



Validation of Collett-Lester Fear of Death Scale in a mexican university nursing students

Validación de la Escala de Miedo a la Muerte de Collett – Lester en estudiantes universitarios de enfermería de México

Validação da Escala de Medo da Morte de Collett–Lester em estudantes Universitários de enfermagem do México

*Edna Johana Mondragon-Sanchez, Enf., MSc., PhD. (c)*¹ , *Erick Landeros-Olvera, Enf., MSc.*² , *PhD., Erika Pérez-Noriega, Enf., MSc.*³ 

1. Nurse, Doctor of Nursing Candidate. Professor, Universidad del Quindío, Colombia.
2. Nurse, Doctor of Nursing. Professor of the Faculty of Nursing at the Benemérita Universidad Autónoma de Puebla (BUAP), Puebla, Mexico.
3. Nurse, Master of Nursing Science. Professor of the Faculty of Nursing at the Benemérita Universidad Autónoma de Puebla (BUAP), Puebla, Mexico.

Corresponding author. Erick Landeros-Olvera. Nurse, Doctor of Nursing. Benemérita Universidad Autónoma de Puebla (BUAP), Puebla, Mexico. Address. 25 Poniente 1302, Colonia Volcanes, C.P. 72304. Email. dr.erick.landeros@gmail.com

ARTICLE INFORMATION:

Article received: September 20th, 2019

Article accepted: January 13th, 2020

DOI: <https://doi.org/10.29375/01237047.3723>

Citation. Mondragon-Sanchez EJ, Landeros-Olvera E, Pérez-Noriega E. Validation of Collett-Lester Fear of Death Scale in a mexican university nursing students. MedUNAB. 2020;23(1):23-34. doi: 10.29375/01237047.3723



ABSTRACT

Introduction. The original Collett-Lester Fear of Death Scale (CLFDS), translated into Spanish, has not been validated in the Mexican population. Since death has a different perspective for Mexicans compared to individuals from other cultures, it is important to inquire into its validation. The objective of this article is to determine

the validity of CLFDS in the Mexican university population. **Methodology.** Psychometric and cross-sectional design, simple random sampling. The responses of 368 nursing students were analyzed. **Results.** The female gender predominated (90.2%), age equal to 21.0±3. The CLFDS obtained a reliability of 0.95. Scores on the dimensions of own death, compared to the death of others, are lower ($\bar{X}=2.8\pm0.56$ vs $\bar{X}=3.5\pm0.53$). The process of own death, compared to the death of others, is no different ($\bar{X}=3.2\pm0.46$ vs $\bar{X}=3.2\pm0.34$). Factor analysis with the varimax rotation method supported the content validity of the original scale, despite the fact that the two-dimensional reagents were regrouped without losing any of their elements. **Conclusions.** The Spanish version of the CLFDS is valid and reliable in Mexican university students; however, it needs to be replicated in other socio-cultural contexts in Mexico.

Keywords:

Nursing; Validation Studies; Fear; Death; Students

RESUMEN

Introducción. La Escala original de Miedo a la Muerte de Collett-Lester (EMMCL), traducida al español, no ha sido validada en población mexicana. Dado que la muerte para los mexicanos tiene una perspectiva diferente a la de individuos de otras culturas, es importante indagar sobre su validación. El objetivo de este artículo es determinar la validez de la EMMCL en población universitaria mexicana. **Metodología.** Diseño psicométrico y transversal, muestreo aleatorio simple. Se analizaron las respuestas de 368 estudiantes de enfermería. **Resultados.** Predominó el género femenino (90.2%), edad igual a 21.0±3. La EMMCL obtuvo una confiabilidad de 0.95. Las puntuaciones en las dimensiones de la muerte propia, en comparación con la muerte de otros, es menor ($\bar{X}=2.8\pm0.56$ vs $\bar{X}=3.5\pm0.53$). El proceso de la muerte propia, en comparación con el de otros, no es diferente ($\bar{X}=3.2\pm0.46$ vs $\bar{X}=3.2\pm0.34$). El análisis factorial con el método de rotación varimax apoyó la validez de contenido de la escala original, a pesar de que los reactivos de dos dimensiones se reagruparon sin perder ninguno de sus elementos. **Conclusiones.** La versión en español de la EMMCL es válida y confiable en estudiantes universitarios mexicanos; Sin embargo, se necesita llevar a cabo réplicas en otros contextos socioculturales del territorio mexicano.

Palabras clave:

Enfermería; Estudios de Validación; Miedo; Muerte; Estudiantes

RESUMO

Introdução. A Escala original de Medo da Morte de Collett-Lester (EMMCL), traduzida para o espanhol, não foi ainda validada na população mexicana. Como a morte para os mexicanos tem uma perspectiva diferente dos indivíduos de outras culturas, é importante perguntar sobre sua validação. O objetivo deste artigo é determinar a validade da EMMCL na população universitária mexicana. **Métodos.** Estudo psicométrico e transversal, com amostragem aleatória simples. Foram analisadas as respostas de 368 estudantes de enfermagem. **Resultados.** O sexo feminino predominou (90.2%), idade igual a 21.0±3. A EMMCL obteve uma confiabilidade de 0.95. A nota nas dimensões da própria morte, comparada com a morte de outras pessoas, é menor ($X=2.8\pm0.56$ vs $X=3.5\pm0.53$). O processo da própria morte, comparada com os processos dos outros, não é diferente ($X=3.2\pm0.46$ vs $X=3.2\pm0.34$). A análise fatorial com o método de rotação varimax sustentou a validade do conteúdo da escala original, embora os fatores de duas dimensões se reagruparam sem perder nenhum de seus elementos. **Conclusão.** A versão em espanhol do EMMCL é válida e confiável em estudantes universitários mexicanos, no entanto, é necessário replicar em outros contextos socioculturais do território mexicano.

Palavras-chave:

Enfermagem; Estudos de Validação; Medo; Morte; Estudantes

Introduction

Death has been a phenomenon that raises fear just by mentioning it. However, Mexicans have a different perspective on death than other cultures; Mexicans enjoy it, celebrate it, mock it, caress it, sleep with it, it is one of their favorite toys and their most permanent love (1). Therefore, it can be said that in Mexico death is not feared; on the contrary, it is expected. At present, the Day of the Dead festivities are held on October 31 and November 1 and 2. Thus, a clear example of these festivities is found in the indigenous and rural communities; therefore, these communities believe that the souls of the dead return those nights to enjoy the essence of the dishes and flowers offered to them by their relatives (2).

Death, in that sense, has gone from being a natural and social event, to being assumed as a shameful and deeply individual event that must be avoided (3). In this way, death has become a traumatic issue: “Current social groups have not only developed rituals of avoidance and concealment regarding death, but they have also developed rituals to reduce from death to disease” (4). So nursing professionals are no strangers to these rituals of avoiding and reducing from death to disease, and thus, these professionals perceive the death of a patient as a failure of their care and therapeutic efforts to save a life (5-7).

Hence, the emotional support of the dying patient by nursing professionals is necessary and essential; therefore, nursing professionals who work day by day at the side of death must be even more prepared. In this vein, it is understood that the experience of the process of dying gives rise to a wide range of attitudes and emotional responses that must be taken into account from the very moment of training as nurses, the most frequent being anxiety, fear and depression (8). As is to be expected, since nursing professionals are a social subject, they are not immune to the influence of society or the experience of emotions generated by death and working with dying patients. For the same reason, they have to face death frequently.

Hence, they may suffer, to a greater or lesser extent, from anxiety and unease that may translate into inadequate care; for example, attitudes of rejection, escape or insecurity, among other dysfunctions, for having to face their own fears about death (9). It should be noted that nursing professionals are one of the actors who faces, in a more direct way, the feelings and emotions caused by seeing their patients die in a short period of time (8). Of course, facing death is a difficult process, and caring

for human beings is complex, with deep connotations in the biopsychosocial dimension. All this must be taken into account both in the training of nurses, during their undergraduate studies, and in the organization of care practices.

Therefore, there is a need to research the perceptions of nursing students in Mexico regarding their own death and that of others (patients). On one hand, own death refers to the situation in which, as human beings, we have sometimes or repeatedly thought: What is it like to be dead? How does it feel to be lifeless? At what age will I die? What will my death be like? Will it be painful? On the other hand, nursing students, in their day-to-day work, are in contact with the patient. Thus, nursing professionals live together, even become friends with the patient; which leads them to acquire a certain esteem for the patient. Nursing professionals commonly wonder the following: How will I react to the death of a family member or acquaintance? When I am in contact with a patient who is terminally ill or likely to die: How would I deal with the process of my patient’s death?

It is therefore important that the syllabuses of nursing programs contain learning units covering the management of one’s own death and that of others; which would create more efficient professionals in terms of self-care and the care of their patients. Therefore, it is important to get to know nursing students’ fear of death, since most of them are young people who are in a university context that poses different changes and challenges associated with their level of training, in addition to the fact that they are surrounded by situations, typical of academia, that cause stress. Thus, by validating a scale in learners, it will help to understand how they are being prepared to assist, understand, support, help and really care for any human being in the difficult times preceding their own death and that of others (10).

In line with this, a review of the literature indicates that it has not been shown, in a clear and assertive manner, how these questions can be answered by nursing students who commonly carry out their clinical training with patients who have a high probability of dying. It should also be noted that instruments in Spanish that can measure this concept of fear of death are scarce. However, there is an instrument in English that has been translated and has only been validated in Spain, Chile and Mexico by health professionals. In turn, no replicas of this instrument have been found among university nursing students in Mexico. Therefore, the purpose of this research was to determine the validity of the

Collett-Lester Fear of Death Scale (CLFDS) (2007) in university nursing students in Mexico.

Methodology

The design of this research is psychometric and cross-sectional with random sampling. In this sense, the population under study was made up of nursing students from the Benemérita Universidad Autónoma de Puebla, Mexico. In turn, to determine the sample size, power analysis was calculated. This is a method to reduce the risk of committing type II errors and to estimate their occurrence. An estimated effect of 0.90 was used with an effect size of 0.25 and a significance level of 0.05, obtaining $n = 336$. To cushion the attraction effect, 8% was added, leaving $n = 363$ (11). So this study was carried out in three stages.

The first stage consisted of the creation of a panel of experts to assess the content validity of the scale. This was done in order to ensure that each item corresponded to the domain of interest to be evaluated and to ensure the clarity of the language in accordance with the social context of the population under study. Fifteen experts or judges were considered, and a 50% attrition effect was taken into account. The final n was 10 judges (12,13). The second stage consisted of the application of a pilot test on 30 nursing students from another Academic Unit. This was done to test not only the instrument, but also the application conditions and procedures involved and thus eliminate possible variables that cause confusion. The third stage involved the recruitment of 786 students and the selection of the sample using a simple random technique. For the fourth stage, the CLFDS was applied to the final sample, with prior informed consent, and the database and statistical analysis were set up.

Instrument

The Collett-Lester Fear of Death Scale (14), created in 1969, is the most popular scale for studying fear of death. At first, it consisted of 36 items. However, at present the authors redesigned it under the assumption that the fear of death is not a one-dimensional construct as had been studied, but that it is, fundamentally, multidimensional. Thus, death anxiety is not only multidimensional, but can be more oriented towards one dimension or another due to different socio-cultural and individual causes (15-17).

In this vein, the scales developed to study the fear of death can be classified as one- and multi-dimensional.

However, the tendency is to prefer the latter, since it is not a unitary and monolithic variable, e.g.: fear of hell, loss of identity, loneliness and uncertainty of what will happen after death, and fear of own death and the death of another (12,13,15). Of course, the Collett-Lester Fear of Death Scale has been widely used in different studies with good results (13-16). However, in the Spanish-speaking population there are few works that explore its validity and reliability, so efforts in Spain (12), Chile (18) and Mexico (19) stand out.

The Spanish version (12) of the Collett-Lester Fear of Death Scale (CLFDS) is a self-administered multidimensional instrument that contains a total of 28 items and four dimensions (7 items each), namely: a) fear of own death, b) fear of one's own process of dying, c) fear of the death of others, and d) fear of others' process of dying. Thus, the answers range on the Likert scale from 1 (none) to 5 (a lot). So one total score is obtained, along with one score for each sub-dimension; then it is divided by 28, which is the number of items averaging the responses respectively. For this reason, and according to the scores, they are classified as: low fear of death (0 - 1), low to moderate fear of death (1 - 2), moderate fear of death (2 - 3), moderate to high fear of death (3 - 4) and high fear of death (4 - 5); so higher average scores indicate greater fear of death or the process of dying.

Statistical Analysis Plan

Based on the judges' content analysis, the respective analysis was conducted. This resulted in a descriptive analysis of the study sample and the scale dimensions. Likewise, a dimension-based and general reliability analysis thereof was obtained. Therefore, a normality test was applied, and the scale dimensions were subjected to a parametric correlation of factor analysis by varimax rotation, supported by the Barlett sphericity correlation matrix and the Kaiser-Meyer-Olkin index (KMO) (13).

Results

Creation of a panel of experts: The methodology proposed by Waltz, Strickland and Lenz (2016) (21) was taken into account to assess the content validity of the scale; therefore, 15 experts or judges were considered on the basis of a 50% attrition effect, with a final n of 10 judges. Thus, the judges' evaluation was determined based on the analysis of each item: answering whether or not they were related to the

concept of Fear of Death and its respective dimensions. The evaluation was conducted using a Likert scale (0= Definitely not related, 1= Not related, 2= Not sure of its relation, the reagents require further review, 3= Related, but minor changes are necessary, and 4= Extremely related). Hence, the ten participating judges received a certificate of participation issued by the Nursing School of the Benemérita Universidad Autónoma de Puebla.

With the experts' analysis, based on the scale, the following indices were calculated according to the method of Waltz and Strickland (2005) (8):

- Item Validity Index (IVI) = \sum total reagents < 3 points / total judges = 3.4 Validity Criteria (VC) = IVI / total reagents = 0.1214 this result represents a 10% chance of error, which is an acceptable percentage, since it is similar to the type II or beta error, where 20% is regularly expected.
- Content Validity Index (CVI) = \sum total reagents \geq 3 points / total reagents reviewed = 0.97 (CVI values close to 1.0 are considered acceptable).

In turn, each judge was free to make adjustments to the wording of the items considered confusing, in order to preserve the consistency with the Fear of Death factor; thus making it possible to standardize and adapt it to the Mexican cultural context. So, it was decided a priori, that if three or more judges considered an item to be confusing, it would be modified. Accordingly, and in accordance with the judges' observations, it is suggested that the

wording be improved in items 8, 19, 23 and 27, as described below:

- Item 8: “The physical delegation involved in the process of dying.” Was adjusted as: “The detachment of the spirit from the body involved in the process of dying.”
- Item 19: “Growing old alone, without a loved one.” Was adjusted as: “Growing old without a loved one.”
- Item 23: “Having to be with someone talk about death with you.” Was adjusted as: “Having to be with someone and to talk about death with that person.”
- Item 27: “Witness the deterioration of their mental faculties.” Was adjusted as: “Provide support during the deterioration of their mental faculties.”

Description of the sample. The sample was made up of 368 participants: 332 women (90.2%), 36 men (9.8%). Also, the mean age was 21.0 ± 3 , range 18-40 years. On the other hand, according to the level of nursing studies, 12 participants were in their first year (3.3%); 126 in the second (34.2%); 176 in the third (47.8%) and 52 in the fourth (14.9%). It should be noted that the average fear of death score for students was moderate to high (3.17). So, what this population fears least is its own death. In turn, the highest score per dimension was the fear of death of others (Table 1).

Table 1. Statistical descriptive measures of the CLFDS

	(FOD)	(FOPD)	(FDO)	(FPDO)	Total average
Mean	2.8	3.2	3.5	3.2	3.31
Standard deviation	0.56	0.46	0.53	0.34	0.47
Maximum value	2.12	2.53	2.88	2.80	2.12
Minimum value	3.51	3.87	4.56	3.91	4.56

Note: Fear of Own Death (FOD), Fear of One's Own Process of Dying (FOPD), Fear of the Death of Others (FDO) and Fear of the Process of Dying of Others (FPDO); these same acronyms are maintained in the following tables.

Source: Own preparation.

Table 2 shows the Alphas by dimensions and the scale in general with an acceptable value ($>.7$) (11). Thus, in order to find the distribution of the dimensions, the Kolmogorov-Smirnov test was applied, with values of $Z=0.944$ and a $p=0.335$, which show a normal distribution.

Table 3 shows Pearson's correlation to verify the association between the dimensions, showing that the ratios are high between the dimensions and they are statistically significant, ranging from 0.508 to 0.725.

Table 2. Cronbach's overall Alpha Coefficient and by dimensions of the CLFDS

Dimension	Reagents	Alpha
FOD	1,2,3,4,5,6,7	0.87
FOPD	8,9,10,11,12,13,14	0.89
FDO	15,16,17,18,19,20,21	0.88
FPDO	22,23,24,25,26,27,28	0.89
Overall Alpha		0.95

Source: Mondragón, De la paz, Pérez and Landeros, 2019.

Table 3. Correlation between the dimensions of the CLFDS

Dimensions	FOD	FOPD	FDO	FPDO
FOD	1	0.721**	0.508**	0.557**
FOPD		1	0.595**	0.618**
FDO			1	0.725**
FPDO				1

* $p < .001$ (bilateral)

($n = 368$)

Source: Mondragón, De la paz, Pérez and Landeros, 2019.

Factor Analysis. Factor Analysis is the generic name given to a class of multivariate statistical methods, whose main purpose is to bring to light the underlying structure in a data matrix. Therefore, it analyzes the structure of the interrelationships between a large number of variables without requiring any distinction between dependent and independent variables (13).

The Barlett sphericity correlation matrix was made beforehand, which provided factors of < 0.5 (0.00) and a Kaiser-Meyer-Olkin (KMO) Index of > 0.70 (0.91); therefore, the factorization was carried out. Thus, factor analysis was performed and the resulting factors were compared to those of the original scale (Table 4); thus obtaining satisfactory results, since most of the reagents only changed to another dimension.

An analysis of the estimated factor matrix (in which the factorial loads whose absolute value is less than 0.5 have been eliminated) does not show a clear interpretation of

the factors, given the large number of factorial loads with intermediate values and also because the first factor is related to various variables. Hence, in order to obtain a more intelligible solution, it is necessary to resort to factor rotation methods which are explained below (13).

A priori, it was decided that a varimax rotation with 4 components would be performed, since the scale is made up of 4 dimensions with 28 reagents. In this sense, it was found that the four dimensions are explained in 62.09%; so it is relevant to point out that the first question had a variance of 47.01% and, therefore, this dimension is considered the most important for the CLFDS (Table 5).

The rotation was diagrammed to complement these results (Figure 1). This shows the importance of the first four items, since 63.35% is obtained, and it shows how

Table 4. Component matrix

Reagent		Dimension (component)			
No.		1	2	3	4
1	Dying alone.	0.634			
2	A short life.	0.613			
3	All the things you will miss out on when you die.	0.443			
4	Dying young.	0.687			
5	What it will be like to be dead.	0.605			
6	Not being able to think and experience anything anymore.	0.674			
7	The disintegration of the body after death.	0.567			
8	The physical delegation involved in the process of dying.		0.597		
9	The pain you may feel in the process of dying.		0.685		
10	The mental degeneration of aging.		0.568		
11	The loss of faculties during the process of dying.		0.606		
12	The uncertainty about how bravely you will face the process of dying.		0.731		
13	The lack of control over the process of dying.		0.694		
14	The possibility of dying in a hospital far from friends and family.		0.680		
15	The loss of a loved one.			0.566	
16	Having to see his/her body.			0.433	
17	Not being able to communicate with him/her anymore.			0.649	
18	Regretting not getting along better with him/her when he/she was still alive.			0.638	
19	Growing old alone, without a loved one.			0.666	
20	Feeling guilty over the relief caused by his/her death.			0.644	
21	Feeling lonely without him/her.			0.672	
22	Having to be with someone who is dying.				0.629
23	Having to be with someone to talk about death with you.				0.650
24	See him/her in pain.				0.617
25	See the physical degeneration of his/her body.				0.644
26	Not knowing how to manage your grief in the loss of a loved one.				0.580
27	Witness the deterioration of their mental faculties.				0.629
28	Being aware that one day you will also have this experience.				0.739

Source: Own preparation.

the percentage of variance decreases after reagent four until the line is practically horizontal.

Table 6, in turn, shows the reagents corresponding to each dimension, resulting in a total of 28; and the reagents selected to determine the cut-off point are shown in bold print, which makes it possible to group the dimensions. Concurrently, the correlations of the reagents were analyzed, and for each dimension, the

highest value was selected and divided by two, in order to take this value as a reference and thus, choose the highest values of that dimension (11) (Tables 5 and 6).

- Dimension one: It was observed that the reagents do not match the original distribution of the scale; that is, reagents 15, 16, 17, 18, 19, 20, 21 belong to dimension three, here, the highest value resulted in item 17 at 0.764; therefore, as a reference, the

values are ≥ 0.38 , so they were placed in dimension one (Tables 5 and 6).

- Dimension two: The highest value resulted in reagent 11 at .761; therefore, reagents with values ≥ 0.38 were chosen (resulting in reagents 8, 9, 10, 11,

12, 13, 14); as can be seen, all reagents in dimension two matched the original scale (Tables 5 and 6).

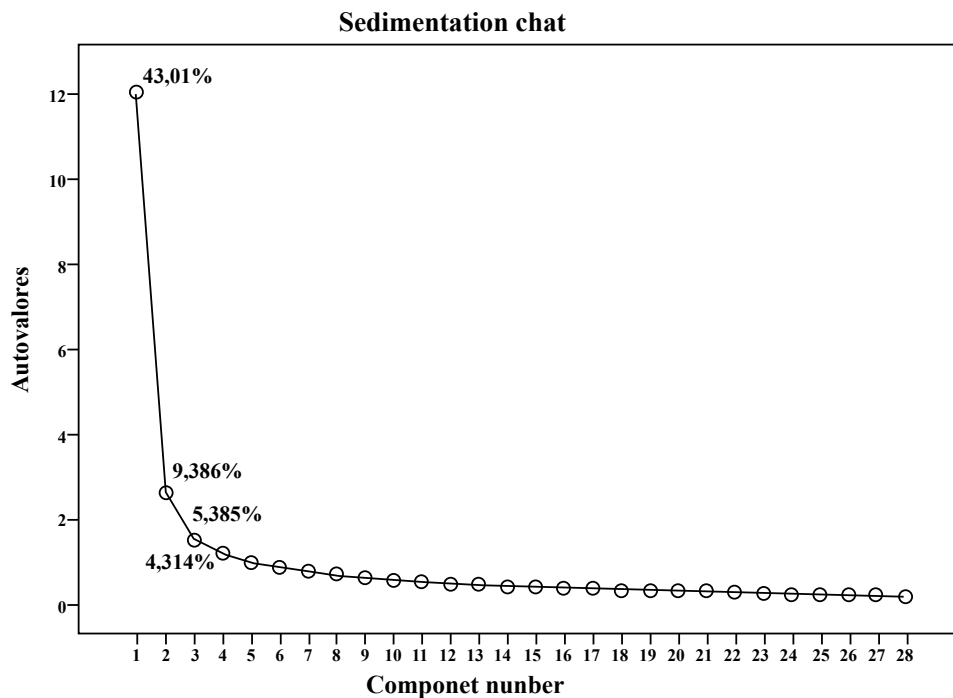
- Dimension three: It was clear that the reagents do not match the original distribution of the scale; that is, reagents 1, 2, 3, 4, 5, 6, 7 corresponding to

Table 5. Variance explained considering the first four reagents with varimax rotation

	Initial eigenvalues			Sum of the squared saturations of the rotation		
	Total	% of variance	cumulative %	Total	% of variance	cumulative %
1	12.04	43.01	43.011	4.607	16.454	16.454
2	2.628	9.386	52.398	4.529	16.175	32.629
3	1.508	5.385	57.783	4.166	14.880	47.509
4	1.208	4.314	62.097	4.085	14.589	62.097

Source: Own preparation.

Figure 1. Importance of the variance of the first four reagents



Source: Own preparation.

Table 6. Rotated component matrix

Reagent		Dimension (component)			
		1	2	3	4
No.					
1	Dying alone.			0.501	
2	A short life.			0.581	
3	All the things you will miss out on when you die.			0.647	
4	Dying young.			0.668	
5	What it will be like to be dead.			0.748	
6	Not being able to think and experience anything anymore.			0.742	
7	The disintegration of the body after death.			0.698	
8	The physical delegation involved in the process of dying.	0.483			
9	The pain you may feel in the process of dying.	0.681			
10	The mental degeneration of aging.	0.727			
11	The loss of faculties during the process of dying.	0.761			
12	The uncertainty about how bravely you will face the process of dying.	0.688			
13	The lack of control over the process of dying.	0.645			
14	The possibility of dying in a hospital far from friends and family.	0.620			
15	The loss of a loved one.	0.701			
16	Having to see his/her body.	0.602			
17	Not being able to communicate with him/her anymore.	0.764			
18	Regretting not getting along better with him/her when he/she was still alive.	0.684			
19	Growing old alone, without a loved one.	0.654			
20	Feeling guilty over the relief caused by his/her death.	0.471			
21	Feeling lonely without him/her.	0.671			
22	Having to be with someone who is dying.				0.686
23	Having to be with someone to talk about death with you.				0.668
24	See him/her in pain.				0.727
25	See the physical degeneration of his/her body.				0.754
26	Not knowing how to manage your grief in the loss of a loved one.				0.605
27	Witness the deterioration of their mental faculties.				0.592
28	Being aware that one day you will also have this experience.				0.408

Source: Own preparation.

Table 7. Dimensional distribution of reagents following varimax rotation

No.	Dimension (Factor)	Reagents
1	Fear of Own Death (FOD)	15,16,17,18,19,20,21
2	Fear of Own Process of Dying (FOPD)	8,9,10,11,12,13,14
3	Fear of Death of Others (FDO)	1,2,3,4,5,6,7
4	Fear of the Process of Dying of Others (FPDO)	22,23,24,25,26,27,28

Source: Own preparation.

dimension one; here, the highest value resulted in item 5 at .748; thus, the values ≥ 0.37 are taken as reference, so they were placed in dimension three (Tables 5 and 6).

- Dimension four: The highest value resulted in reagent 25 at 0.754; thus, as a reference the values ≥ 0.37 (resulting in reagents 22, 23, 24, 25, 26, 27, 28); as can be seen, all reagents in dimension three matched the original scale (Tables 5 and 6).

It is important to mention that the previous changes were only a readjustment or rearrangement of reagents as a result of the factor analysis without eliminating any of them (see Table 7); although some reagents changed dimensions, they can be considered a favorable point, since the reagents remained in groups and were merely placed in another dimension.

Discussion

CLFDS was validated in a group of university students in the nursing program. To do so, we aimed to determine the validity of the Collet-Lester Fear of Death Scale in the Mexican university population. In general, the fear of death scores obtained by nursing students in the four dimensions of CLFDS are similar to those found in other papers on the same topic (9,22,16). This is confirmed by a study that was conducted in Mexico, whose objective was to compare the level of fear of death in nursing professionals. It seems that as time goes by in the practice of their profession, they acquire more confidence and the fear of death decreases (10).

The findings of said study show that it is not so much the nursing student's fear of their own death that worries them, but the fear of death of others (patients and family), which includes the loss of a loved one, having to see a dead body, regretting not getting along better with the person when they were still alive, and feeling guilty over the relief caused by their death. This may be due to characteristics of Mexican culture, where the family is still deeply rooted in the imagination of individuals, with a marked sentimental co-dependence among its members, in addition to being considered the core unit of society (6).

It can also be interpreted that the greatest difficulty for nursing students is the grieving process generated by the loss of a family member. This includes the loss of a loved one, the obligation to see a dead body as a result of their profession, regrets for not getting along better with the person when he/she was still alive, and guilt

over the relief caused by their death. So, it is clarified that the greatest difficulty in this population comes from the grieving process caused by the loss of a relative or a patient; therefore, lectures teaching about death must be provided as part of the training process of nursing professionals (10).

In turn, in the hospital context, the loss of a patient causes greater anxiety; since there is a preamble of support and care for dying patients, which is a specific care provided by nurses in terminal patients, for which most of the student population has not yet been trained. Hence the importance of being familiar with instruments focused on the nursing profession, since they are the caregivers of these patients in their process of dying.

Regarding the reliability of the CLFDS, the results show a reliability with a good result on the Cronbach's Alpha coefficient per dimension. However, these results must be considered with reserve, since the coefficient of the general scale shows a value close to one, which could denote certain collinearity between the dimensions. Nevertheless, the results are similar to those obtained in studies that applied the same scale in other countries (22,15-17). In this regard, the Scale was applied in Spain to a sample of nursing students and graduate nurses, with results that reveal satisfactory reliability, good internal consistency and acceptable factor structure, thus confirming its multidimensional structure. In addition, convergent and discriminant validity was demonstrated by positively correlating it more with death anxiety than with general anxiety respectively (11,12).

However, as regards the item-total correlations of the items of each subscale, it was positive and higher than 0.47, and Cronbach's Alpha reached 0.91, 0.92, 0.88, and 0.92 for Fear of one's own death, Fear of one's own process of dying, Fear of the death of others, and Fear of the process of dying of others, respectively (15-17,22). This is a more consistent factor structure than the previous analyses, with remarkable congruence for two of the subscales, namely: Fear of own death and Fear of one's own process of dying, although not so satisfactory for the factor structure of the subscales: Fear of the death of others and Fear of the process of dying of others (23).

To complement the measurement of the construct, a Pearson correlation was applied in order to verify the association between the dimensions. Thus, the findings show a statistically significant relationship with a high effect between the dimensions involving fear and one's own process of dying, and a medium effect between the dimensions of one's own death and the process of

dying, with the death and process of dying of others. Regarding the factor analysis, it was performed by a varimax rotation, showing that all the reagents, which were found in dimension three, corresponding to Fear of the Death of Others (FDO) on the original scale, were regrouped in dimension number one corresponding to Fear of Own Death (FOD). Similarly, all the reagents that were found in dimension one, which correspond to the Fear of Own Death (FOD) on the original scale, were regrouped in dimension number three, corresponding to the Fear of the Death of Others (FDO).

In short, the findings of the factor analysis denote that the original Spanish translation suggests no modification when applied to Mexican university students (at least nursing students), despite the fact that the reagents that make up dimensions one and three were regrouped. However, it is suggested that the CLFDS be applied in other sociocultural contexts of the Mexican territory; given that the results obtained, in another Ibero-American population (Spain), do not match those of this research when regrouping a group of reagents to obtain a fifth dimension.

Conclusion

The Spanish version of the Collett-Lester Fear of Death Scale is a reliable and valid instrument to measure the fear of death construct in Mexican university students. Therefore, multidimensionality is confirmed. However, in this population the notion of fear of death has an additional aspect, which contemplates two sub-components that are essential to research, these are: the physical dimension and the psychological dimension of fear of death and dying itself. Hence, these dimensions could lead to new conceptualizations of the construct, which would guide the development of an instrument appropriate to Mexican culture. Therefore, the factor solution found with this scale does not exclude the existence of other solutions in different samples; the best fit of the models should be evaluated in the future through further exploratory factor analyses.

Conflict of interest

This research was conducted in accordance with the provisions of Mexico's General Health Law (20); therefore, it was approved by the Research Department of the Nursing School of the Benemérita Universidad Autónoma de Puebla and registered as A-2012-0039-CIP.

References

1. Paz O. El Laberinto de la Soledad. México D.F. Fondo de Cultura Económica. 2008.
2. López F. Artes e historia México. México D.F. Publicación Cultural Independiente. 1996.
3. Grimberg M. Proceso salud-enfermedad-atención y hegemonía. Guía para la discusión. Buenos Aires: ICA-UBA. 1992.
4. Menéndez, E. Desaparición, resignificación o nuevos desarrollos de lazos y rituales sociales. *Rev Relat. Est. Hist. y Soc.* 2006;27(107):147-178.
5. Chacón M, Grau J. Burnout en enfermeros que brindan atención a pacientes oncológicos. *Rev Cubana Oncol.* 1997;13(2):118-125.
6. Frutos M, Iglesias JA, Frutos JM, Calle A. La persona en proceso de muerte. *Rev Enfer Glob.* 2007; 6(1):1-14.
7. Maza, M.; Zavala, M.; Merino, J. Actitud del profesional de enfermería ante la muerte de pacientes. *Cienc. enferm.* 2009;15(1):39-48.
8. Limonero T, Tomás-Sábado J, Fernández-Castro J, Cladellas R, Gómez-Benito J. Competencia personal percibida y ansiedad ante la muerte en estudiantes de enfermería. *Rev Ans y est;* 2010;16(2-3):177-188.
9. Gual M, Tomás-Sábado J, Aradilla A. Miedo a la muerte en estudiantes de enfermería. *Rev Enfer Clín.* 2011;21(3):129-135.
10. Mondragón-Sánchez EJ, Cordero EA, Espinoza ML, Landeros-Olvera EA. Comparación del nivel de miedo a la muerte entre estudiantes y profesionales de enfermería en México. *Rev. Latino-Am. Enfermagem.* 2015;23(2):323-328.
11. Polit B. Investigación científica en ciencias de la salud. México D.F.: Mc Graw Hill. 2011.
12. Martín A. Diseño y validación de cuestionarios. *Rev Mat Prof.* 2004;5(17):23-29.
13. Hernández R, Fernández C, Baptista MP. Metodología de la investigación. México D.F.: McGraw-Hill. 2014.
14. Collett L, Lester D. El miedo a la muerte termina con el miedo a morir. *J Psychol.* 1969;72:179-181.
15. Pérez L, Almanzar C, Sevilla R, Ramos A. Exploración psicométrica de la Escala miedo a la Muerte de Collett-Lester en profesionales de enfermería. *Rev Conjet Sociol.* 2018;16(6): 58-73.
16. Kolawole M, Olusegun A. The reliability and validity of revised Collett-Lester Fear of Death Scale in Nigerian population. *Omega Journal of Death and Dying.* (2008);57(2):195-205.
17. Niemeyer RA. Constructions of death and loss: Evolution of a research program. *Personal Construc Theory Prac.* 2004;(1):8-22.
18. Aguinaga B. Enfermería, muerte y duelo: Un texto de reflexión académica. Bogotá Editorial Universidad Nacional de Colombia. 2010.
19. Espinoza M, Sanhueza O, Barriga O. Validación de

- la Escala de Miedo a la Muerte de Collett-Lester en una muestra de estudiantes de Enfermería. Rev. Rev. Latino-Am. Enfermagem. 2011;19(5):1-10.
20. Cámara de Diputados del Honorable Congreso de la Unión. Ley General de la Salud en Materia de Investigación para la Salud. [Sitio en internet] Disponible en: http://www.diputados.gob.mx/LeyesBiblio/regley/Reg_LGS_MIS.pdf
 21. Waltz C, Strickland O, Lenz E. Measurement in Nursing and Health Research. New York: Springer Publishing Company. 2016.
 22. Abdel-Khalek A, Lester D. (2009). Death anxiety as related to somatic symptoms in two cultures. Psychol Rep, 105(2):409-10.
 23. Tomás-Sábado J, Limonero J, Abdel-Khalek AM. (2007). Spanish Adaptation of the ColletLester fear of death scale. Death Stud. 2007;31(3):246-260.