85, 0.78, and 0.82, respectively (Jiang et al., 2016; Lu et al., 2015).

2.2.3. Chinese version of the Death Attitude Profile-Revised scale

Nurses' attitude toward death was measured by the Death Attitude Profile-Revised (DAP-R) scale (Wong et al., 1994). It is a 32-item scale consisting of five subscales: fear of death (FD) (7 items) measures negative thoughts about death; death avoidance (DA) (5 items) measures attempts to avoid thinking or talking about death; neutral acceptance (NA) (5 items) measures the extent to which a person accepts death as an integral part of life; approach acceptance (AA) (10 items) measures the extent to which a person views death as an entry point to a better afterlife; and finally, escape acceptance (EA) (5 items) assesses the extent to which a person views death as an escape from a life filled with pain and suffering (Wong et al., 1994). In this study, we used the validated Chinese version of DAP-R; the Cronbach's alpha for the whole questionnaire is 0.84, ranging from a low of 0.66 to a high of 0.85 for the five subscales (Fu et al., 2012). The score for each item ranges from 1 (strongly disagree) to 5 (strongly agree). The score for each subscale is the mean score of its items, with 3 being the neutral score. A higher mean score indicates a stronger tendency to identify with that particular subscale.

2.3. Data collection

Eligible nurses were invited to participate by research staff in the department morning shift meetings. The survey packets containing the instruments and demographic form were left in the nursing station for interested participants to pick up, and completed surveys were placed in a labeled box at the nursing units. A member of the research team' contact information was enclosed in the survey and was available to subjects for any questions and to provide further explanations. The questionnaires took approximately 20 min to complete.

2.4. Data analysis

Data were analyzed using SPSS 25.0, and two-tailed significance tests with $p < 0.05$ were conducted. As the DAP-R scores and MBI scores followed normal distribution and met the assumption of homoscedasticity ($p > 0.05$), parametric tests were used to analyze

data. Descriptive statistics (frequency, means, and standard deviations) were calculated for sample characteristics and the mean scores of MBI subscales and DAP-R subscales. Group differences in mean MBI subscales and DAP-R subscales were assessed using independent sample t-tests and one-way analysis of variance (ANOVA) with post-hoc testing using the Scheffe test for multiple comparisons to identify which pairs of means are significantly different. The associations between MBI subscales and DAP-R subscales were analyzed using Pearson's correlation. Multiple linear stepwise regression analyses were used to further explore the factors correlated with the three MBI subscales, and the demographic variables that were associated with MBI were entered into the model as independent variables, including age, marital status, years of working, participation of death education/training and need for death education/training.

2.5. Ethical considerations

This study was approved by the Research Ethics Board at the participating hospital (Nursing 18–06). Participants were notified that returning the questionnaire implied informed consent. No names or other identifying information was collected from participants, ensuring the responses were anonymous. All the data were held secure, confidential and only accessed by the research team.

3. Results

3.1. Demographic characteristics

A total of 320 participants were approached. Among the participants, 26 did not respond to at least two-third of items of the questionnaires, and 15 provided obvious biased responses, for instance, giving same response to all the questions for multiple scales which had reverse-score items. Finally 279 questionnaires were analyzed, for a valid response rate of 87.2%. Table 1 shows the demographic characteristics of study participants. Participants in this study were predominately female (98.9%), and more than half (55.9%) of them were single. The ages of participants ranged from 22 to 48 years, with a mean age of 28.39 years (SD 5.75). The majority of participants (92.8%) identified that they had no religious beliefs. Nearly half (49.5%) of participants had university or higher levels of education. The mean years of oncology nursing experience of participants was 6.19 (SD 6.58), ranging from 0.5 to 29 years. Over half of participants (53.0%) reported that they talked about death very openly with their colleagues at work, followed by “occasionally, when necessary” (38.0%) and “seldom/never” (9.0%). Nearly half of participants (46.6%) seldom or never took care of dying patients at work, 33.3% took care of dying patients occasionally (times/month), and 20.1% of them often (several times/week) took care of dying patients at work. Less than half of the participants (42.7%) reported that they had received death education/training through continuing education, hospital in-service training, or in their basic nursing courses, and the majority (78.1%) endorsed that such training is necessary for oncology nurses.

Table 1
Demographic characteristics of oncology nurses (N = 279).

Characteristics	N (%)
Age	
30 and younger	209(74.9)
30-40	51(18.3)
Older than 40	19(6.8)
Gender	
Female	276(98.9)
Male	3(1.1)
Marital status	
Single	156(55.9)
Married/divorced	123(44.1)
Religious belief	
Yes	19(6.8)
No	259(92.8)
Missing	1(0.4)
Education	
Associate's degree/diploma	141(50.5)
Bachelor's degree and higher	138(49.5)
Years of working	
0–5 years	166(59.5)
6–10 years	64(22.9)
More than 10 years	49(17.6)
Discussing death with colleagues	
Very open	148(53.0)
Occasionally, when necessary	106(38.0)
Seldom or never	25(9.0)
Frequency of care of dying patients	
Often (several times/week)	56(20.1)
Occasionally (several times/month)	93(33.3)
Seldom (several times/year) or never	130(46.6)
Participation of death education/training	
Yes	119(42.7)
No	160(57.3)
Need for death education/training	
Yes	218(78.1)
No/unsure	61(21.9)

Table 2
Prevalence of burnout among Chinese oncology nurses (N = 279).

	Mean (SD)	Range	Levels of Burnout (%)*		
			Low	Moderate	High
EE	25.73 (10.48)	3–54	26.9	24.4	48.7
DP	9.70 (5.42)	0–30	23.1	31.5	45.4
PA	31.79 (6.06)	13–47	13.1	21.8	65.1

Note: EE, emotional exhaustion; DP, depersonalization; PA, personal accomplishment.

3.2. Prevalence of burnout and associated factors

Table 2 shows the prevalence of burnout among study participants. In general, nurses in this study reported moderate levels of EE (M = 25.73, SD = 10.48) and DP (M = 9.70, SD = 5.42) and high levels of reduced PA (M = 31.79, SD = 6.06). A high level of burnout was identified in 48.7% of the participants in the area of EE, 45.4% in the area of DP, and 65.1% in the area of reduced PA. No significant relationships were found between gender, religion belief, education, frequency of caring for dying patients, discussing death with colleagues, and the three subscales of MBI, EE, DP and PA ($p > 0.05$). Those oncology nurses with different age, marital status, years of working, participation of death education/training, and need for death education/training demonstrated significantly differences of EE (See Table 3). Nurses who were younger than 30 years of age, single, had worked less than 5 years, had attended death education/training, and indicated the need for death education/training experienced less EE in comparison to those who were older than 30 ($p = 0.000$), married ($p = 0.000$), had worked more than 5 years ($p = 0.000$), had never attended death education/training ($p = 0.002$), and did not indicate the need for death education/training ($p = 0.041$).

3.3. Attitudes towards death and associated factors

Nurses in the study reported positive attitudes towards death, with mean scores of FD M = 2.78 (SD 0.69), DA M = 2.97 (SD 0.77), AA M = 2.77 (SD 0.66) and EA M = 2.72 (SD 0.78) lower than the neutral score of 3; and NA M = 3.91 (SD 0.65) higher than the neutral score of 3. The statistically significant relationships were found among certain demographic variables and DAP-R subscales (See Table 4). Single nurses reported less FD in comparison to nurses who were married or divorced ($p = 0.039$). Nurses who seldom/never discussed death and

Table 3
Mean MBI subscale scores by demographic characteristics (N = 279).

Characteristics	EE		DP		PA	
	Mean (SD)	*p*	Mean (SD)	*p*	Mean (SD)	*p*
Age						
30 and younger	24.29 (10.26)	0.000**	9.44 (5.18)	0.375	31.46 (6.32)	0.274
30–40	29.35 (9.78)		10.46 (5.54)		32.67 (4.96)	
Older than 40	32.05 (10.47)		10.63 (7.37)		33.17 (5.62)	
Gender						
Male	23.33 (5.86)	0.692	10.33 (4.93)	0.840	30.67 (2.52)	0.749
Female	25.75 (10.52)		9.70 (5.43)		31.80 (6.09)	
Marital status						
Single	23.32 (9.99)	0.000**	9.32 (5.15)	0.184	31.66 (6.24)	0.708
Married/divorced	28.79 (10.33)		10.20 (5.73)		31.94 (5.86)	
Religious belief						
Yes	29.63 (13.11)	0.094	12.00 (6.18)	0.072	29.95 (5.55)	0.168
No	25.45 (10.25)		9.56 (5.25)		31.94 (6.09)	
Education						
Associate degree	26.42 (10.89)	0.263	9.61 (5.61)	0.783	32.03 (6.24)	0.502
Bachelor/higher	25.00 (10.03)		9.79 (5.23)		31.54 (5.89)	
Years of working						
0–5 years	22.98 (10.09)	0.000**	9.21 (5.02)	0.176	31.29 (6.33)	0.189
6–10 years	28.90 (9.40)		10.56 (5.60)		32.14 (5.69)	
More than 10 years	30.94 (10.13)		10.32 (6.36)		33.04 (5.47)	
Frequency of caring for dying patients						
Often	26.18(9.76)	0.789	10.27(5.07)	0.343	30.57(5.14)	0.226
Occasionally	25.13(10.33)		9.07(5.34)		32.26(5.96)	
Seldom/never	25.96(10.40)		9.91(5.48)		31.96(6.38)	
Discussing death with colleagues						
Very open 25.97 (10.45)		0.919	9.98 (5.24)	0.542	31.93 (5.88)	0.077
Occasionally 25.45 (9.97)			9.53 (5.64)		32.20 (6.09)	
Seldom/never 25.44 (12.93)			8.75 (5.59)		29.20 (6.63)	
Participation of death education/training						
Yes 23.47 (10.23)		0.002**	9.31 (5.37)	0.300	32.28 (6.39)	0.242
No 27.38 (10.39)			10.00 (5.45)		31.41 (5.80)	
Need for death education/training						
Yes 25.05 (10.42)		0.041*	9.66 (5.52)	0.808	31.60 (6.15)	0.338
No/unsure 28.17 (10.40)			9.85 (5.09)		32.44 (5.75)	

Note: MBI, Maslach Burnout Inventory; EE, emotional exhaustion; DP, depersonalization; PA, personal accomplishment.
*$p < 0.05$; **$p < 0.01$.

dying at work and who had never attended death education/training reported more DA compared with those who often or sometimes discussed death ($p = 0.003$) and those who had attended death education/training ($p = 0.005$). Nurses who were younger than 30 years of age and indicated the need for death education/training reported less AA compared with those who were 30–40 years of age ($p = 0.014$) and did not indicate the need for death education/training ($p = 0.017$). Nurses who were 30–40 years of age, married or divorced, worked more than 10 years, indicated no need for death education/training reported higher EA in comparison to those who were younger than 30 ($p = 0.012$), never got married ($p = 0.005$), worked fewer years ($p = 0.000$), and indicated the need for death education/training ($p = 0.008$).

3.4. Correlations between attitudes towards death and burnout

Table 5 shows the associations between the subscales of DAP-R and MBI. FD was significantly positively correlated with EE ($r = 0.25$, $p < 0.01$) and DP ($r = 0.27$, $p < 0.01$), and negatively correlated with PA ($r = 0.21$, $p < 0.01$). DA was significantly positively correlated with EE ($r = 0.14$, $p < 0.05$). NA was significantly positively correlated with PA ($r = 0.20$, $p < 0.01$), and negatively correlated with DP ($r = 0.16$, $p < 0.01$). AA was significantly positively correlated with EE ($r = 0.15$, $p < 0.05$). EA was significantly positively associated with EE ($r = 0.36$, $p < 0.01$) and DP ($r = 0.34$, $p < 0.01$), and negatively correlated with PA ($r = 0.14$, $p < 0.05$).

3.5. Multiple linear regression analyses

A summary of multiple linear stepwise regression analysis for variables correlated with three subscales of MBI is presented in Table 6. Four variables (EA, FD, age (30 and younger) and participation of death education/training) were statistically significantly associated with oncology nurses' EE ($p < 0.01$), accounting for 22.0% of the variance. β-weights for each predictor indicates that higher levels of EA ($\beta = 0.29$, $p = 0.000$), higher levels of FD ($\beta = 0.20$, $p = 0.000$), being younger ($\beta = -0.17$, $p = 0.002$), and had never attended death education/training ($\beta = -0.15$, $p = 0.006$) were associated with higher levels of EE.

Three subscale of DAP-R, including EA, FD, and NA, in total explained 17.8% of variance in DP of MBI. In particular, EA and FD had a significantly positive association with DP, while NA was significantly negatively correlated with DP ($p < 0.01$), indicating that higher levels of EA ($\beta = 0.32$, $p = 0.000$) and FD ($\beta = 0.19$, $p = 0.001$), and lower levels of NA ($\beta = -0.15$, $p = 0.009$) were associated with higher levels of DP.

Three subscales, EA, FD and NA, accounted for 8.5% of PA; specifically, EA and FD were statistically negatively associated with PA ($p < 0.05$), and NA was statistically positively associated with PA ($p < 0.01$), indicating that lower levels of FD ($\beta = -0.16$, $p = 0.010$) and EA ($\beta = -0.13$, $p = 0.029$) and higher levels of NA ($\beta = 0.18$, $p = 0.003$) were associated with higher levels of PA.

Table 4
Mean DAP-R subscale scores by demographic characteristics (N = 279).

Characteristics	FD		DA		NA		AA		EA	
	Mean (SD)	*p*	Mean (SD)	*p*	Mean (SD)	*p*	Mean (SD)	*p*	Mean (SD)	*p*
Total score	2.78 (0.69)		2.97 (0.77)		3.91 (0.65)		2.77 (0.66)		2.72 (0.78)	
Age										
30 and younger	2.78 (0.69)	0.278	2.99 (0.74)	0.882	3.88 (0.65)	0.269	2.71 (0.63)	0.014**	2.63 (0.73)	0.004**
30–40	2.85 (0.73)		3.01 (0.88)		4.04 (0.63)		3.01 (0.72)		2.99 (0.88)	
Older than 40	2.55 (0.55)		2.91 (0.86)		3.96 (0.76)		2.73 (0.61)		2.97 (0.77)	
Gender										
Male	2.62 (0.79)	0.687	2.73 (0.61)	0.590	3.80 (0.92)	0.775	2.63 (0.21)	0.727	2.67 (0.64)	0.905
Female	2.78 (0.69)		2.98 (0.77)		3.91 (0.65)		2.77 (0.66)		2.72 (0.78)	
Marital status										
Single	2.70 (0.67)	0.039**	2.94 (0.75)	0.420	3.91 (0.66)	0.946	2.71 (0.67)	0.117	2.61 (0.75)	0.005**
Married/divorced	2.87 (0.70)		3.01 (0.80)		3.90 (0.65)		2.84 (0.63)		2.87 (0.79)	
Religious belief										
Yes	3.08 (0.73)	0.054	3.21 (0.70)	0.166	3.80 (0.60)	0.439	3.04 (0.63)	0.059	3.09 (0.85)	0.058
No	2.76 (0.68)		2.96 (0.77)		3.92 (0.66)		2.75 (0.65)		2.69 (0.77)	
Education										
Associate degree	2.76 (0.68)	0.596	3.06 (0.78)	0.056	3.92 (0.67)	0.785	2.71 (0.72)	0.172	2.76 (0.85)	0.340
Bachelor/higher	2.80 (0.70)		2.88 (0.75)		3.90 (0.64)		2.82 (0.58)		2.68 (0.70)	
Years of working										
0–5 years	2.74 (0.68)	0.152	2.96 (0.77)	0.906	3.89 (0.67)	0.266	2.71 (0.67)	0.150	2.60 (0.74)	0.000**
6–10 years	2.92 (0.68)		2.99 (0.68)		3.85 (0.61)		2.79 (0.59)		2.74 (0.70)	
More than 10 years	2.73 (0.71)		3.01 (0.90)		4.04 (0.65)		2.92 (0.68)		3.09 (0.88)	
Frequency of care of dying patients										
Often 2.76 (0.76) .448			2.91 (0.72)	0.269	3.91 (0.59)	0.979	2.75 (0.64)	0.790	2.76 (0.76)	0.878
Occasionally 2.72 (0.65)			2.90 (0.81)		3.92 (0.72)		2.80 (0.65)		2.72 (0.82)	
Seldom/never 2.83 (0.68)			3.05 (0.76)		3.90 (0.64)		2.74 (0.67)		2.70 (0.75)	
Discussing death with colleagues										
Very open 2.71 (0.73) 0.171			2.87 (0.80)	.003**	3.98 (0.66)	.107	2.77 (0.72)	0.738	2.69 (0.83)	0.732
Occasionally 2.83 (0.65)			3.00 (0.72)		3.85 (0.64)		2.73 (0.60)		2.75 (0.71)	
Seldom/never 2.94 (0.49)			3.43 (0.64)		3.74 (0.60)		2.84 (0.52)		2.79 (0.73)	
Participation of death education/training										
Yes 2.73 (0.66) 0.332			2.82 (0.74)	0.005**	3.89 (0.63)	0.777	2.70 (0.60)	0.146	2.69 (0.76)	0.544
No 2.81 (0.71)			3.08 (0.77)		3.92 (0.67)		2.81 (0.69)		2.74 (0.79)	
Need for death education/training										
Yes 2.77 (0.70) 0.562			2.93 (0.77)	0.110	3.93 (0.62)	0.389	2.72 (0.62)	0.017**	2.66 (0.76)	0.008**
No/unsure 2.82 (0.63)			3.11 (0.75)		3.84 (0.76)		2.94 (0.75)		2.95 (0.79)	

Note: DAP-R, Death Attitude Profile-Revised; FD, fear of death; DA, death avoidance; NA, neutral acceptance; AA, approach acceptance; EA, escape acceptance.
$p < 0.05$; $^{**}p < 0.01$.

Table 5
Pearson correlations between DAP-R subscales and MBI subscales.

	EE	DP	PA
FD	0.246**	0.265**	−0.214**
DA	0.141*	0.100	−0.070
NA	−0.044	−0.162**	0.200**
AA	0.145*	0.081	0.007
EA	0.362**	0.337**	−0.135*

Note: MBI, Maslach Burnout Inventory; EE, emotional exhaustion; DP, depersonalization; PA, personal accomplishment; DAP-R, Death Attitude Profile-Revised; FD, fear of death; DA, death avoidance; NA, neutral acceptance; AA, approach acceptance; EA, escape acceptance.
$^{*}p < 0.05$; $^{**}p < 0.01$.

4. Discussion

Oncology nurses in this study experienced moderate levels of emotional exhaustion and depersonalization and a high level of reduced personal accomplishment. Past research involving registered nurses across China found that nurses had moderate to high levels of emotional exhaustion and moderate levels of depersonalization (Xie et al., 2011; You et al., 2013; Wang et al., 2015), but low levels of reduced personal accomplishment. Similarly, oncology nurses in this study reported moderate levels of emotional exhaustion and depersonalization.

Consistent with findings published in previous studies (Zhang et al., 2014; Tuna and Baykal, 2014), the most prominent element of high burnout among oncology nurses in this study was found in reduced personal accomplishment (65.1%). A possible explanation for this finding might be Chinese oncology nurses' personal sense of futility or failure in patient care and seeing their patients die. This stands in contrast to research conducted with oncology nurses in North America who generally reported low or moderate levels of reduced personal accomplishment (Cañadas-De la Fuente et al., 2018; Davis et al., 2013; Russell, 2016). This is probably relevant to the phenomenon that nurses have a lower status as a profession in China compared with Western countries (Zhang et al., 2014).

This study revealed that younger and less experienced nurses were less likely to experience emotional exhaustion compared to those who were older and more experienced. This is consistent with a study conducted by Quattrin et al. (2006) in an Italian region, who reported a positive relationship between age and levels of emotional exhaustion among oncology nurses. Similarly, American scholars Medland et al. (2004) reported that burnout results from prolonged high levels of stress at work; the longer nurses work, the more emotional exhaustion they tend to experience; this dynamic could contribute to senior nurses leaving the workplace. A concern raised from this result is the impact of high burnout among experienced nurses and the consequences of losing such a valuable resource. Thus efforts to retain senior nurses by reducing factors associated with burnout are needed to ensure that a sufficient number of experienced nurses are available to mentor younger nurses in the future (Jiang et al., 2016).

The results of this study indicated that oncology nurses tended to accept death as a natural part of life, and they did not show strong fear of death. However, among the negative attitudes towards death, they scored the highest on death avoidance, indicating that oncology nurses

Table 6
Summary of multiple stepwise regression for variables contributing to MBI of oncology nurses (n = 279).

	B	SE	β	*F/t*	*p*	*R*	R^2	Adjusted R^2
Emotional Exhaustion				19.27	0.000	0.469	0.220	0.208
Constant	14.15	3.56		3.97	0.000			
EA	3.94	0.74	0.29	5.38	0.000			
FD	2.98	0.82	0.20	3.63	0.000			
Age (30 and younger)	−4.01	1.31	−0.17	−3.06	0.002			
Participation of death education/training	−3.10	1.13	−0.15	−2.75	0.006			
Depersonalization				19.86	0.000	0.422	0.178	0.169
Constant	4.41	2.48		1.78	0.076			
EA	2.21	0.38	0.32	5.76	0.000			
FD	1.45	.044	0.19	3.25	0.001			
NA	−1.21	0.46	−0.15	−2.62	0.009			
Personal Accomplishment				8.53	0.000	0.292	0.085	0.075
Constant	32.00	2.94		10.89	0.000			
FD	−1.38	0.53	−0.16	−2.61	0.010			
NA	1.62	0.55	0.18	2.95	0.003			
EA	−1.00	0.46	−0.13	−2.19	0.029			

Note: MBI, Maslach Burnout Inventory; FD, fear of death; NA, neutral acceptance; EA, escape acceptance.

were likely to avoid talking and thinking about death to reduce their death anxiety. This is consistent with previous studies which found that unlike Western nurses who are relatively more open to talk about death, Chinese oncology nurses are hardly talking about death, especially with their patients, because of the traditional death-taboo culture and their lack of knowledge and skills regarding communication about death (Dong et al., 2016; Zheng et al., 2015). Moreover, Chinese nurses' educational preparation tends to focus on the biomedical aspects of disease and death, without having students ever reflect upon and thus grapple with their own attitudes and beliefs about death and dying (Zheng et al., 2015).

Younger nurses in the study reported less approach acceptance and escape acceptance compared with those who were older, indicating that younger nurses are less likely to view death as an entry point to a better afterlife or perceive death as a solution to suffering. In this study, nurses who worked more than 10 years reported higher escape acceptance than those who worked fewer years. This is consistent with findings from a study of 355 inpatient and outpatient oncology nurses conducted in the United States (Lange et al., 2008), which found that nurses with more than 10 years of work experience scored higher on the escape acceptance subscale than nurses with fewer years of experience, suggesting that nurses with more years of work experience are more likely to view death as a solution to suffering. Similar results were also reported in Dunn et al.'s (2005) study of 58 nurses in oncology and medical/surgical departments.

The correlations of oncology nurses' attitudes towards death with burnout were detailed in the study. Nurses who had more attitudes of fear of death and who viewed death as an escape from suffering tended to experienced more emotional exhaustion, depersonalization and less personal accomplishment. Emotional exhaustion is more likely to happen to nurses who avoid thoughts about death and who perceive death as a passageway to a better afterlife. Nurses who viewed death as a natural part of life tended to experience more personal accomplishment and less depersonalization. Similar results were reported in a study (Gama et al., 2014) conducted in Portugal surveying a sample of 360 nurses from internal medicine, oncology, haematology and palliative care departments to explore factors relevant to burnout in nurses coping with death issues. The findings indicated that nurses with more positive attitudes towards death tend to experience less burnout.

The death-taboo culture is weakening from the effect of globalization on Chinese culture and as the Chinese population ages, the necessity of offering death education and end-of-life care training programs to health care professionals, especially oncology nurses who work closely with cancer patients, is increasingly recognized. As Cui et al. (2011) suggested, nurses need adequate death training in their attempts to care for dying patients; such training should enable them to be aware of and discuss their personal attitudes towards death, thus reducing their death anxiety and negative attitudes when facing death and dying issues (Dong et al., 2016). In the present study, oncology nurses who had attended death education/training reported significantly lower scores on emotional exhaustion and death avoidance; and death education/training was endorsed by the majority of participants. Empirical evidence demonstrates that educating nurses in the care of the dying results in more positive attitudes towards death and the care of dying patients (McClement et al., 2005; Göriş et al., 2017).

4.1. Limitations

The study has several limitations. Although the participating hospital is a one of the biggest tertiary cancer hospitals in China and the response rate of nurses to participate in the study was high, it was conducted in one cancer hospital in Northern China using convenience sampling; thus, it may not be possible to generalize the results to a greater population of oncology nurses. A large random sample from different locations will be needed in order to better understand burnout and attitudes towards death among Chinese oncology nurses. As the non-response rate was low, we consider it has minimal effect on the generalization of the results to the overall target population. Nurses in this study were predominantly female, although this is representative of the nursing workforce in China which is dominated by women.

4.2. Implications

This study is significant in that it examined the prevalence of burnout and attitudes towards death among Chinese oncology nurses, a clinical issue that has not been previously well examined. Burnout in oncology nursing is a cross-cultural phenomenon (Cañadas-De la Fuente et al., 2018); Chinese oncology nurses experience moderate to high levels of burnout, which mirrors the experience of oncology nurses in western countries. Nursing administration needs to be aware of the issue of burnout among oncology nurses, and psychosocial support should be offered to oncology nurses to reduce their burnout, especially the feelings of emotional exhaustion and reduced personal accomplishment, with the goal of retaining experienced nurses within the workforce. This study also offers insights into the need for the development of training programs to foster more positive attitudes towards death among oncology nurses. Awareness of and reflecting upon own attitudes and beliefs about death and dying could help oncology nurses reduce burnout. More studies will be needed to explore how Chinese oncology nurses' attitudes towards death and burnout impact the care of cancer patients as well as themselves.

5. Conclusion

Chinese oncology nurses experienced moderate to high levels of burnout. Younger and less experienced nurses had less feeling of burnout; and the longer nurses worked, the more burnout they tended to experience. In general, oncology nurses showed positive attitudes towards death. They tended to accept death as an integral part of life, and did not show strong fear of death when facing death. Nurses who had more positive attitudes towards death tended to experience less burnout. Death education/training was endorsed by oncology nurses and prevented against emotional exhaustion. More training programs should be offered to oncology nurses, which include opportunities to discuss their personal attitudes towards death. This will enable them to better care for patients who are imminently approaching end-of-life.

Conflicts of interest

The authors have no conflicts of interest to disclose.

CRediT authorship contribution statement

Qiaohong Guo: Conceptualization, Methodology, Writing - original draft, Funding acquisition. **Ruishuang Zheng:** Investigation, Writing - original draft, Writing - review & editing.

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