International Journal of Nursing Sciences 4 (2017) 135–141

HOSTED BY

Contents lists available at ScienceDirect

International Journal of Nursing Sciences

journal homepage: http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132

Cronbach's α reliability, concurrent validity, and factorial structure of the Death Depression Scale in an Iranian hospital staff sample

Mahboubeh Dadfar [a], David Lester [b, *]

[a] School of Behavioral Sciences and Mental Health-Tehran Institute of Psychiatry, International Campus, Iran University of Medical Sciences, Iran
[b] Psychology Program, Stockton University, Galloway, NJ 08205, USA

ARTICLE INFO

Article history:
Received 28 July 2016
Accepted 24 February 2017
Available online 11 March 2017

Keywords:
Death Depression Scale (DDS)
Reliability
Validity
Factorial structure
Nurses
Hospital

ABSTRACT

Objective: Death depression is an important component in the process of death and dying. Death depression is the second element of death. Depression is one of the important features in death distress. The aim of this study was to explore the performance of the Farsi version of the Death Depression Scale with an Iranian convenience sample of nurses ($n = 106$).

Methods: Nurses were selected using a convenience sampling method, and completed the Death Depression Scale (DDS), Death Concern Scale (DCS), Collett-Lester Fear of Death Scale (CLFDS), Reasons for Death Fear Scale (RDFS), Templer's Death Anxiety Scale (DAS), and Death Obsession Scale (DOS).

Results: The results of exploratory factor analysis on DDS identified 4 factors (56.16% of variance). Factor 1 labeled "Death sadness", Factor 2 labeled "Death finality/end and Death dread/fear", Factor 3 labeled "Death despair and Death depression", and Factor 4 labeled "Death loneliness". Cronbach's α coefficient was 0.84, Spearman-Brown coefficient 0.85, and Guttman Split-Half coefficient 0.81 The DDS correlated 0.40 with the DCS, 0.39 with the CLFDS, 0.50 with the DAS, 0.35 with the RDFS, and 0.44 with the DOS, indicating good construct and criterion-related validity. Concurrent validity for the DDS with the other scales were significant.

Conclusions: The DDS has good validity and reliability, and it can use in clinical and research settings.

1. Introduction

Depression is the fourth of the five stages of in the Elizabeth Kübler-Ross' dying process [1]. Depression is related to anxiety level and death distress [2]. In the process of dying, a strong depression has been reported [3]. Difficulty sleeping, poor appetite, fatigue, lack of energy, crying spells, self-pity, feel lonely, isolated, empty, lost, and anxious are the most common signs of depression in the stage of depression' process of grief [4]. Depressive disorders may be associated with, or exacerbated by, existential despair and lack of meaning [5–7]. Depressed individuals may respond to reminders of death with more worldview defense than non-depressed individuals, confirming that depression may be associated with less buffering against mortality concerns. Experimental research has shown that mildly depressed individuals demonstrated greater worldview defense in response to reminders of death, when compared to non-depressed individuals [8]. Ramchandani (2010) indicated that thinking about death-related issues, can cause depressive symptoms such as despair, hopelessness, loneliness, and sadness. Also when thoughts related to death deny, can cause loss of energy, one of the depressive symptom [9]. Ongider and Eyuboglu (2013) found that in depressive patients, death anxiety was associated with depression [10].

Templer, Lavoie, Chalgujian, and Thomas-Dobson (1990) were introduced concept of death depression, the second element of death (the first concept was death anxiety), and developed Death Depression Scale (DDS) [11]. The DDS has 17-item, two formats (Likert, and False/True), and six elements death despair, death loneliness, death dread/fear, death sadness, death depression and death finality/end. It is a useful clinical tool for determination of time changes due to the bereavement, terminal illness and various life events [12]. The emotional, attitude, and cognitive concept of death depression refers to despair, loneliness, dread and sadness related to the death of a close person, the death of others and general concept of death [13]. Abdel-Khalek (2011–2012) indicated that on the Death Anxiety Scale (DAS), DDS, and Death Obsession

* Corresponding author.
E-mail address: lesterd@stockton.edu (D. Lester).
Peer review under responsibility of Chinese Nursing Association.

http://dx.doi.org/10.1016/j.ijnss.2017.02.007

Scale (DOS), death distress includes death anxiety, death depression, and death obsession [14].

Depressive signs including suffering, hopeless, loss, and sadness have been reported by some health professionals such as nurses to work with dying patients [15]. Ayyad (2013) reported that working in higher stress nursing departments such as ICU and Heart Department, affected death distress includes the DDS, DOS, and Reasons for Death Fear Scale (RDFS) than their counterparts working in lower stress departments such as internal medicine [16]. Some studies have been conducted with Iranians and their emotional needs about related-death issues [17,18]; existential issues and death-related thoughts and concerns [19,20]; and death anxiety in nurses and health professionals [21,22]. There is one study about death depression in Iranian college students [23], and two studies have been carried on death depression in Iranian nurses [24,25]. Dadfar et al. (2014) examined death depression using DDS in 56 nurses and 56 comparison women. Results showed that nurses had significantly higher scores on the 10 items and 3 elements of death despair, death loneliness, and death finality/end than the controls [24].

The aim of the present study was to evaluate the reliability, validity, and factorial structure of the DDS (17 items, False/True format) with Iranian nurses. In order to do this, the study examined item frequency endorsement, inter-item correlations and reliability coefficients and performed an exploratory factor analysis. In addition, the study explored the relationship between depression and other psychological variables related to death and dying, such as death concern, death fear, reasons for death fear, death anxiety, and death obsession in order to establish the construct validity of the measure.

2. Methods

2.1. Participants

The sample included 106 Iranian nurses. They were selected using a convenience sampling method from different wards of two hospitals in Tehran, Iran: Hazrat-e Rasool General Hospital affiliated with Iran University of Medical Sciences, and the Khatam-Al-Anbia General Hospital. Table 1 gives some demographic and professional data on the sample.

They completed the Death Depression Scale (DDS). Concurrent validity of the DDS was measured by the Death Concern Scale (DCS; Dickstein, 1972) [26], Collett-Lester Fear of Death Scale (CLFDS; Collett, & Lester, 1969) [27], Reasons for Death Fear Scale (RDFS; Abdel-Khalek, 2002) [28], Templer's Death Anxiety Scale (DAS; Templer, 1970) [29], and Death Obsession Scale (DOS; Abdel-Khalek, 1998) [30].

2.2. Measures

The Death Depression Scale (DDS) was made by Templer et al. (1990) [11]. The DDS is a 17-item self-report questionnaire. Six elements of the DDS include death despair (items of 8, 11 and 16), death loneliness (items of 4, 9, 10 and 13), death dread/fear (items of 14, 15 and 16), death sadness (items of 2 and 3), death depression (items of 2 and 12) and death finality/end (items of 6 and 7). The DDS has two different formats (a false and true or yes/no format, and a five-point Likert format). In False/True format, items are answered (0) False and (1) True. In a five-point Likert format, items are answered (1) Strongly agree, (2) Agree, (3) Neutral, (4) Disagree, and 5 Strongly disagree. The DDS has 2 items to control an acquiescence response set (items of 11, and 12). The DDS is answered conversely in both of formats. Total scores can range from 0 to 17. Higher scores on the DDS is indicator more death depression [12].

Table 1
Characteristics of the sample.

Variable	%
Age	
20–29	26.2%
30–39	48.8%
40–49	19.0%
≥50	6.0%
Sex	
Women	95%
Men	5.0%
Appointment	
Contract	61%
Formal	39%
Work experience	
1–5 y r	32.6%
≥5 y r	67.4%
Position	
Staff nurse	88%
Head nurse	12%
Work shift	
Rotational	79%
Fixed	20.4%
The number of patients per shift	
0 -9	51%
Care of end stage patients in the past 3 month	
0 - 6	58%
Participation in reclamation operations in the past 3 month	
≥5	29.9%

Many studies showed that the DDS has good internal consistency. It correlated positively with death anxiety, death obsession, Zakerman general depression and anxiety [11,13,30–34]. There was significant correlation between the DDS and the Arabic Scale of Death Anxiety (ASDA) [35,36]. Validity and reliability of Likert format of the DDS was higher than its False/True format and use of Likert format of the DDS is more favorite [23]. The correlation between two formats of the DDS was 0.77 [12]. Aghazadeh et al. (2014) reported that the DDS has good validity and reliability in Iranian college students. Multidimensional structure of the DDS by Principal Component Analysis with Promax rotation extracted four factors (49.71% of total variance) that were labeled death despair, death finality, death loneliness, and death acceptance. Concurrent validity of the DDS was reported well with parallel using of the DAS. Three types of reliability of the DDS were reported well: Test retest ($r = 0.78$), split half ($r = 0.77$), internal constancy ($r = 0.76$). They concluded that the DDS as valid measure can be used in empirical studies surrounding death distress [23]. Rajabi et al. (2015) reported that exploratory factor analysis on Death Depression Scale-Revised (DDS-R) revealed three factors among the nurses. Cronbach's α coefficient was 0.93, with alphas ranging from 0.80 to 0.94 for the individual factors. The DDS-R had concurrent validity with the DAS, DOS, and Short-Form of Beck Depression Inventory (BDI-13) [25].

3. Results

The means score of the sample on the DDS was 8.04 (SD = 4.34). The highest means scores included elements of Death loneliness 1.96 (SD = 1.39); and Death dread/fear 1.56 (SD = 0.96) (See Table 2).

Correlations between the items of the DDS were from 0.013 to 0.603; and correlations between the items and the total score the items the total score were from −0.117 to 0.706 (See Table 3).

Cronbach's α coefficient of the DDS was 0.84, Spearman-Brown coefficient 0.85, and Guttman Split-Half coefficient 0.81.

The DDS correlated 0.40 with the DCS, 0.39 with the CLFDS, 0.50

Table 2
Mean, SD of elements and total score, and F (%) true answer to Death Depression Scale (DDS) in nurses.

Elements of the DDS	Mean	SD
1. Death despair	0.99	0.86
2. Death loneliness	1.96	1.39
3. Death dread/fear	1.59	0.96
4. Death sadness	0.94	0.84
5. Death depression	0.83	0.72
6. Death finality/end	0.66	0.78
Total score of the DDS	8.07	4.34
Items of the DDS	**F**	**%**
1. I get depressed when I think about death.	51	48.1
2. Hearing the word death makes me sad.	46	43.4
3. Passing by cemeteries makes me sad.	54	50.9
4. Death means terrible loneliness.	52	49.1
5. I become terribly sad when I think about friend or relatives who have died.	65	**61.3**
6. I am terribly upset by the shortness of life.	38	35.8
7. I cannot accept the finality of death.	33	31.1
8. Death deprives life of its meaning.	35	33.0
9. I worry about dying alone.	57	**53.8**
10. When I die, I will completely lose my friends and loved ones.	67	**63.2**
11. Death does not rob life of its meaning.	45	42.5
12. Death is not something to be depressed by.	42	39.6
13. When I think of the death, I feel tired and lifeless.	32	30.2
14. Death is painful.	59	**55.7**
15. I dread to think of the death of friends and loved ones.	85	**80.2**
16. Death is the ultimate failure in life.	25	23.6
17. I feel sad when I dream of death.	70	**66.0**

Items of high loadings (>.50) are given in bold to more clearly differentiate the percent.

Table 3
Correlations between the items and the total score on the Death Depression Scale (DDS) in nurses.

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
1	1																	
2	0.37**	1																
3	0.34**	**0.44****	1															
4	**0.41****	0.39**	**0.43****	1														
5	**0.41****	0.34**	0.34**	**0.43****	1													
6	**0.46****	0.33**	0.30**	0.36**	0.35**	1												
7	0.37**	0.31**	0.29**	0.19*	0.19*	0.39**	1											
8	**0.44****	0.19*	0.24*	0.27**	0.31**	**0.43****	**0.43****	1										
9	0.17	0.23*	0.18	0.22*	0.15	0.33**	0.21*	0.16	1									
10	0.38**	0.31**	0.38**	**0.43****	0.31**	0.36**	0.38**	0.32**	0.31**	1								
11	−0.21*	0−0.13	−0.07	−0.11	−0.10	−0.20*	−0.04	−0.11	−0.23*	−0.13	1							
12	0.10	0.06	−0.01	−0.02	0.08	−0.12	−0.00	0.04	−0.06	−0.06	0.24*	1						
13	0.39**	**0.50****	0.35**	**0.46****	0.39**	**0.53****	**0.40****	**0.41****	0.32**	0.33**	−0.19	0.01	1					
14	0.32**	0.39**	**0.45****	0.34**	0.30**	0.23*	0.27**	0.26**	0.12	0.34**	−0.19*	0.02	0.33**	1				
15	0.28**	0.19*	0.12	0.25**	0.33**	0.27**	0.23*	0.24*	0.15	**0.40****	−0.33**	−0.17	0.22*	0.27**	1			
16	0.35**	0.32**	0.27**	0.34**	0.30**	**0.41****	**0.49****	**0.50****	0.29**	0.33**	−0.11	0.141	**0.60****	0.36**	0.22*	1		
17	**0.41****	**0.42****	0.37**	0.38**	0.33**	0.28**	0.26**	0.24**	0.33**	0.40**	−0.15	−0.07	0.34**	0.36**	0.34**	0.25**	1	
Total	**0.66****	**0.63****	**0.61****	**0.64****	**0.61****	**0.63****	**0.59****	**0.59****	**0.43****	**0.64****	−0.11	0.13	**0.70****	**0.57****	**0.43****	**0.66****	**0.61****	1

*Significant at the 0.05 level.
**Significant at the 0.01 level. Note. See the items in Table 3. Items of high loadings (>.40) are given in bold to more clearly differentiate the correlations.

with the DAS, 0.35 with the RDFS, and 0.44 with the DOS, indicating good construct and criterion-related validity. Concurrent validity for the DDS with the other scales, were significant (See Table 4).

3.1. Factor analysis

The criteria for a factor analysis were evaluated using Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity. The KMO was 0.877, indicating the adequacy of the sample of nurses, and Bartlett's Test of Sphericity (553.611, df = 136, $P < 0.001$) indicated that the factor analysis was justified in nurses.

The results of exploratory factor analysis on DDS identified 4 factors (56.16%). Factor 1 (items: 2, 3, 4, 5, 10, 14, and 17) labeled: Death sadness (21.21%). Factor 2 (items: 1, 6, 7, 8, 13, and 16) labeled: Death finality/end and Death dread/fear (18.27%). Factor 3 (items: 11, 12, and 15) labeled: Death despair and Death depression 9.84%, and Factor 4 (item 9) labeled: Death loneliness (6.38%) (See Table 5 and Fig. 1).

4. Discussion

The aim of the present study was to explore the validity and reliability of the Death Depression Scale (DDS). The DDS is a

Table 4
Descriptives of all scales and correlations with the DDS.

Scales	Mean	SD	Cronbach's α	Pearson r with DDS
Death Concern Scale (DCS)	72.72	10.82	0.73	0.40**
Collett-Lester Fear of Death Scale (CLFDS)	99.15	25.14	0.94	0.39**
Templer's Death Anxiety Scale (DAS)	8.27	2.71	0.60	0.50**
Reasons for Death Fear Scale (RDFS)	57.70	14.23	0.90	0.35**
Death Obsession Scale (DOS)	30.74	12.35	0.95	0.44**

*Two-tailed $P < 0$ 0.01.

multidimensional scale and had good internal consistency and reliability in this sample of Iranian nurses.

In our study reliability coefficients of the DDS were Cronbach's α (0.84), Spearman-Brown Coefficient (0.85), and Guttman Split-Half Coefficient (0.81). Dadfar et al. (2014) found two-week test-retest reliability was 0.75 [24]. In study of Aghazadeh et al. (2014), Cronbach's α was 0.78, Spearman-Brown Coefficient was 0.77, and four week test-retest reliability was 0.75 in the sample of Iranian college students [23].

The present study identified four components of the DDS: Death sadness (21.21% of variance); Death finality/end and Death dread/fear (18.72% of variance); Death despair and Death depression (9.84% of variance); and Death loneliness (6.38% of variance). Thus, the construct of depression as measured by the DDS in our sample comprised of four dimensions, which may suggest exploring each dimension further in future studies. Our findings differ somewhat from studies of Templer et al. (1990) which used 17-item False-True of the DDS and found six factor: death despair, death loneliness, death dread, death sadness, death depression, and death finality [11], Aghazadeh et al. (2014) obtained four factors using Promax rotation in Iranian college students. Six items loaded on Factor 1 (1, 6, 12, 13, and 17) labeled "death despair (27.32% of variance), six items (4, 7, 8, 10, 14, and 16) loaded on factor 2 labeled "death finality" (8.84% variance), five items (3, 5, 9, 10, and 15) loaded on factor 3 labeled "death loneliness" (7.43% variance), and three items (8, 11, and 12) loaded on factor 4 labeled "death acceptance" (6.11% variance). Items 8, 10, 1 and 12 commonly loaded on the factors of 1 and 4; 2 and 3; 1 and 4 [23]. Rajabi et al. (2015) obtained three factors in Iranian nurses. Eight items loaded on Factor 1 (1, 2, 3, 4, 5, 6, 7, and 10) labeled "negative emotion toward self (43.9% of variance) and six items (7, 8, 9, 11, 12, and 13) loaded on factor 2 labeled "not-enjoying" (8.6% variance) [25]. The four factors obtained in this study explained 56.16% of the variance in DDS scores, which is more than the 49.71% explained in Aghazadeh et al. (2014) [23], and 52.54% explained in Rajabi et al. (2015) [25].

There were four differences between the study Rajabi et al. (2015) [25] and our study following items:(1) In their study The Death Depression Scale-Revised (DDS-R)-21-items was used but we used DDS 17 items False-True format (Yes/No), (2) For concurrent validity, they used Death Anxiety Scale (DAS), Death Obsession Scale (DOS), as well as Short-Form of Beck Depression Inventory (BDI-13) but we used the DCS, CLFDS, RDFS, DAS, and DOS, (3) In their study were male and female nurses at Jundishapur University of Medical Science and 2 private hospitals in Ahvaz, Iran (Khozestan

Table 5
Four varimax factor loadings (>0.5) of the Death Depression Scale (DDS) in nurses ($n = 106$).

Death Depression Scale (DDS) Items	Component			
	1	2	3	4
1. I get depressed when I think about death.	0.483	**0.509**	0.113	−0.203
2. Hearing the word death makes me sad.	**0.685**	0.188	−0.062	0.265
3. Passing by cemeteries makes me sad.	**0.726**	0.114	−0.065	0.155
4. Death means terrible loneliness.	**0.677**	0.215	0.077	0.069
5. I become terribly sad when I think about friend or relatives who have died.	**0.581**	0.302	0.066	−0.260
6. I am terribly upset by the shortness of life.	0.260	**0.619**	0.243	0.233
7. I cannot accept the finality of death.	0.172	**0.688**	0.016	0.104
8. Death deprives life of its meaning.	0.135	**0.780**	0.070	−0.156
9. I worry about dying alone.	0.196	0.261	0.249	**0.681**
10. When I die, I will completely lose my friends and loved ones.	**0.508**	0.343	0.278	0.014
11. Death does not rob life of its meaning.	−0.094	−0.105	**−0.694**	−0.081
12. Death is not something to be depressed by.	0.086	0.161	**−0.688**	−0.239
13. When I think of the death, I feel tired and lifeless.	0.422	**0.597**	0.018	0.318
14. Death is painful.	**0.644**	0.178	0.070	−0.082
15. I dread to think of the death of friends and loved ones.	0.302	0.261	**0.645**	−0.331
16. Death is the ultimate failure in life.	0.236	**0.759**	−0.078	0.158
17. I feel sad when I dream of death.	**0.644**	0.137	0.237	0.132
Eigen value	3.60	3.18	1.67	1.08
% of Variance	21.21	18.27	9.84	6.38
% of total variance	56.16			
Component Transformation Matrix				
1	0.71	0.64	0.21	0.11
2	0.04	0.29	−0.94	−0.12
3	0.69	−0.68	−0.16	−0.13
4	−0.01	0.13	0.16	−0.97

Factor 1 (items: 2, 3, 4, 5, 10, 14, and 17): Death sadness.
Factor 2 (items: 1, 6, 7, 8, 13, and 16): Death finality/end and Death dread/fear.
Factor 3 (items: 11, 12, and 15): Death despair and Death depression.
Factor 4 (item 9): Death loneliness. Items of high loadings (>.50) are given in bold to more clearly differentiate the factors.

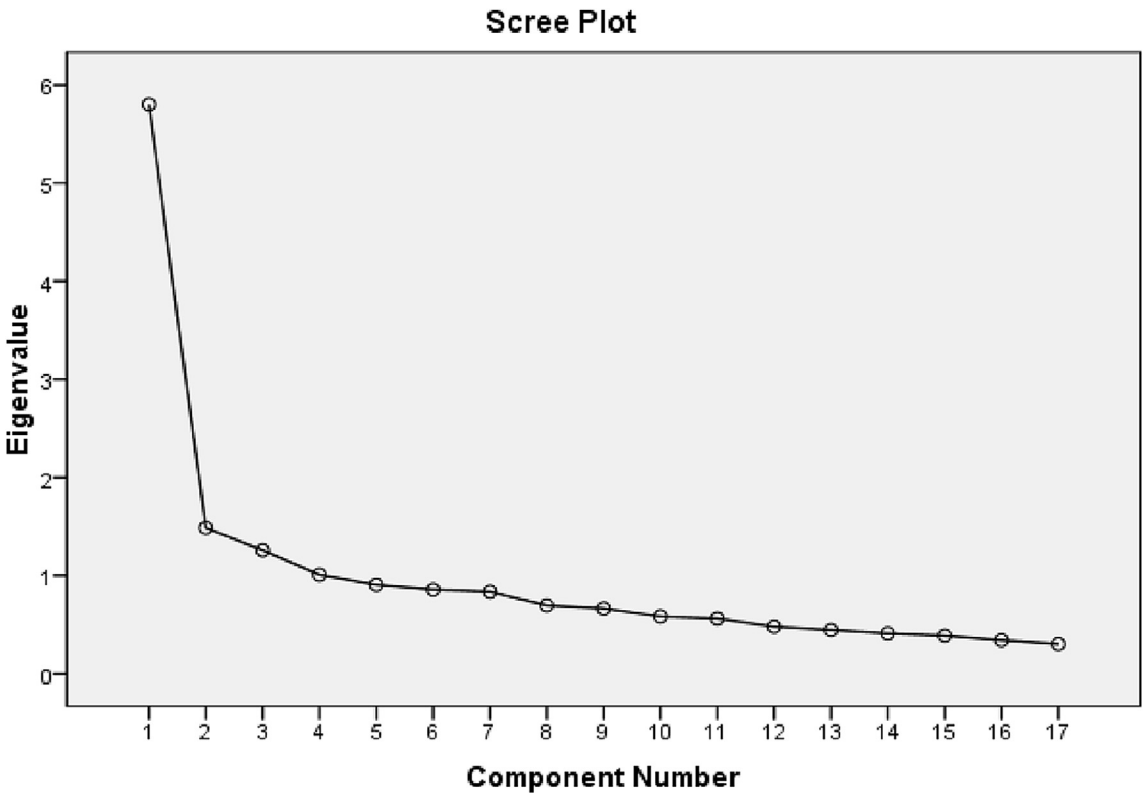

Fig. 1. Scree plot of the DDS.

province of Iran) but in our study the majority were women nurses at Iran University of Medical Science and 2 general hospitals (one affiliated to Iran University of Medical Science (governmental), and one a private hospital or non-governmental) in Tehran, Iran (Tehran province of Iran), (4) They obtained 3 factors but we yield 4 factors. The observed differences between the three studies (our study, studies of Aghazadeh et al. (2014) [23], and Rajabi et al. (2015)) [25] may be best explained due to the use of different clinical versus non-clinical setting samples, Iranian diverse cultures, different versions (DDS, and DDS-R) and numbers of items of the DDS (17 items) and DDS-R (21 items), and also different Principal Component Analysis.

The means score of the sample on the DDS was 8.04 (SD = 4.34); elements of Death loneliness 1.96 (SD = 1.39); Death dread/fear 1.56 (SD = 0.96) had higher mean scores than other elements. The most common death symptoms on the items of DDS were Item 15 (I dread to think of the death of friends and loved ones), 17 (I feel sad when I dream of death), 10 (When I die, I will completely lose my friends and loved ones), 5 (I become terribly sad when I think about friend or relatives who have died), 14 (Death is painful), 9 (I worry about dying alone), and 3 (Passing by cemeteries makes me sad) respectively. In study of Rajabi et al. (2015) means score of the DDS-R was 0.48 (SD = 0.74). The most common depressive symptoms on the items of DDS-R were Item 9 (Indecisiveness), and the lowest depressive symptoms was item 7 (Self -punitive wishes/Self-harm), respectively [25].

In our study scores on the DDS are associated with many measures of psychological problems: Death concern, death fear, reasons for death fear, death anxiety, and death obsession. These associations indicate evidence for the construct validity of the DDS. Therefore, the DDS is useful for assessing death depression symptoms in nurses. In study of Templer et al. (1990), the DDS correlated positively with death anxiety, general depression, and general anxiety [11]. Abdel-Khalek (2004) reported that among Kuwaiti college students, a general high-loaded factor of death distress included death anxiety, death depression, and death obsession [35]. Tomas-Sabado and Gomez-Benito (2005) reported death anxiety and death depression is related together but they are distinct aspects of human reactions to death phenomenon [32]. In study of Aghazadeh et al. (2014), concurrent validity of the DDS with the DAS was ($r = 0.68$, $P < 0.001$) [23]. There was correlation between death anxiety, death depression and geriatric depression; and no significant difference between death anxiety, death depression, geriatric depression and suicidal ideation based on age of the elders [37–40].

Erikson believed that in the last stage of life, persons who are lack a coherent sense of self, they consider themselves as failed and despaired [41]. In study of Bahrami, Dadfar, Lester, and Abdel-Khalek (2014), on the DAS, DDS, and DOS, Iranian older adults showed death distress. Iranian women older adults showed higher death distress than men older adults but the difference was no statistically significant [42]. Rasquinha and Acharya (2013) reported that there was a relationship between depression and death anxiety among elderly [43]. Sridevi and Swathi (2014) showed that institutionalized elders had significant death depression than non-institutionalized elders. There was no significant difference in death anxiety and death depression among institutionalized elders based on gender. The single elders had significant death depression than coupled elders. Rural elders are showed significant death depression than urban elders. There was correlation between death anxiety, death depression and geriatric depression [40].

Roshdieh, Templer, Cannon, and Canfield (1998–1999) showed a relationship of death anxiety and death depression with religion and civilian war-related experiences in Iranians [31]. Alvarado, Templer, Bresler, and Thomas-Dobson (1992, 1995) found that religious variables related to death depression and death anxiety

[44,45]. Lo, Hales, Zimmermann, Gagliese, Rydall, et al. (2011) revealed that dying and death-related distress was positively associated with depression and negatively associated with spiritual, emotional, physical, and functional well-being [46]. Lester (2012) reported that religiosity and spirituality were positively associated with depression, mania, and past suicidal ideation [47]. Spirituality and religiosity are predictors of depression and suicidal ideation [48].

Preoccupation with death can cause anxiety and depression in some religious people. In general, religious attitudes toward death are debatable in three characteristics: Death anxiety, death depression, and death obsession.

There were some studies about afterlife view and death depression. Results of a study showed that lower death depression scores were associated with more confidence in religion and stronger afterlife beliefs. Also less belief/faith to life after death was associated with the DDS lower scores [45]. More certain about life after death was related to less depression and afterlife beliefs play a main role in lower the DDS scores than belief in God [49]. It is seemed that relationship between death anxiety and afterlife beliefs be more inconsistent than the literature on death depression [9].

Our study has some limitations. The sample of the study only included nurses, so, it seems that generalizing these findings cannot generalize to other social classes. Attitudes toward death are different on the basis of demographic factors, and fluctuate in different stages of development, other professionals, cultures and religions. Therefore we suggest the study repeat in other samples, particularly the elderly and dying people. Also feasibility of a Likert format of the DDS should be explored. It will be useful to investigate relationship between the DDS with other depression tools such as BDI-II and BDI-13.

Conflicts of interest

The authors declare that they have no conflicts of interest.

Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.ijnss.2017.02.007.

References

[1] Kübler-Ross E. On death and dying. New York: Macmillan; 1969.
[2] Chibnall JT, Videen SD, Duckro PN, Miler DK. Psychosocial-spiritual correlates of death distress in patients with life-threatening medical conditions. Palliat Med 2002;16(4):331–9.
[3] Abdel-khalek AM, Lester D. Correlations of attitudes toward physician-assisted suicide, death depression, death obsession, and trait anxiety. Psychol Rep 2006;98(3):734.
[4] Dadfar M, Kalibatseva Z. Psychometric properties of the Persian version of the short Beck Depression Inventory (BDI-13) with Iranian psychiatric outpatients. Scientifica 2016. http://dx.doi.org/10.1155/2016/8196463. Article ID 8196463, 6 pages.
[5] Ghaemi SN. Feeling and time: the phenomenology of mood disorders, depressive realism, and existential psychotherapy. Schizophr Bull 2007;33:122–30.
[6] Havens LL, Ghaemi SN. Existential despair and bipolar disorder: the therapeutic alliance as a mood stabilizer. Am J Psycho 2005;59:137–47.
[7] Simon L, Arndt J, Greenberg J, Solomon S, Pyszczynski T. Terror management and meaning: evidence that the opportunity to defend the worldview in response to mortality salience increases the meaningfulness of life in the mildly depressed. J Pers 1998;66:359–82.
[8] Simon L, Greenberg J, Harmon-Jones E, Solomon S, Pyszczynski T. Mild depression, mortality salience and defense of the worldview evidence of intensified terror management in the mildly depressed. Pers Soc Psycho Bull 1996;22:81–90.
[9] Ramchandani K. Coping with personal death: the extent that afterlife beliefs influence death anxiety and death depression. Doctoral Dissertation. USA: California School of Professional Psychology San Francisco Bay area Campus: Alliant International University; 2010.
[10] Ongider N, Eyuboglu SO. Investigation of death anxiety among depressive patients. J Clin Psych 2013;16:34–46.
[11] Templer DI, Lavoie M, Chalgujian H, Thomas-Dobson S. The measurement of death depression. J Clin Psycho 1990;46(6):834–9.
[12] Fischer K, Corcoran J. Measures for clinical practice and research: a source-book two-volume set. 3rd ed. Hardcover; 2007.
[13] Templer DI, Harville M, Hutton S, Underwood R, Tomeo M, Russell M, et al. Death Depression Scale-revised. Omega J Dea Dyi 2001-2002;44(2):105–12.
[14] Abdel-Khalek AM. The death distress constructs and scale. Omega J Dea Dyi 2011-2012;64(2):171–84.
[15] Tomas-Sabado J, Limonero JT, Templer DL, Gomez-Benito J. The Death Depression Scale-revised: preliminary empirical validation of the Spanish form. Omega J Dea Dyi 2004-2005;50:43–52.
[16] Ayyad F. Death distress among two samples of lower and higher stress in health care professionals. Psychol Rep 2013;113(1):1332–41.
[17] Sharif Nia H, Ebadi A, Lehto RH, Mousavi B, Peyrovi H, Chan YH. Reliability and validity of the Persian version of templer death anxiety scale-extended in veterans of Iran–Iraq warfare. Iran J Psy Behr Sci 2014;8(4):29–37.
[18] Sharif Nia H, Ebadi A, Lehto RH, Peyrovi H. The experience of death anxiety in Iranian war veterans: a phenomenology study. Death Stud 2015;39:281–7.
[19] Lehto RH, Therrien B. Death concerns among individuals newly diagnosed with lung cancer. Death Stud 2010;34:931–46.
[20] Lehto RH. The challenge of existential issues in acute care: nursing considerations for the patient with a new diagnosis of lung cancer. Clin J Onco Nurs 2012;16(1):4–11.
[21] Lehto RH, Stein KF. Death anxiety: an analysis of an evolving concept. Res Theo Nurs Prac Inter J 2009;23(1):23–41.
[22] Sharif Nia H, Lehto RH, Ebadi A, Peyrovi H. Death anxiety among nurses and health care professionals: a review article. Inter J Comm Bas Nurs Mid (IJCBNM) 2016;4(1):2–10.
[23] Aghazadeh SE, Mohammadzadeh A, Rezaie A. Validation of Death Depression Scale (DDS) in university students. J Res Beha Sci 2014;12(3):433–42.
[24] Dadfar M, Lester D, Asgharnejad Farid AA, Atef Vahid MK, Birashk B. Death depression in Iranian nurses. Adv Envir Bio 2014;8(13):218–22.
[25] Rajabi GR, Begdeli Z, Naderi Z. Psychometric properties of the Persian version of death depression scale among nurses. Death Stu 2015;39(6):342–6.
[26] Dickstein L. Death concern: measurement and correlates. Psychol Rep 1972;30:563–71.
[27] Collett L, Lester D. The fear of death and the fear of dying. Psychol Rep 1969;72:179–81.
[28] Abdel-Khalek AM. Why do we fear death? The construction and validation of the reasons for Death Fear Scale. Death Stud 2002;26(8):669–80.
[29] Templer DI. The construction and validation of a death anxiety scale. J Gen Psycho 1970;82:165–77.
[30] Abdel-Khalek AM. The structure and measurement of death obsession. Pers Ind Diff 1998;24(2):159–65.
[31] Roshdieh S, Templer DI, Cannon WG, Canfield M. The relationship of death anxiety and death depression to religion and civilian war-related experiences in Iranians. Omega J Dea Dyi 1998-1999;38(3):201–10.
[32] Tomas–Sabado J, Gomez-Benito J. Death anxiety and death depression in Spanish nurses. Psychol Rep 2005;97(1):21–4.
[33] Tomas-Sabado J, Limonero JT. Death depression and death obsession: are they different constructs? Psychol Rep 2007;100(3):755–8.
[34] Almostadi D. The relationship between death depression and death anxiety among cancer patients in Saudi Arabia 2012; A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science College of Nursing University of South Florida.
[35] Abdel-Khalek AM. A general factor of death distress in seven clinical and non-clinical groups. Death Stu 2004;28:889–98.
[36] Dadfar M, Abdel-Khalek AM, Lester D, Atef Vahid MK. The psychometric parameters of the Farsi form of the Arabic Scale of Death Anxiety (ASDA). Submitted to The Sci Wor J.
[37] Sridevi G. Death anxiety and death depression among institutionalized and non-institutionalized elders. Inter Multi E-J 2014a;III(VI):21–35.
[38] Sridevi G. Death anxiety and death depression, geriatric depression and suicidal ideation among institutionalized elders. Inter J Psycho Res 2014b;III(1):35–40.
[39] Sridevi G. Death anxiety and death depression among elders. BESST 2014:85–90. ISBN 978-93-84224-05-9l.
[40] Sridevi G, Swathi P. Death anxiety, death depression, geriatric depression and suicidal ideation among institutionalized and non-institutionalized elders. Inter J Sci Res Pub 2014;4(10):1–8.
[41] Berk L. Development through the lifespan, vol. 2. USA: Boston: Allyn & Bacon publication; 2007.
[42] Bahrami F, Dadfar M, Lester D, Abdel-Khalek AM. Death distress in Iranian older adults. Adv Env Bio 2014;8(12):56–62.
[43] Rasquinha DM, Acharya YTB. Relationship between depression and death anxiety among elderly. GRA Glob Res Ana 2013;21(10):107–8.
[44] Alvarado KA, Templer DI, Bresler C, Thomas-Dobson S. Are death anxiety and death depression distinct entities? Omega J Dea Dyi 1992;26:113–8.
[45] Alvarado KA, Templer DI, Bresler C, Thomas-Dobson S. The relationship of religious variables to death depression and death anxiety. J Clin Psychol 1995;51:202–4.
[46] Lo C, Hales S, Zimmermann C, Gagliese L, Rydall A, Rodin G. Measuring death-

related anxiety in advanced cancer: preliminary psychometrics of the death and dying distress scale. J Ped Hemato Onco 2011;(Suppl 2):S140–5.
[47] Lester D. Spirituality and religiosity as predictors of depression and suicidal ideation: an exploratory study. Psychol Rep 2012;110(1):247–50.
[48] Colucci E, Lester D. Suicide and culture: understanding the context. USA: Hogrefe Publishing; 2013.
[49] Harville M, Stokes SJ, Templer DI, Rienzi B. Relation of existential and religious variables to the death depression scale-revised. Omega J Dea Dyi 2003-2004;48:165–84.