**Research Article**

**End-of-life Education: Nurse Students Knowledge and Attitudes. A Descriptive and Cross-sectional Survey**

**Lidia Gómez-Martinez1, Rebeca Abajas-Bustillo1,2,3#, Noelia Ruiz-Pellón3, Víctor Mencía-Seco3, Carmen Ortego-Maté1,2**

1Faculty of Nursing, University of Cantabria, Spain

2Nursing Research Group IDIVAL, Spain

3Servicio Cántabro de Salud, Santander, Spain

**#Corresponding author:** Rebeca Abajas Bustillo, RN, MS, PhD, Associate Professor, Department of Nursing, University of Cantabria, Avda.de los Castros, s / n, 39005 Santander, Spain

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**Abstract**

**Background:** When education on end of life is insufficient, this leaves a gap in knowledge and attitudes, which affects the quality of care provided.

**Purpose:** To examine the extent of knowledge on palliative care and attitudes towards end-of-life care.

**Methods:** A descriptive and cross-sectional survey was conducted in 2019. The palliative care quiz for nursing and the Frommelt Attitude toward Care of the Dying Scale were used.

**Results:** In total, 199 nursing students participated. The mean score on the palliative care quiz for nursing was 8.32 (SD=2.9) whereas on the Frommelt Attitude toward Care of the Dying Scale the mean score was 118 (SD=9.84). The academic year was a significant predictor of knowledge and attitudes.

**Conclusions:** An increase in level of knowledge and favorable attitudes was observed during the course of studies, and there is an association between these two variables. Hence, it is advisable to provide nursing students with more extensive training on end-of-life care.

Keywords: Attitudes towards death; Clinical practice; Nursing education; Nursing students; Palliative care

Introduction

End-of-life (EOL) care is the term used to describe the support and health care for people who nearing the end of their life and have stopped treatment to cure or control their disease. It’s an important part of palliative care. Combines the broad set of health and community services and includes physical, emotional, social, and spiritual support for patients and their families. The provision of end-of-life care has increased in recent decades, and yet, a further increase is foreseeable, due to population ageing and the emergence of chronic diseases [1]. These changes in epidemiological patterns have meant that palliative care is no longer focused solely on cancer patients, but includes all incurable pathologies, and those that generate physical and spiritual suffering for patients and their families [2-4]. According to the WHO, palliative care "is an approach that improves the quality of life of patients and their families when they face problems inherent to a life-threatening illness. Thus, palliative care prevents and relieves suffering from pain and other problems, whether these are physical, psychosocial or spiritual [1].

The latest data offered by the EAPC (European Association for Palliative Care) reveal that in Europe 4,428,663 people die while in need of palliative care [5], whereas worldwide, this figure rises to a total of 40 million [1]. Nursing professionals are an essential part of the provision of end-of-life care, representing the largest group in the teams that care for these patients, moreover nurses are those who spend the most time with the dying [6]. The provision of care to patients at the end of their lives is possibly one of the most complex situations faced by professionals, given the difficulty of dealing with death, pain and other symptoms, as well as the heterogeneity of cases; therefore, the provision of quality care requires proper training in knowledge and skills in this area [7,8]. The WHO stresses that lack of training is an obstacle in the proper delivery of palliative care and access to the same, and urges countries to include and strengthen palliative care in core curricula [1].

Numerous studies have revealed insufficient training in palliative care knowledge and skills for nursing staff, and have highlighted the need for proper training to ensure quality care [9]. Training is not only important for acquiring an adequate level of knowledge, but also for developing the personal attitudes that allow for the professional management of suffering and fear of death, which results in improved care [10-12]. Berndtsson et al. [13], suggest that knowledge in palliative care helps students change their attitudes towards death, since greater knowledge makes them feel better prepared and less anxious about the palliative patient's situation. Some of the learning needs identified are: coping with death and loss, developing communication skills with the patient and family, and managing pain and other symptoms [14]. Various studies [15-18] also stress the need to provide training during undergraduate studies so that all nursing students have an equal opportunity to acquire the necessary knowledge, skills and positive attitudes towards palliative and end-of-life care before they have to deal with it professionally.

Given the high demand for end-of-life care, and the need for properly trained nursing professionals to meet these needs, it is interesting to examine the level of knowledge about palliative care and attitudes towards the end of life among nursing degree students. In Spain, there are some studies in this field [19,20], although no studies have been conducted in the nursing school of University of Cantabria. The extent of knowledge on palliative care and attitudes towards end-of-life care in nursing degree students of University of Cantabria has been examined trough a descriptive and cross-sectional survey. For this purpose, participants completed a demographic form and two questionnaires that assessed the topics.

The general aim of this study is to answer the following questions:

What is the level of knowledge in palliative care that the students of the four nursing years of the Nursing Faculty of Cantabria have?

What are the attitudes of these students towards death and care at the end of life?

Specific aims are:

To determine the demographic, academic, educational and death-experience covariates that influence knowledge and attitudes.

Study whether level of knowledge is associated with attitudes towards end-of-life care.

**Methods**

**Design and Sample**

A cross-sectional observational study was conducted with four cohorts of nursing degree students from a university in Spain. Data collection took place between 7 October and 21 December 2019. The participants were 199 students of the Nursing Degree of the University of Cantabria. The total population was 271 students, representing a participation of 73.43%. The inclusion criteria were: students from one of the four courses of the Nursing Degree at the University of Cantabria enrolled in the 2019-2020 academic year, who accepted to participate.

**Instruments**

Eight variables were recorded: age, sex, academic year, have you seen someone die? Have you suffered the death of a close person? Have you had contact with palliative care? Knowledge of palliative care and attitudes towards palliative care.

The Spanish version of the Palliative Care Quiz for Nurses (PCQN-SV) [21] was used to assess the level of knowledge in palliative care. It is a self-administered questionnaire consisting of 20 multiple choice items. These items evaluate three aspects of palliative care: philosophy and principles of palliative care, control of pain and other symptoms, and psychosocial aspects of palliative care. The score ranges between 0 and 20 points. A score closer to 20 indicates greater knowledge of the subject.

The Spanish adaptation of the Frommelt Attitude toward Care of the Dying Scale (FATCOD) [22] was used to assess attitudes towards end-of-life care. This scale consists of 30 items assessed according to the 5-point Likert scale. The total score ranges from 30 to 150 points. A higher score reflects more positive attitudes.

**Data Analysis**

Data analysis was performed using SPSS version 25 software and Excel spreadsheets. Quantitative data were described using the mean and Standard Deviation (SD), and qualitative data were described using absolute and relative frequencies. To analyze the relationship between the socio-demographic variables, we used one-factor ANOVA and Chi-square tests, depending on the nature of the variables to be related. Before calculating the one-factor ANOVA, the normality and homogeneity of the variances were verified. A value of p<0.05 was considered significant. A bivariate analysis was used to examine the association between covariates and the overall scores of the PCQN and FATCOD. First, binary models were constructed for each covariate with the PCQN and FATCOD scores as dependent variables. Then, covariates with a value of p <0.20 were introduced in multivariate linear regression analyses, using the backward elimination method to obtain the final models. After investigating assumptions related to normal residual distribution and multicollinearity, no modifications to the analysis were required.

**Ethical Considerations**

The study did not begin until consent had been granted by the directors of the Centre and the University's Ethics Committee (University of Cantabria). The students were duly informed of the purpose of the study, furthermore, they were assured that their data would be treated anonymously and for statistical purposes, and they were reminded that they would not receive any financial compensation for their participation. Subsequently, their collaboration was requested and the consent of all participants was obtained.

**Results**

A total of 199 students of the Nursing Degree of the University of Cantabria accepted to participate in this study. The mean age was 21.20 years (SD=5.04), 85% were women. When comparing the year of studies, no significant differences were found with sex (χ2=3.32 p=0.345), although there were significant differences with age (F0.05, 3, 181=3.12, p=0.028) and concerning the questions "Have you ever seen someone die? (χ2=42.87 p=0.000), "Have you ever suffered the death of someone very close?" (χ2=8.19 p=0.042) and "Have you ever had contact with palliative care?" (χ2=43.83 p=0.000). As displayed in (Table 1), in general, students in higher years have more experience with death and palliative care, this was particularly significant in the case of students in their last year of the Nursing Degree.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Age | | | | Gender | | | | | Have Tou Ever Seen Any One Die? | | | | | | Have you ever suffered the death of someone close to you? | | | | | | Have you had contact with PC? | | | | |
| mean | SD | Range | pa | women | % | men | % | pb | yes | % | no | % | pb | yes | | % | no | % | pb | yes | | % | no | % | pb |
| 21.2 | 5.04 | 17-50 |  | 170 | 85.4 | 29 | 14.6 |  | 90 | 45.2 | 109 | 54.8 |  | 162 | | 81.4 | 37 | 18.6 |  | 88 | | 42.2 | 111 | 55.8 |  |
| 19.9 | 4.82 | 17-42 |  | 46 | 85.2 | 8 | 14.8 |  | 12 | 22.2 | 42 | 14.8 |  | 43 | | 79.6 | 11 | 20.4 |  | 17 | | 31.5 | 37 | 68.5 |  |
| 21 | 5.14 | 18-45 |  | 55 | 84.6 | 10 | 15.4 |  | 28 | 43.1 | 37 | 56.9 |  | 47 | | 72.3 | 18 | 27.7 |  | 19 | | 29.2 | 46 | 70.8 |  |
| 21.3 | 4.03 | 19-42 | 0.03 | 34 | 94.4 | 2 | 5.56 | 0.35 | 12 | 33.3 | 24 | 66.7 | 0 | 30 | | 83.3 | 6 | 16.7 | 0 | 12 | | 33.3 | 24 | 66.7 | 0 |
| 23 | 5.53 | 20-50 |  | 35 | 79.6 | 9 | 20.5 |  | 38 | 86.4 | 6 | 9.09 |  | 42 | | 95.5 | 2 | 4.55 |  | 40 | | 90.9 | 4 | 9.09 |  |
| aOne-factor ANOVA  bChi-square SD: Standard deviation; PC: Palliative Care | | | | | | | | | | | | | | | | | | | | | | | | | |

**Table 1:** Characteristics of the total sample (n=199).

For the total number of students, the average score obtained on the PCQN questionnaire was 8.32 points (dt= 2.59). The mean percentage of correct answers was 41.62%, the mean percentage of incorrect answers was 31.86%, and the mean percentage of don't know/don’t answer responses was 26.51%. First year students had the highest percentage of unanswered and failed questions. Only 8% of the total students in the four years obtained a score greater than or equal to 12 points, this score was considered by the authors of the questionnaire as "sufficient knowledge of palliative care". No first-year student managed to reach 12 points, whereas fourth-year students had the highest percentage of students exceeding this score. When comparing the average scores in the four years, significant differences were obtained (F0,05, 3, 181= 19.57, p=0.000) (Table 2).

The mean score on the FATCOD questionnaire was 118 points (dt=9.84). Most respondents scored between 75 and 120 points, whereas in no case was the score less than 75. As many as 91% of the respondents considered caring for a dying person a very valuable experience.

When comparing the mean scores of the four years, significant differences were obtained (F0,05, 3, 181=14.363, p=0.000). The fourth year students had the highest mean score, followed by the third, second and first year students, respectively. Up to 75% of fourth-year students and 57% of third-year students scored 120 or more, whereas most first and second years were below 120 points (χ2= 27.6, p=0.000). About half of the students expressed fear of making friends with a person who is dying, and about 40% felt that they would be uncomfortable talking to the patient about his or her own death.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| year | mean | SD | Range | Pa | Mean | SD | Range | Pa |
| Overall | 8.32 | 2.59 | 14-Jan |  | 118.84 | 9.84 | 91-144 |  |
| 1st year | 6.4 | 2.28 | 11-Jan |  | 114.93 | 8.65 | 91-131 |  |
| 2ndyear | 8.68 | 2.42 | 13-Mar |  | 115.32 | 8.28 | 100-133 |  |
| 3rd year | 9.75 | 1.54 | 13-Jul | 0 | 122.26 | 9.67 | 105-144 | 0 |
| 4th year | 8.99 | 2.56 | 14-Feb |  | 125.1 | 9.28 | 101-144 |  |
| PCQN: Palliative Care Quiz for Nurses (Spanish version);  DK/DA: don’t know/don’t answer  aOne-factor ANOVA ; SD: Standard deviation; | | | | | | | | |

**Table 2:** Response frequencies for PCQN and FATCOD.

Concerning the results on the PCQN questionnaire, when comparing average scores per year in the three categories, significant differences were obtained in two categories: philosophy and principles (F0,05, 3, 181=11.859 p=0.000), control of pain and other symptoms (F0,05, 3, 181=7.872, p=0.000) and psychosocial aspects (F0,05, 3, 181=1.158, p=0.328). The section in which the students demonstrated the greatest degree of knowledge was the one related with the philosophy and principles of palliative care. The psychosocial aspect was where students accumulated the greatest number of errors, whereas the most questions unanswered were for control of pain and other symptoms (Table 3).

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Philosophy and principles | | | | Control of pain and other symptoms | | | | Psychosocial aspects | | |
| Year | % Correct | % Incorrect | % DK/DA | pb | % Correct | % Incorrect | % DK/DA | pb | % Correct | % Incorrect | % DK/DA |
| Overall | 48.65 | 26.49 | 24.86 |  | 42.45 | 27.57 | 29.98 |  | 28.65 | 57.66 | 13.69 |
| 1st year | 32.55 | 30.19 | 22.64 |  | 33.67 | 17.42 | 37.74 |  | 23.9 | 0.6604 |  |
| 2nd year | 47.03 | 32.63 | 20.34 |  | 45.5 | 28.03 | 26.47 |  | 29.38 | 62.15 | 8.47 |
| 3rd year | 59.03 | 20.83 | 20.14 | 0 | 48.93 | 25.64 | 25.43 | 0 | 33.33 | 32.87 | 23.61 |
| 4th year | 64.19 | 16.89 | 18.92 |  | 43.87 | 27.23 | 28.9 |  | 28.83 | 47.75 | 23.42 |
| PCQN: Palliative Care Quiz for Nurses (Spanish version); DK/DA: don’t know/don’t answer bChi-square | | | | | | | | | | | |

**Table 3:** PCQN response frequencies by area.

A significant positive linear correlation was detected between PCQN and FATCOD scores (rxy=0.21 p=0.006), which indicates that increasing scores on one of the questionnaires also increases scores on the other.

In the linear regression models, two variables were significant for PCQN: year-related and having suffered the death of a close person. However, for FATCOD, only the year related variable was significant. However, in the latter model, the variables age and having had contact with palliative care were marginally significant. The regression models were able to explain 21% of the variability of PCQN, and 22% of FATCOD, respectively (Table 4).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Dependent variable | Prediction variables | B | SE | β | t | p |
|  | (Constant) | 9.28 | 1.24 |  | 7.45 | 0 |
|  | Year | 1.03 | 0.16 | 0.43 | 6.45 | 0 |
| PCQN | Gender | -0.79 | 0.49 | -0.11 | -1.6 | 0.111 |
|  | Have you ever suffered the death of someone very close to you? | -1.03 | 0.44 | -0.16 | -2.35 | 0.02 |
|  | Model statistics: R2=0.21; R2 adjusted=0.19; F (3, 181) =15.47⁎⁎ | | | | | |
|  | (Constant) | 102.08 | 3.05 |  | 33.52 | 0 |
| FACTOD | Year | 2.97 | 0.69 | 0.33 | 4.33 | 0 |
|  | Age | 0.26 | 0.13 | 0.14 | 1.97 | 0.051 |
| PCQN: Palliative Care Quiz for Nurses (Spanish version)  FATCOD: Frommelt Attitude Toward Care of the Dying Scale (Spanish version) | | | | | | |

**Table 4:** Multivariate linear regression models for PCQN and FATCOD scores.

Finally, in this study, the Cronbach coefficient α for the Spanish version of PCQN was α= 0.702 whereas for FATCOD this was α=0.778. These are considered optimal values to guarantee the reliability of the scale.

**Discussion**

Responding to the objective of this study, students in the Nursing Degree showed positive attitudes towards end-of-life care, although knowledge about palliative care was largely insufficient. The academic year was a significant predictor for both attitudes and knowledge. Age and having had contact with palliative care were also predictors of attitudes, while having suffered the death of a close person was a predictor of knowledge. In our study, the degree of knowledge in palliative care is similar to that of other studies involving Spanish, Greek or Swedish students [23,24] albeit inferior to Chinese students 16. In the study by Jiang et al. 16 the school, the year, the gender, the place of birth and the religious beliefs significantly influenced the knowledge.

Several studies have evaluated nursing students' knowledge of palliative care [16,23,25-27], consider that providing more training in palliative care in undergraduate education programs is essential to improve the level of knowledge.

In terms of attitudes, a comparison with students from other countries shows that our sample has more positive attitudes. In the Greek study [23], although the students displayed positive attitudes, these were somewhat lower than those reflected in our findings: 23.6% of the Greek respondents scored 120 or higher on the FATCOD scale, compared to 47.2% in our sample. Age, academic year, experience with death and training in palliative care were also significant predictors of attitudes. In addition, gender was a significant variable in their case, unlike ours, although no explanation was found for this finding. In the study by Lewis-Pierre et al. [28] among American students, aimed at comparing their pre-post attitudes after participating in two EOL modules, an online module, and one that also included simulation, although they found a significant increase in FATCOD scores after participation in both groups, their mean scores were lower than those recorded in our sample.

Turkish, Palestinian and Iranian students also reported relatively poor attitudes towards the care of the dying patient and their family [29-32]. Regarding the comparison with other countries, in addition to the training programs, cultural aspects should be taken into account in order to analyze their possible influence on attitudes and knowledge regarding the process of death. In our study, the level of knowledge was able to predict the variation in attitudes. In a study conducted with Swedish students [13], the idea that knowledge changes attitudes is supported. In our case, as in other studies [10], although it has been possible to confirm the hypothesis that greater knowledge is associated with more positive attitudes, there seem to be other variables that also exercise an even greater influence on the improvement of these attitudes.

In Spain, the research carried out by Edo-Gual et al. [22] showed that younger students have less positive attitudes. A possible cause for this is that younger people have not yet developed effective strategies to deal with death. The academic year also emerged as a significant variable, suggesting that through training and education, there is a significant improvement in attitudes, in line with other studies [33-35]. Other variables that were significant in predicting more positive attitudes were having seen someone die and having had contact with death during clinical placements. These results are consistent with those obtained in our students. In the case of nurses who have already entered the workforce, several studies have evaluated their attitudes [36-38] concurring that age and experience with terminal patients are significant predictors of better attitudes. Numerous studies show the benefit of offering training programs for nurses, especially for the less experienced, [13,25,37-40] argue that inexperience and lack of control are a source of stress, leading to negative attitudes, and suggest that greater training and perceived competence leads to a greater desire to work with terminally ill patients.

**Strengths and Limitations**

This study presents strengths and limitations. The main strength is that it provides data on 73.43% of a population of University of Cantabria nursing students. Unfortunately, some sources of bias could not be avoided. Non-random sampling, the participation of students from only one university and country, and the use of only two questionnaires to assess knowledge and attitudes could be sources of bias that should be considered when interpreting the results, and therefore caution should be exercised when generalizing the data. Future research should attempt to address these limitations.

**Conclusions**

The data obtained in this study help to identify possible aspects to be reinforced in the training of nursing students. In this sense, palliative care is a fundamental part of nursing care and should constitute a relevant area in the curricula of the Nursing Degree.

Attitudes towards end-of-life care are generally very positive, and increase significantly with the academic year. As the academic year increases, so does knowledge, although the level of knowledge is not high, especially regarding psychosocial aspects and pain and symptom control, indicating a need to emphasize these aspects.

In short, although there has been significant progress in knowledge and attitudes in palliative care, some deficiencies have been detected that make it advisable to increase training in end-of-life care for nursing students.

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