

## **Death Attitude Profile and Dissection of the Human Cadaver: An Study in Medical Students of Mexico**

Arturo G. Rillo<sup>1</sup>, Beatriz E. Martínez-Carrillo<sup>2</sup>, Maria Luisa Pimentel Ramírez<sup>1</sup>,  
Mario E. Arceo Guzmán<sup>1</sup>, Estefanía Jenifer Duran Cortes<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Autonomous University of the State of Mexico, Mexico

<sup>2</sup>Nutrition Research Laboratory, Faculty of Medicine/ Autonomous University of the State of Mexico, Mexico

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**ABSTRACT:** *Human cadaver dissection course represents the first exhibition of the medical student to the topic of death leading to emotional events. In the context, the study was conducted to characterize the profile of attitudes to death in medical students at the end of the practical course of dissections on human cadaver at a public University in Mexico. The study was observational, cross-sectional, prospective and descriptive; the Death Attitude Profile-Revised applied to 83 students. T-Student, ANOVA and Pearson correlation test was used for statistical analysis. The results show the profile of attitudes in students is made up of: neutral acceptance (5.61±1.56), approach acceptance (4.11±1.20), escape acceptance (3.17±1.73), avoidance of death (3.13±1.67), and fear of death (3.04±1.20). There was no statistically significant difference in relation to age (p>0.05). The comparison by sex showed significant difference (p<0.05) in approach acceptance. It is concluded that students complete the course of dissection with neutral attitude to death, accompanied by a positive trend towards the other explored dimensions, what generates conditions of emotional well-being dealing positively with death itself and others.*

**Keywords:** *attitude toward death, anatomy, dissection, human cadaver*

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### **I. INTRODUCTION**

The medical schools orient efforts to integrally train the student and offer a professional preparation that allows the graduate to attend to health problems from a biopsychosocial and spiritual context in a way that contributes to strengthen the attitudes and values of the practice of medicine. [1,2] These values are promoted through the teaching of medical professionalism to develop professional identity and incorporate humanistic skills at all levels of medical student training, [3] among which the humanist work of announcing death stands out. [4] For this purpose, courses in ethics, medical humanism, bioethics or tanatology are incorporated into the medical curriculum; although the contribution of the hidden curriculum in the appropriation of professional identity and medical professionalism is also recognized. [5-7]

The medical curriculum is integrated with a set of disciplines oriented to provide the necessary knowledge to enable the patient's health problems to be addressed. Among these courses, traditionally, that of anatomy, [8,9] which is taught in the first year of undergraduate studies in medicine and includes practices of dissections in human cadaver. [10] In addition to learning the structure of the human body, the anatomy course is considered as an approximation to medical practice with relevance for clinical training, fundamentally human cadaver dissection. [11] Among the factors that emphasize the educational importance of carrying out dissection in a human cadaver is the fact that it is considered the first medical student's exposition to the subject of death, [12] leading to various emotional events, some even compatible with symptoms associated with posttraumatic stress. [13] The reactions of students to exposure to the human cadaver during the course of anatomy have been studied extensively since the decade of the 70s of the twentieth century. Among these reactions stress anxiety and anxiety when acquiring the awareness of the possibility of own death as well as exposure to the death of others. [14] In several studies it has been reported that exposure to human cadaver dissection in anatomy courses induces physical and psychological reactions in 30% of students, including disappointment, loss of appetite, recurrent visual images of corpses, insomnia and nightmares. [15-18]

On the other hand, it has been described that the dissection room and the practice of cadaver dissections, induces in the student reflections of a philosophical nature on the death, reason why it is assumed that the theoretical-practical course of anatomy in medical schools offers essential elements for the student's ethical training. [19,20] Currently educational interventions are being developed that contribute to education for death. [11] The professionalism and ethical training of the physician include dealing with death, hence the importance of exploring the attitude toward death among students. In this context, the study was conducted with the purpose of characterizing the profile of attitudes towards death in medical students at the end of the practical course of dissections in a human cadaver at a public university in Mexico.

## II. MATERIAL AND METHOD

A qualitative, observational, transversal, prospective and descriptive study was performed using a non-experimental cross-sectional design. [21,22] Participated 100 students enrolled in the anatomy course. During the application of the questionnaire the explanation of the research project was made indicating that if they did not wish to participate they could deliver the questionnaire blank. The students gave their free and voluntary acceptance to answer the questionnaire and guaranteed the anonymity and confidentiality of the data. Seventeen participants were eliminated for having submitted the incomplete or blank questionnaire. Finally, only 83 students were included in the results analysis. The application of the questionnaire was self-administered and was carried out in the dissecting rooms during class hours with prior authorization from the group teacher.

The Spanish version of the Death Attitude Profile-Revised (DAP-R) was used. [23-25] Instrument consists of 32 statements that record the attitude towards death. The answers use a Likert scale of 7 points ranging from totally disagree (1 point) to totally agree (7 points). It evaluates 5 dimensions: fear of death, avoidance of death, neutral acceptance, approach acceptance, escape acceptance. The registration of age and sex was also performed. A Cronbach alpha has been reported in a range of 0.61 to 0.97. The statistical analysis included the description of the data, comparison between measures and correlation of the attitudes evaluated. Statistical package SPSS 15.0 for Windows was used. For the description of the data the frequency, percentage, mean and standard deviation were calculated. The hypothesis test was performed by analyzing the differences between means, using Student's t-test and analysis of variance (ANOVA). The correlation between variables was performed using the Pearson coefficient. We also performed the reliability analysis using Cronbach's alpha, obtaining an alpha of 0.734 for the complete questionnaire. In each dimension the alpha obtained was the following: fear of death = 0.802, avoidance of death = 0.894, neutral acceptance = 0.845, approach acceptance = 0.808, escape acceptance = 0.853. Results are expressed as mean  $\pm$  standard deviation.

## III. RESULTS

Of the 83 students who answered the questionnaire completely, 41 (49.4%) were women and 42 (50.6%) were men. The mean age was  $19.05 \pm 0.99$  years and was distributed in a range of 17 to 22 years, corresponding to 64 (77.11%) in the 17-19 age group and 20 (22.89%) in the 20-22 age group. Statistical analysis showed significant differences in relation to age between men and women ( $p < 0.05$ ). The results obtained in relation to the attitude towards death presented by the students at the conclusion of the theoretical-practical course of anatomy are shown in table 1. The highest average among the scores obtained by the study population corresponds to the attitude of neutral acceptance, followed by "approach acceptance", "escape acceptance", "avoidance of death" and finally "fear of death". Statistical analysis using the ANOVA test did not show significant differences ( $p > 0.05$ ) between the factors of the attitudes towards death and age. Regarding sex, only a significant difference ( $p < 0.05$ ) was found in the approach acceptance attitude ( $F=4.855$ ;  $p = 0.03$ ). Pearson's correlation of attitudes towards death showed a weak, statistically significant ( $p < 0.05$ ) association of the approach acceptance attitude and sex ( $r = -0.238$ ;  $p = 0.030$ ). In relation to age, the correlations were not significant ( $p > 0.05$ ).

**Table 1:** Mean and standard deviation of attitude toward death in the study population according to sex.

Attitude toward death	Women	Men	Total
Fear of death	3.12 $\pm$ 1.24	2.96 $\pm$ 1.17	3.04 $\pm$ 1.20
Avoidance of death	2.93 $\pm$ 1.66	3.32 $\pm$ 1.68	3.13 $\pm$ 1.67
Approach acceptance	4.40 $\pm$ 1.02	3.83 $\pm$ 1.31	4.11 $\pm$ 1.20
Neutral acceptance	5.61 $\pm$ 1.42	5.60 $\pm$ 1.68	5.61 $\pm$ 1.56
Escape acceptance	3.37 $\pm$ 1.88	2.98 $\pm$ 1.56	3.17 $\pm$ 1.73

\*  $p < 0.05$

The attitude of fear of death presents a moderate and statistically significant association ( $p < 0.01$ ) with avoidance of death ( $r = 0.668$ ,  $p = 0.000$ ), approach acceptance ( $r = 0.328$ ,  $p = 0.002$ ), escape acceptance ( $r=0.339$ ,  $p = 0.006$ ). With regard to neutral acceptance ( $r = -0.301$ ;  $p = 0.006$ ), the association is negative. The attitude of acceptance of approach to death presents a weak association statistically significant with the acceptance of escape ( $r = 0.261$ ;  $p = 0.017$ ). The attitude of neutral acceptance to death shows a negative and weak correlation with the attitude of avoidance of death ( $r = -0.270$ ;  $p = 0.014$ ) and escape acceptance ( $r = -0.267$ ;  $p = 0.015$ ). Finally, the escape acceptance attitude is significantly associated with death avoidance ( $r = 0.273$ ;  $p = 0.013$ ).

### 2.1. Fear of death

The DAP-R explores the attitude of "fear of death" understood as the conscious response to death; [23,26] through 7 items expressed in statements in which the student must indicate their level of agreement or disagreement regarding the subject's fear of death itself (items 1 and 18), to the consciousness of his own death (item 2), the purpose of death (items 7 and 21) and the beyond death (items 20 and 32).

**Table 2:** Mean and standard deviation of the items of the dimension "fear of death" in the study population according to sex.

Items of the dimension "fear of death"	Women	Men	Total
1. Death is no doubt a grim experience.	3.22±1.78	2.52±1.67	2.87±1.75
2. The prospects of my own death arouses anxiety in me.	3.41±1.76	2.83±1.95	3.12±1.87
7. I am disturbed by the finality of death.	2.68±1.77	3.02±1.80	2.86±1.78
18. I have an intense fear of death.	2.64±2.01	2.52±2.05	2.58±2.02
20. The subject of life after death troubles me greatly.	2.73±1.76	3.05±1.83	2.89±1.79
21. The fact that death will mean the end of everything as I know it frightens me.	3.32±2.20	3.26±1.99	3.29±2.08
32. The uncertainty of not knowing what happens after death worries me.	3.85±2.03	3.48±2.17	3.66±2.10

Table 2 presents the average value of each of the items by gender. The scores obtained in each of the items are in the range of the disagreement of the Likert scale; that is, the students express that they disagree with the statements that are stated. This implies that they exhibit a positive attitude towards the fear of death, they do not fear the idea of death. Statistical analysis did not show significant differences ( $p > 0.05$ ) when comparing the scores of each statement by sex. Table 3 presents the analysis of variance in relation to age, noting that there are no significant differences ( $p > 0.05$ ) in items 1 and 7.

**Table 3:** Analysis of variance by age of the items of the dimension "fear of death" in medical students who performed dissection practices.

Items of the dimension "fear of death"	F	p
1. Death is no doubt a grim experience.	0.234	0.946
2. The prospects of my own death arouses anxiety in me.	2.862	0.020
7. I am disturbed by the finality of death.	1.358	0.249
18. I have an intense fear of death.	2.913	0.018
20. The subject of life after death troubles me greatly.	3.229	0.011
21. The fact that death will mean the end of everything as I know it frightens me.	4.484	0.001
32. The uncertainty of not knowing what happens after death worries me.	4.367	0.001

When analyzing the frequency of response for each statement, it is verified that 15 (18.07%) students consider that death is a horrible experience; 16 (19.27%) are afraid of death. 23 (27.71%) students report anxiety when thinking about their own death; 17 (20.48%) do not understand the purpose of death; To 25 (30.12%) they are frightened by the fact of death as a finitude. A total of 19 (22.89%) students are concerned about the subject of life after death and 26 (31.33%) the uncertainty of not knowing what happens after death. Statistical analysis did not corroborate the existence of significant correlations ( $p > 0.05$ ) between the response provided by students according to age or sex. On the other hand, it was found that the horrible experience of death is significantly associated ( $p < 0.01$ ) with the anxiety of thinking about his own death ( $r = 0.322$ ;  $p = 0.003$ ). Thinking about their own death correlates significantly ( $p < 0.05$ ) with thinking related to the purpose of death ( $r = 0.307$ ;  $p = 0.004$ ) presenting a moderate association. The thought of the purpose of death was moderately and significantly associated ( $p < 0.01$ ) with: intense fear of death ( $r = 0.486$ ,  $p = 0.000$ ), concern for the subject of life after death ( $r = 0.327$ ,  $p = 0.001$ ) and the uncertainty of facing the unknown after death ( $r = 0.327$ ,  $p = 0.002$ ). The intense fear of death was moderately and significantly associated ( $p < 0.001$ ) with: the preoccupation of life after death ( $r = 0.659$ ,  $p = 0.000$ ), the meaning of death as the end of existence = 0.640,  $p = 0.000$ ) and the uncertainty produced by existence after death ( $r = 0.692$ ,  $p = 0.000$ ). Among students who expressed concern about the subject of life after death, we found a positive correlation with the meaning of death as the end of the known world ( $r = 0.704$ ,  $p = 0.000$ ) and the uncertainty that occurs after existence of death ( $r = 0.790$ ,  $p = 0.000$ ). The meaning of death as the end of the known world correlates positively with the concern that causes the uncertainty of existence after death ( $r = 0.687$ ;  $p = 0.000$ ). Both correlations were statistically significant ( $p < 0.001$ ).

## 2.2. Avoidance of death

The DAP-R explores the attitude of "avoidance of death" understood as the rejection of the subject of death. [23,26] Five items are used in statements in which the student indicates his level of agreement or disagreement with thoughts associated with death. The attitudes that are explored are: avoiding thinking about death (items 3, 12 and 19), separating thoughts related to death (item 10) and avoiding the subject of death (item 26).

**Table 4:** Mean and standard deviation of the items of the dimension "avoidance of death" in the study population according to sex.

Items of the dimension "avoidance of death"	Women	Men	Total
3. I avoid death thoughts at all costs.	3.19±2.05	2.95±2.12	3.07±2.08
10. Whenever the thought of death enters my mind, I try to push it away.	3.17±2.02	3.31±2.08	3.24±2.04

12. I always try not to think about death.	2.93±1.93	3.71±2.11	3.33±2.05
19. I avoid thinking about death altogether.	2.54±1.86	3.11±2.04	2.83±1.96
26. I try to have nothing to do with the subject of death.	2.81±1.66	3.50±1.95	3.16±1.84

Table 4 presents the average value of each of the items according to sex. Statistical analysis does not show statistically significant differences ( $p>0.05$ ) when comparing the scores of each statement by sex and age. The scores obtained on all items fall within the disagreement range of the Likert scale, that is, in expressing their disagreement with the stated statements, students exhibit a positive attitude towards the thought of death and do not avoid the subject of death. When analyzing the frequency of response for each statement, only 23 (27.71%) students avoid thinking about death, 21 (25.30%) always try not to think about death and 18 (21.69%) refer to totally avoid thinking about death. In addition, 23 (27.71%) students try to separate the thought of death when they come to reflect on it and only 19 (22.89%) try to have nothing to do with the subject of death. Statistical analysis did not corroborate the existence of significant correlations ( $p>0.05$ ) between the response provided by students according to age or sex; however, a statistically significant correlation ( $p<0.01$ ) was found among all the statements used to explore this factor of the attitudes towards death. (Table 5) Among these correlations are those that are established between item 12 (I always try not to think about death) with item 3 (I avoid death thoughts at all costs) and 10 (whenever the thought of death enters my mind, I try to push it away) for having strong associations.

**Table 5:** Pearson's correlation of items to determine the dimension "avoidance of death" in medical students who practice dissections.

	Item 10	Item 12	Item 19	Item 26
Item 3	0.586*	0.714*	0.602*	0.524*
Item 10		0.748*	0.644*	0.595*
Item 12			0.696*	0.537*
Item 19				0.623*

\*  $p<0.001$

### 2.3. Approach acceptance

The DAP-R explores the attitude of "approach acceptance" from religious ideas related to death. [23,26] There are 10 items expressed in statements in which the student indicates his level of agreement or disagreement regarding the spiritual dimension determined by his religious beliefs and the possible influence of religious ideas with the fact of death. In this sense, death is explored as liberation of the soul (item 27), union with God (item 15) or with loved ones (item 22). It also includes death as transit (items 25 and 8), heaven as the dwelling place of death (items 4 and 13) and belief in a life after death (items 16, 28 and 31). Table 6 presents the average value of each of the items by gender. It can be observed that the score obtained in the statements is located predominantly in the indifference range according to the Likert scale; that is, students express that they do not disagree or agree with the statements that are stated, implying that religious ideas do not predominantly influence the attitude toward death in this group of students.

**Table 6:** Mean and standard deviation of the items of the dimension "approach acceptance" in the study population according to sex.

Items of the dimension "approach acceptance"	Women	Men	Total
4. I believe that I will be in heaven after I die.	2.95±1.95	2.95±2.07	2.95±2.00
8. Death is an entrance to a place of ultimate satisfaction.	4.10±1.58	3.90±1.79	4.00±1.68
13. I believe that heaven will be a much better place than this world.	4.56±1.92	4.07±2.02	4.31±1.98
15. Death is a union with God and eternal bliss.	4.34±1.83	4.12±2.04	4.23±1.93
16. Death brings a promise of a new and glorious life.	4.54±1.95	3.83±2.11	4.18±2.05
22. I look forward to a reunion with my loved ones after I die.	4.88±2.05	4.29±2.27	4.58±2.17
25. I see death as a passage to an eternal and blessed place.	4.27±1.83	3.69±2.04	3.98±1.95
27. Death offers a wonderful release of the soul.	3.98±1.84	3.17±1.81	3.57±1.86
28. One thing that gives me comfort in facing death is my belief in the afterlife.	5.00±1.91	4.02±2.19	4.51±2.10
31. I look forward to life after death.	5.34±1.68	4.21±2.34	4.77±2.11

Comparing the scores of each statement by sex with the analysis of variance (ANOVA), significant differences ( $p<0.05$ ) were identified in the belief that death releases the soul (item 27,  $F = 4.091$ ,  $p = 0.046$ ); belief of a life after death to face it (item 28,  $F = 4.669$ ,  $p = 0.034$ ) and in expecting a life after death (item 31,  $F = 6.312$ ,  $p = 0.014$ ). The comparison by age identified a significant difference ( $p < 0.05$ ) in the belief that the sky will be a much better place than this world ( $F = 2.861$ ;  $p = 0.020$ ).

In analyzing the frequency of response for each statement, 42 (50.60%) students consider that death is not a soul release, while 38 (45.78%) agree that death leads to union with God and 48 (57.83%) with the belief that they will unite with their loved ones in death.

**Table 7:** Pearson's correlation of items to determine the dimension "approach acceptance" in medical students who practice dissections.

	Item 8	Item 13	Item 15	Item 16	Item 22	Item 25	Item 27	Item 28	Item31
Item 4	r=0.036 p=0.745	r=-0.195 p=0.077	r=0.012 p=0.911	r=0.20 p=0.857	r=-0.156 p=0.158	r=0.078 p=0.484	r=0.096 p=0.387	r=0.136 p=0.219	r=0.174 p=0.116
Item 8		r=-0.158 p=0.154	r=0.214 p=0.52	r=0.209 p=0.058	r=0.334* p=0.002	r=0.335* p=0.002	r=0.270* p=0.014	r= 0.310* p=0.004	r=0.148 p=0.182
Item 13			r=0.164 p=0.140	r=0.266* p=0.015	r=0.267* p=0.015	r=0.198 p=0.072	r=0.240* p=0.029	r=0.158 p=0.154	r=0.342* p=0.002
Item 15				r=0.827* p=0.000	r=0.379* p=0.000	r=0.550* p=0.000	r=0.284* p=0.009	r=0.470* p=0.000	r=0.253* p=0.021
Item 16					r=0.412* p=0.000	r=0.505* p=0.000	r=0.370* p=0.001	r=0.561* p=0.000	r=0.408* p=0.000
Item 22						r=0.283* p=0.010	r=0.211 p=0.055	r=0.515* p=0.000	r=0.565* p=0.000
Item 25							r=0.432* p=0.000	r=0.357* p=0.001	r=0.283* p=0.009
Item 27								r=0.310* p=0.004	r=0.326* p=0.003
Item 28									r=0.673* p=0.000

\* p<0.005

The analysis of death as transit shows that 31 (37.35%) students see death as the passage to an eternal and blessed place, but another 31 (37.35%) believe otherwise and 38 (45.78%) express indifference about death as a way of entry to a place of ultimate satisfaction. 51 (61.45%) of the students indicated their disagreement that the sky is the abode of death, however, 34 (40.96%) believe that heaven is a better place than this world. Finally, in relation to the belief in a life after death, 34 (40.96%) students believe that death brings the promise of a better life, 45 (54.22%) believe that there is a life after death and 47 (56.63%) expect life in death.

Statistical analysis did not corroborate the existence of significant correlations ( $p > 0.05$ ) between the responses provided by students as a function of age. In relation to sex, significant correlations ( $p < 0.05$ ) were found with the belief that death offers a soul release ( $r = -0.219$ ;  $p = 0.046$ ); belief in a life after death in dealing with it ( $r = -0.233$ ;  $p = 0.034$ ) and to expect a life after death ( $r = -0.269$ ;  $p = 0.019$ ).

Table 7 presents the correlation between the different items that explore the "approach acceptance" attitude. It is observed that the belief related to death as soul liberation (item 27) is significantly correlated ( $p < 0.05$ ) with: belief in death as union with God (item 15), death as transit (items 8 and 25), heaven as the dwelling place of death (item 13) and belief in a life after death (items 16, 28 and 31).

The belief of death as union with God (item 15) correlates significantly ( $p < 0.05$ ) with the following thoughts: belief in a life after death (items 16, 28 and 31), a way of reuniting with loved ones (item 22), transit to an eternal place (item 25) and soul liberation (item 27).

Believing in the meeting with loved ones at death (E22) is significantly correlated ( $p < 0.05$ ) with: belief in the existence of life after death (items 16, 28 and 31); the idea of death as transit (items 8 and 25) and as union with God (item 15), and of heaven as a better place than this world (item 13).

The items that explore the belief of death as transit (items 8 and 25) correlate significantly ( $p < 0.05$ ) with the idea of death as soul liberation (item 27), desire to reunite in death with loved ones (item 22) and the existence of life after death as a way to overcome the idea of death (item 28).

Of the items that address the idea of heaven as the abode of death, the belief that heaven will be a better place than the world (item 13) correlates significantly ( $p < 0.05$ ) with the idea of death as soul liberation (item 27), belief in an afterlife (items 16 and 31) and reuniting with loved ones (item 22).

#### 2.4. Neutral acceptance

The DAP-R explores the attitude of "neutral acceptance" of death understood fundamentally as a biological process that shows the finitude of life. In this sense, the ambivalence involved in death is exposed. [23,26] On the one hand, the natural fear that causes death in the human being and, on the other, the acceptance as an undeniable fact of every living organism. Five items are used in statements in which the student indicates his level of agreement or disagreement regarding the idea of death as a natural event (items 6, 14 and 24), natural fear of death (item 17), and moral character of death (item 30). Table 8 shows the average value of each of the items according to sex. Statistical analysis does not show significant differences when comparing the scores of each item by sex. By age there is a significant difference ( $p < 0.05$ ) in relation to the idea that death is simply a part of the life process ( $F = 2,598$ ;  $p = 0.032$ ). It can be observed that the score obtained in the statements is located in the agreement range according to the Likert scale; that is, the students express that they are in agreement with the affirmations that are enunciated. A positive attitude toward "neutral acceptance" is shown, since they understand death as a continuum with life, so that even when they do not reject it, they do not deny the possibility of dying.

**Table 8:** Mean and standard deviation of the items of the dimension "neutral acceptance" in the study population according to sex.

Items of the dimension "neutral acceptance"	Women	Men	Total
6. Death should be viewed as a natural, undeniable, and unavoidable event.	5.54±1.99	5.83±1.92	5.69±1.95
14. Death is a natural aspect of life.	6.10±1.77	5.95±2.16	6.02±1.97
17. I would neither fear death nor welcome it.	5.12±1.93	5.55±1.78	5.34±1.86
24. Death is simply a part of the process of life.	5.95±1.83	5.61±2.27	5.78±2.06
30. Death is neither good nor bad.	5.37±1.70	5.02±2.37	5.19±2.06

When analyzing the frequency of response for each statement, 66 (79.52%) students consider death as a natural event, while 70 (84.34%) accept the idea that death is a natural aspect of life And 66 (79.52%) affirm that death is part of the life process. In addition, 57 (68.68%) students are not afraid of death and 53 (63.86%) agree that death is neither good nor bad. Statistical analysis did not corroborate significant correlations ( $p > 0.05$ ) between the response provided by students based on age or sex. A statistically significant correlation ( $p < 0.001$ ) was found between all the items used to explore this factor of the attitudes towards death. (Table 9) Among these correlations, it is important to point out that between item 14 (death is a natural aspect of life) and item 24 (death is simply a part of the process of life) because it has a strong association.

**Table 9:** Pearson's correlation of items to determine the dimension "neutral acceptance" in medical students who practice dissections.

	Item 14	Item 17	Item 24	Item 30
Item 6	0.637*	0.373*	0.547*	0.291*
Item 14		0.575*	0.765*	0.590*
Item 17			0.504*	0.422*
Item 24				0.503*

\*  $p < 0.001$

## 2.5. Escape acceptance.

The DAP-R explores the attitude of "acceptance of escape" to death emphasizing the ability to cope with pain and suffering as the motive for resorting to death. In this sense, death becomes the option to escape from the limit situations to which the human being is exposed during life. Five items are used in statements in which the student indicates his level of agreement or disagreement with the idea of death as an escape (items 5, 9 and 11) and relief (items 23 and 29) to the suffering suffered during the life of the human being. Table 10 presents the average value of each of the items according to sex. Statistical analysis did not show significant differences ( $p > 0.05$ ) when comparing the scores of each statement by sex. When comparing age, a significant difference ( $p < 0.01$ ) was found in relation to the idea that death provides an escape from the world ( $F = 2.369$ ,  $p = 0.008$ ). The score obtained in the items is in the range of disagreement according to the Likert scale. The students express that they disagree with the affirmations that are stated and expose a positive attitude regarding the "escape acceptance"; that is, they understand that death is not the way out of the pain and suffering that is associated with life.

**Table 10:** Mean and standard deviation of the items of the dimension "escape acceptance" in the study population according to sex.

Items of the dimension "escape acceptance"	Women	Men	Total
5. Death will bring an end to all my troubles.	3.37±2.53	2.76±2.22	3.06±2.38
9. Death provides an escape from this terrible world.	2.51±1.94	2.45±1.90	2.48±1.91
11. Death is deliverance from pain and suffering.	3.71±2.34	3.33±2.04	3.52±2.19
23. I view death as a relief from earthly suffering.	3.73±2.29	3.17±2.19	3.45±2.24
29. I see death as a relief from the burden of this life.	3.51±2.28	3.17±1.96	3.34±2.12

When analyzing the frequency of response for each item, it is verified that only 24 (28.92%) students consider that death is the end of all their worries, 13 (15.66%) that death provides an escape from the world and 31 (37.35%) the release of pain and suffering. When considering death as a relief, 27 (32.53%) students see death as a relief from suffering and 26 (31.33%) as relief from the burden of life. Statistical analysis did not corroborate significant correlations ( $p > 0.05$ ) between the response provided by students based on age or sex. A statistically significant correlation ( $p < 0.001$ ) was found among all the statements used to explore this factor of the attitudes towards death. (Table 11)

**Table 11:** Pearson's correlation of items to determine the dimension "escape acceptance" in medical students who practice dissections.

	Item 9	Item 11	Item 23	Item 29
Item 5	0.659*	0.574*	0.479*	0.465*
Item 9		0.491*	0.584*	0.532*
Item 11			0.539*	0.467*
Item 23				0.635*

\* p<0.001

#### IV. DISCUSSION

Death is a multidimensional, heterogeneous and complex process, defined from the philosophy and biomedical sciences; [27] as an experience, is rebuilt throughout life. [28] When the human being is exposed to stimuli that threaten the existence, it generates fears and anxiety when becoming aware of it, So that anxiety about death is understood as an emotional reaction produced by the perception of danger signals to existence. [29] In the case of medicine, medical practice develops in the dialectic of the health-disease process exposing the physician to the duality of the life-death dilemma in different moments and circumstances, favoring the adoption of behaviors related to fear or acceptance death. The attitude towards death that the doctor builds from his student stage influences the doctor-patient relationship that develops during the medical act, [30] a process in which the modulating effect of dissection of the human cadaver is recognized. [31]

It is now accepted that the doctor's first contact with death dates back to his formative stage during the course of anatomy when performing dissecting practices on human cadavers; so that from the first days of his studies in medicine, begins the conceptual and emotional construction of the idea of death that will be reflected in the encounter with the patient. In this context, the study was aimed at characterizing the profile of attitudes towards death in medical students at the end of the practical course of dissections in human cadaver in a public university in Mexico. The results show that the profile of attitudes in these students is integrated, in order from highest to lowest score, by: neutral acceptance, approach acceptance, escape acceptance, avoidance of death and fear of death. Similar results have been reported by Asadpour et al. [32]

The conception of death induces emotional responses of fear, anxiety and worry that trigger positive or negative attitudes ranging from the rational coping of death to anguish at the thought of one's own death or the fact of the death of others. Attitudes that support specific behaviors integrate the set of beliefs about death. In this line of thought, when characterizing a profile of attitudes towards death refers to thoughts, cognitive processes and concrete facts that trigger behaviors in specific contexts of culturally specific limit situations in which the individual develops. [23] The profile identified in this study is congruent with that reported by Firth-Cozens and Field [34] in relation to the ability of medical students to effectively cope with the daily life they will face continuously. The medical students in their transit through the educational institution and hospital, will appropriate experiences that contribute to coping with the fact of dying that will be exposed during the medical care. The multidimensionality of death links it to cultural, social and biological patterns that take shape in the ambit of consciousness. Acquiring awareness of the possibility of death induces in the human being a feeling of fear of the unknown and makes possible two fundamental attitudes: fear of death or acceptance of it.

The study of the fear of death has developed widely in the last decades. [26] The effort to understand death has spread to adolescents and adults. [35] Exposure of health personnel to death and the patient's dying process have motivated studies aimed at promoting educational interventions to reduce the fear induced by experience with the death of the other. [36] This tendency contrasts with the results obtained in the study, since the fear of death is the dimension that obtained the lowest score among the students, which can be attributed to the type of scale to determine the attitude towards death. [26] The positive attitude towards the fear of death can lead to an approach to the dissection of the human corpse without generating stress or anguish as has been reported in the literature. [20]

Students who perform dissecting practices on a human cadaver do not fear of loss of self; neither to the unknown, to beyond death, to pain or to suffering. His life and death have meaning. However, the results show, in relation to the student's fear of death, the possibility of associating the idea of death as a horrible experience with anxiety when thinking about one's own death. In addition, intense fear of death is associated with: the preoccupation of life after death, the meaning of death as the end of existence and the uncertainty of not knowing what happens after death. Being aware of their own death, 27.71% of students report that it causes them distress and is associated with the disorder that leads one to think about the purpose of death. Russa and Mligiliche reported that 30.8% of the students presented fear in the dissection room and 21.2% anxiety. [37] The results obtained among students show that thoughts related to the purpose of death were moderately associated with intense fear of death, concern for the subject of life after death, the meaning of death as the end of the known world and the uncertainty of facing the unknown after death. It was also found that concern for the subject of life after death is directly and strongly associated with the meaning of death as the end of the known world and the uncertainty in existence after death. In addition, it was shown that the meaning of death as the end

of the known world is directly associated with the uncertainty of existence after death. From the attitudes towards death that derive from life experiences and cultural patterns, "avoidance of death" stands out. This attitude expresses the rejection to the subject of the death as well as to any situation associated with the death, own or others; [38] so as to avoid thinking about death, even the thoughts related to it are removed from the mind. At the conclusion of the practice of dissection in human cadavers during the course of anatomy, students exhibit a positive attitude towards "avoidance of death"; that is, they do not reject thoughts or situations associated with the idea of self or alien death. These results contrast with studies carried out in physicians with clinical activity who show negative attitudes to the subject of death, favoring the appearance of defense mechanisms that operate during clinical practice; [39] but is consistent with what is reported in nursing staff. [40] When deepening in the analysis of the statements oriented to evaluate the attitude of avoidance before the death it was shown that to avoid thinking about the death is associated moderately with the attitude of: put away the thought of death, avoid totally thinking about death and have nothing to do with the subject of death; while it is strongly associated with the attempt not to think about death.

The attitude of "approach acceptance" represents the effect of religious ideas on the fact of the death of the human being; explores the spiritual dimension, hope and conformity in the understanding of the finitude of life. In this sense, students participating in the study show an attitude of indifference towards the "approach acceptance" to death; that is, belief in death as liberation of the soul, a way of union with God or loved ones, and transit to another life, do not influence his attitude towards death. The belief in heaven as a dwelling place after death or the belief of a life after death, do not influence the attitude toward death. These results are congruent with those reported in nursing staff, [41] but contrast with those reported in adolescents and young adults [35], in the sense of the influence attributed to religious beliefs in attitudes towards death. [42] On the other hand, the neutral acceptance of death represents the attitude of the human being at the moment of understanding the finitude of life, viewing as a biological process in which the act of living ends. [43] This attitude is presented with the highest average in the study, which is why it is considered as the main characteristic of students at the conclusion of the practice of dissection in human cadavers during the course of anatomy, which may be contributing to the generation of anxiety or distress during the course. These results are congruent as reported by health personnel, such as the health team working in the intensive care unit in a Spanish hospital, where it was found that 84% of the respondents expressed that the idea of dying is inherent to the life. [44]

The attitude of "escape acceptance" before death represents the ability to face pain and suffering in life, of oneself or the other, by offering himself as a possibility to alleviate the suffering caused by different situations experienced by the human being during his lifetime. In students who conclude the practice of dissection in human cadavers, this attitude presents a fundamental element to deal with the contact with the cadaver, by making it possible to coping the human suffering that results from the process of getting sick. These results are congruent with Palacios Parrilla's study in health personnel, where it was found that 52% of the respondents presented a positive trend regarding escape acceptance. [44] Similar results are reported in Greek nurses. [45] Given the descriptive nature of the study, new questions have been generated that open the way to research processes, for example, what is the influence of the course of anatomy and dissections in the attitude towards death presented by medical students? Is there an association between contact with the corpse and the process of constructing an attitude towards death? What is the relationship between attitude towards death and medical empathy? Considering what has been reported in the national and international literature, are there differences in the dimensions of the attitude towards death among medical students and physicians in professional practice? Does medical identity and the vocation to study medicine influence the attitude towards death? Does the early introduction to the medical student's clinic modify his attitude towards death? Does exposing the medical student to courses of thanatology modify his attitude towards death?

## **V. CONCLUSION**

Although human cadaver dissection has been reported to cause emotional and physical stress to students, the study found that they have a neutral attitude towards death, accompanied by a positive trend toward the other explored dimensions (approach acceptance, escape acceptance, avoidance of death and fear of death). The analysis of the obtained results found that the female students have a greater correlation between the religious beliefs related to the death; in addition, among students, the fear of death is moderately associated with avoidance of death, approach acceptance and escape acceptance; while the fear of death is indirectly associated with neutral acceptance. On the other hand, it was shown that among students, religious ideas and beliefs about death (approach acceptance) are weakly associated with coping skills or problems of existence (escape acceptance); while the natural fear of death is associated negatively and weakly with the attitude of rejection before death (avoidance of death) and the ability to cope effectively with pain and problems of existence (escape acceptance). Thus, the ability to cope with pain and the existence problems, is weakly associated with the attitude of rejection to death. With the results obtained, it is concluded that the profile of attitudes towards death presented by medical students exposed to the human cadaver in the practice of dissections is characterized by

positive attitudes that imply: not being afraid of the idea of death, not to avoid the subject of death, religious ideas do not predominantly influence the attitude towards death, to understand death as a continuum with life in a way that does not reject it but does not deny possibility of dying and, finally, they understand that death is not the way out of the pain and suffering that is associated with life. In short, students have a positive attitude toward death, coping positively the idea of death and not be afraid; what contributes to generate conditions of emotional well-being for the development of the operational activities of the course of Anatomy in the dissection room.

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