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Professional values and perception of knowledge regarding professional ethics in physical therapy students

A STROBE compliant cross-sectional study

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Abstract

Undergraduate students start the acquisition of a professional identity, and begin to achieve professional values and consciousness of an ethical behavior as future health professionals. The aim of this study was describe professional values and perception of knowledge regarding professional ethics of physical therapy students. A cross-sectional study was performed. A total of 351 students participated in the study. Professional values and perception of knowledge regarding professional ethics were assessed. Ethical approval was obtained from the University Ethics Review Board. The most important value was equity, while the least one was abnegation. The second educational year showed higher scores in importance of scientific quality ($P = .010$ vs first year), the third year in respect for life ($P = .041$ vs first year, respectively), and the fourth year in respect to patient's autonomy ($P = .033$ vs first year). First-year students showed lower scores in perception of knowledge regarding professional ethics ($P < .001$ vs second, third, and fourth year), while second-year students had higher scores ($P < .001$ vs first and third; $P = .006$ vs fourth year) and no differences between third- and fourth-year students were found. Those professional values highly considered by the students were mainly shared professional values, with equity ranked highest and abnegation lowest. Furthermore, second-year students had a well-established perception of knowledge regarding professional ethics, showing significant higher scores when compared to the rest of the educational years. This is the first cross-sectional study that describes these variables among physical therapy students and it is a starting point for future. Physical therapy educators might want to take into account these findings when teaching and guiding students in developing awareness for their professional values and perception of knowledge regarding professional ethics.

Abbreviations: AEPVQ = Axiologic Estimation of Professional Values Questionnaire, KPE = knowledge regarding professional ethics, PKPEPT = Perceptions of Knowledge Regarding Professional Ethics in Physical Therapy, PV = professional values.

Keywords: education, health occupations, knowledge, physical therapy modalities, professional ethics, students

1. Introduction

Healthcare professions require facing situations for which ethical knowledge and professional values (PV) are needed.[1–4] Particularly, in physical therapy, the increase on clinical autonomy and independence in clinical decision-making and judgments has implied more complex ethical dilemmas and additional ethical challenges.[5,6] Thus, as for other healthcare professionals, ethical conduct of physical therapists has become a main issue.[7]

Therefore, during the last decades, normative descriptions of professional ethics have been published[8] and the body of literature examining physical therapy ethics has also increased.[5,9–19] In this line, ethics has been defined as a set of values and a skill that can be learned and enhanced through professional practice.[20] Therefore, health professionals must have values related to their profession to detect ethical issues and guide decision-making.[2,3] These ethical issues imply, among others, being aware of the needs of patient's and of other professional's, balancing quality of treatments and working within the restrictions which health institutions or policies may require.[6,9,21]

PV are related to individual beliefs and most of them originate from previous personal values.[20,22,23] In this regard, university training is of paramount importance, since it is where the process of professional socialization begins[24,25] and, therefore, the acquisition of an identity based on PV[23,24] can be gradually internalized.[23–27] Given that this achievement of PV can lead to

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a broader capacity for solving conflicts and making decisions based on ethics,[24] it is important to clarify which healthcare PV could be transmitted more consciously within university training.[27] Thus, this could provide insight of the values that physical therapists intend to defend and apply in daily practice[27] and, furthermore, their achievement of ethical competence.

Taking into account that ethical competence is understood in terms of character strength, ethical awareness, moral judgment skills, and willingness to do good, knowledge regarding professional ethics (KPE) can be seen as a prerequisite for ethical competence.[4] Thus, KPE can be defined as the combination of philosophical, theoretical, and practical knowledge while considering the contexts and people involved.[28] Therefore, KPE is needed to be integrated by physical therapists, since it is as important for ethical reasoning as anatomy and physiology for clinical reasoning.[29]

Scientific research related to physical therapy values is scarce when comparing to other health professions.[23,27] Moreover, the emerging literature[15,30,31] suggests gaps between knowledge of ethical theory and its implementation in practice.[9] Therefore, many authors defend the importance of ethical learning of physical therapy students, since professional ethics and its application to the clinical context is needed to respond to the ethical issues that they will encounter in their future practice.[1,10,32] Such training is important for students so that they can practice and theorize about ethical issues concerning human beings, in order to enable the development of practical ethical reasoning skills that can prepare them to become responsible care providers.[1,33]

In Spain, professional ethics in physical therapy is based on the specific ethical principles elaborated by the World Confederation of Physical Therapy[8] of which Spanish Association of Physical Therapists is part. In the Physical Therapy Degree of the University of Valencia, ethical competence is part of a set of transversal competences, applied throughout all the subjects. Moreover, ethics is taught in the second educational year in the compulsory subject "Administration, Legislation and Deontology of the Profession" with a theoretical and practical program. Analyzing the PV and the perception of KPE of undergraduate physical therapy students may reveal the shortcomings that future physical therapists have during their training in the Physical Therapy Degree and the need to develop intervention strategies to be taught in the educational environment.

The objective of this study was to describe the PV which are considered compulsory and important for developing the profession, the perception of KPE among undergraduate physical therapy students, and to compare both PV and the perception of KPE among the educational years.

2. Method

2.1. Research design

A cross-sectional observational study was performed among undergraduate physical therapy students at the University of Valencia, Spain. The study was developed at a university research lab, within the professional ethics research line in the Physical Therapy Degree. This research adheres to the Strengthening the Reporting of Observational Studies in Epidemiology protocol.[34]

2.2. Participants

Inclusion criteria were to be a student of the Physical Therapy Degree at the aforementioned university, aged >18 years and willingness to participate. Written informed consent was provided by all participants. From the eligible 359 students, 351 were finally included (Fig. 1).

2.3. Outcome measures

The data collection was carried out from September 2016 to July 2017. Demographic information was collected, including: age, gender, family members related to health professions, willingness to choose the degree, and working perspectives after the degree. Afterwards, participants underwent a self-reported assessment and supervised by a trained teacher in managing the evaluation tools. The questionnaires were written in a structured and comprehensive way for the students and presented in their preferred language (Spanish).

PV were assessed by the Axiologic Estimation of Professional Values Questionnaire (AEPVQ; Table S1, Supplemental Digital Content, http://links.lww.com/MD/H67, which shows this questionnaire, that assesses professional values).[35] The AEPVQ is a self-reported questionnaire composed of 30 items which correspond to values and their definition, divided into 2 categories: shared PV and nonshared PV. Shared PV include 15 health professions deontological codes shared values: professional autonomy, benevolence, scientific quality, fellowship, competence, confidentiality, scientific knowledge, caring, equity, respect to patient's autonomy, respect for life, responsibility, correct and friendly relationship, vocation to serve, and sincerity. On the other hand, nonshared PV comprise 15 values of health professions, thus at least being present in 1 health profession deontological code (nursing, medicine, physical therapy, psychology, podology) although noncoincident in all of them: hospitality, personalized attention, altruism, closeness, compassion, diligence, efficiency, empathy, fidelity, honesty, justice, abnegation, prudence, simplicity, and tolerance. The questionnaire registers if each value is considered always as a compulsory value, by means of a 2-point Likert question which includes 2 options: "yes" or "no." This question explores whether the student understands the value as a deontological value, meaning that this value is considered as an intrinsic value for the profession and thus must be compulsory. Second, the degree of importance of each value is required, ranking with a Likert scale from 0 to 7 (0 = not important at all; 7 = very important), the higher the score, the more important the value for the student. The reliability of the internal consistency of the AEPVQ has been previously analyzed and obtained a Cronbach alpha = 0.84 for the yes/no question, and a Cronbach alpha = 0.91 for the ranking Likert question.[35]

Perception of KPE was assessed by a 19-items self-reported questionnaire (Perceptions of Knowledge Regarding Professional Ethics in Physical Therapy, PKPEPT; Table S2, Supplemental Digital Content, http://links.lww.com/MD/H69, which illustrates this questionnaire, that evaluates perceptions of knowledge regarding professional ethics). The reliability of the internal consistency of the PKPEPT has been analyzed showing a value of Cronbach alpha = 0.76.[36] The questionnaire included basic professional ethical concepts that physical therapy students are required to know such as: moral and nonmoral values, ethical and legal professional act; deontological and behavioral codes; ethical problems, dilemmas, moral stress, and moral temptations; competences that characterize a good professional; autonomy, beneficence, nonmaleficence and justice; professional values; and bioethics and professional ethical principles established by the World Confederation of Physical Therapy[8] Items were shown in a 4-point Likert format, with scores ranging from 1 (none) to 4 (high),[36] thus, 76 being the maximum score. The higher score indicated the best perception of KPE.

2.4. Statistical analysis

Statistical analysis sere performed using SPSS v. 24.0 (SPSS Inc., Chicago, IL). Descriptive results of continuous data were expressed as mean and standard deviation, while nominal data were described as frequencies and percentages. For the analysis of continuous variables (i.e., level of importance of each value by the AEPVQ, and perception of KPE), 1-way analysis of variance was conducted with a between-subject factor "educational year" having 4 categories (i.e., first year, second year, third year, and fourth year). Normality of variable distribution

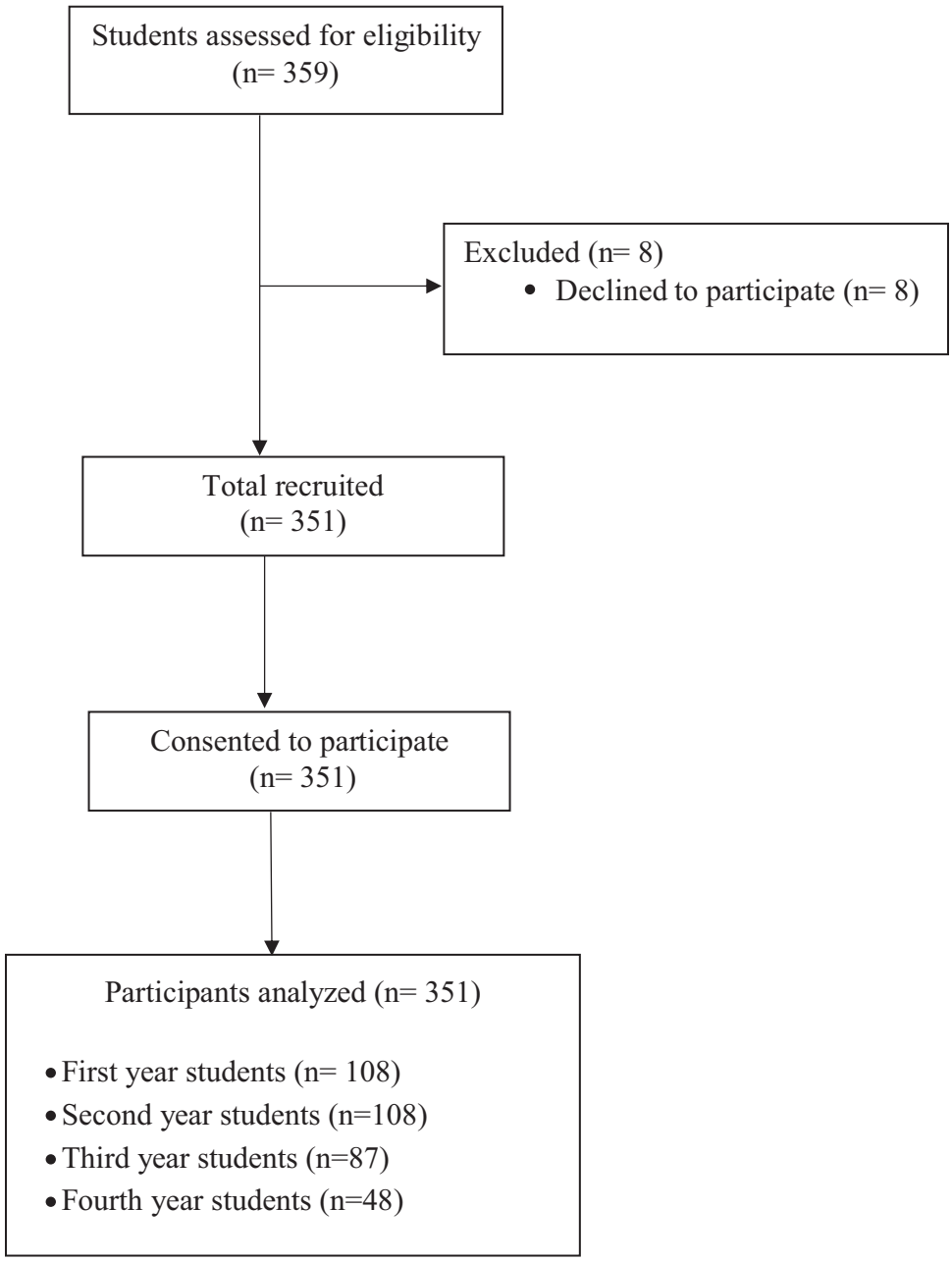

Figure 1. Flow diagram of study participation.

was checked by the Shapiro–Wilk test. Multiple comparison techniques were requested using the Bonferroni correction. We evaluated the assumption of homoscedasticity using Levene test and of sphericity using Mauchly test. For the categorical variables (i.e., PV considered compulsory by the AEPVQ), the chi-square test was performed. The α level was set below 0.05 for all tests. For the effect size of the continuous variables, Cohen *d* was computed, whereby the effect size was rated as follows: small (0.20–0.50), medium (0.50–0.80), or large (>0.80). For the categorical variables, the effect size was reported with the contingency coefficient (CC). An external assistant not involved in the study performed the statistical analysis.

2.5. Ethical considerations

The study protocol was approved by the Institutional Review Board of the University of Valencia, Spain (H1516821547258). The research was conducted according to the Declaration of Helsinki. All enrolled participants were informed of the purpose of the study and provided written informed consent. Participation in the study was voluntary. No incentives were provided for participation.

3. Results

From the 359 students, a total of 351 agreed to participate and were analyzed (response rate 97.77%), mean age 21.45 (4.73) years, 48.15% men. Demographic characteristics of the participants are depicted in Table 1.

3.1. Professional values

Table 2 shows the description of PV considered compulsory by students, for each educational year. Significant differences were found in the shared PV for: professional autonomy (χ^2 (3) = 16.97, $P < .001$, CC = 0.22) with a higher score in second, third,

Table 1

Demographic characteristics of the sample.

	First year n = 108 RR = 95,57%	Second year n = 108 RR = 97,29%	Third year n = 87 RR = 100%	Fourth year n = 48 RR = 100%	*P* value
Age, mean (SD)	21.3 (5.27)	21.1 (5.00)	21.0 (3.69)	23.4 (4.12)	.017
Gender, n (%)					
Male	54 (50.00)	58 (53.70)	33 (37.93)	24 (50.00)	.159
Female	54 (50.00)	50 (46.30)	54 (62.07)	24 (50.00)	
With family members working in health-related professions, n (%)					.187
No	71 (65.74)	69 (63.89)	46 (52.87)	33 (68.75)	
Yes	37 (34.26)	39 (36.11)	41 (47.13)	15 (31.25)	
Students chose the degree voluntarily, n (%)					NA
No	0 (0.00) 108	0 (0.00) 108	0 (0.00) 87	0 (0.00) 48	
Yes	(100.00)	(100.00)	(100.00)	(100.00)	
Students want to work as physical therapist when they finish their degree, n (%)					.022
No	1 (0.93) 107	1 (0.93) 107	2 (2.30)	4 (8.33)	
Yes	(99.07)	(99.07)	85 (97.70)	44 (91.67)	

n = number of subjects, NA = not applicable, RR = response rate, SD = standard deviation.

Table 2

Description of professional values considered compulsory by the Axiologic Estimation of Professional Values Questionnaire, for each educational year.

	Considered compulsory n (%)				
Ethical value	**First year n = 108**	**Second year n = 108**	**Third year n = 87**	**Fourth year n = 48**	**Total**
Shared PV					
Professional autonomy	62 (57.41)*,†,‡	84 (77.78)§	52 (78.79)§	38 (80.85)§	236 (67.24)
Benevolence	105 (97.22)	106 (98.15)	65 (98.48)	47 (100)	323 (92.02)
Scientific quality	95 (87.96)	101 (93.52)	62 (93.94)	38 (80.85)	296 (84.33)
Fellowship	103 (95.37)	102 (94.44)	65 (98.48)	45 (95.74)	315 (89.74)
Competence	102 (94.44)	101 (93.52)	63 (95.45)	43 (91.49)	309 (88.03)
Confidentiality	106 (98.15)	106 (98.15)	65 (98.48)	45 (95.74)	322 (91.74)
Scientific knowledge	105 (97.22)	106 (98.15)	63 (95.45)	44 (93.62)	318 (90.60)
Caring	107 (99.07)	105 (97.22)	65 (98.48)	45 (95.74)	322 (91.74)
Equity and nondiscrimination	108 (100)	107 (99.07)	66 (100)	47 (100)	327 (93.16)
Respect to patients autonomy	94 (87.04)‡	101 (93.52)	63 (95.45)	47 (100)§	305 (86.89)
Respect for life	106 (98.15)	106 (98.15)	66 (100)	46 (97.87)	324 (92.31)
Responsibility	107 (99.07)	108 (100)	66 (100)	46 (97.87)	327 (93.16)
Correct and friendly relationship	105 (97.22)	102 (94.44)	65 (98.48)	45 (95.74)	317 (90.31)
Vocation to serve	103 (95.37)‡	98 (90.74)	62 (93.94)‡	38 (80.85)†,§	301 (85.75)
Sincerity	86 (79.63)	95 (87.96)	60 (90.91)	39 (82.98)	280 (79.77)
Nonshared PV					
Hospitality	105 (97.22)	101 (93.52)	65 (98.48)	45 (95.74)	316 (90.00)
Personalized attention	97 (89.81)	98 (90.74)	61 (92.42)	44 (93.62)	300 (85.40)
Altruism	80 (74.07)	80 (74.07)	54 (81.82)	37 (78.72)	251 (71.51)
Closeness	95 (87.96)	89 (82.41)	60 (90.91)	43 (91.49)	287 (81.77)
Compassion	77 (71.3)	84 (77.78)	56 (84.85)	34 (72.34)	251 (71.51)
Diligence	68 (62.96)	72 (66.67)	43 (65.15)	36 (76.6)	219 (62.39)
Efficiency	101 (93.52)	104 (96.3)	60 (90.91)	45 (95.74)	310 (88.32)
Empathy	99 (91.67)	94 (87.04)	61 (92.42)	41 (87.23)	294 (83.76)
Fidelity	101 (93.52)	99 (91.67)	61 (92.42)	40 (85.11)	301 (85.75)
Honesty	105 (97.22)	101 (93.52)	63 (95.45)	46 (97.87)	315 (89.74)
Justice	94 (87.04)	95 (87.96)	59 (89.39)	42 (89.36)	290 (82.62)
Abnegation	21 (19.44)	22 (20.37)	18 (27.27)	8 (17.02)	69 (19.66)
Prudence	105 (97.22)	106 (98.15)	65 (98.48)	47 (100)	323 (92.02)
Simplicity	79 (73.15)	84 (77.78)	53 (80.3)	35 (74.47)	251 (71.51)
Tolerance	100 (92.59)	103 (95.37)	65 (98.48)	46 (97.87)	314 (89.46)

n = number of subjects, PV = professional values.

*$P < .01$ versus second.

†$P < .001$ versus third.

‡$P < .01$ versus fourth.

§$P < .001$ versus first.

Table 3

Description of the level of importance of each value by the Axiologic Estimation of Professional Values Questionnaire, for each educational year.

Ethical value	Level of importance Mean (SD)				Total
	First year n = 108	Second year n = 108	Third year n = 87	Fourth year n = 48	
Shared PV					
Professional autonomy	4.59 (1.81)	5.06 (1.67)	5.06 (1.45)	5.02 (1.84)	4.90 (1.71)
Benevolence	6.48 (0.8)	6.44 (0.85)	6.44 (0.98)	6.21 (1.08)	6.42 (0.9)
Scientific quality	5.56 (1.33)*	6.08 (1.05)†	6.05 (1.25)	5.66 (1.17)	5.84 (1.22)
Fellowship	6.28 (1.13)	6.18 (0.97)	6.32 (0.95)	5.98 (1.29)	6.21 (1.07)
Competence	5.88 (1.31)	6.11 (1.1)	5.94 (1.46)	5.57 (1.56)	5.92 (1.32)
Confidentiality	6.46 (0.93)	6.46 (0.97)	6.55 (0.96)	6.28 (1.08)	6.45 (0.97)
Scientific knowledge	6.3 (0.87)	6.38 (0.82)	6.12 (1.18)	5.98 (1.07)	6.24 (0.96)
Caring	6.24 (0.86)	6.08 (1.08)	6.26 (1.09)	5.96 (1.55)	6.15 (1.10)
Equity and nondiscrimination	6.69 (0.66)	6.64 (0.69)	6.71 (0.7)	6.66 (0.6)	6.67 (0.67)
Respect to patients autonomy	5.31 (1.42)*,‡	5.81 (1.15)†	5.82 (1.29)	5.94 (1.28)†	5.67 (1.30)
Respect for life	6.15 (1.12)§	6.48 (0.92)	6.56 (0.79)†	6.4 (0.95)	6.38 (0.98)
Responsibility	6.22 (0.94)	6.31 (0.78)	6.35 (0.99)	6.49 (0.83)	6.31 (0.89)
Correct and friendly relationship	6.19 (1.2)	6.22 (0.96)	6.38 (0.97)	5.87 (1.41)	6.19 (1.12)
Vocation to serve	6.14 (1.04)	5.99 (1.19)	6.02 (1.34)	5.66 (1.49)	6.00 (1.23)
Sincerity	5.31 (1.43)	5.79 (1.14)	5.7 (1.42)	5.34 (1.46)	5.55 (1.36)
Nonshared PV					
Hospitality	6.06 (1.02)	6.03 (1.2)	6.2 (0.96)	6.28 (0.83)	6.11 (1.05)
Personalized attention	5.66 (1.43)	5.81 (1.32)	5.8 (1.27)	6.13 (1.21)	5.80 (1.33)
Altruism	5.13 (1.51)	5.21 (1.42)	5.08 (1.67)	5.04 (1.69)	5.13 (1.54)
Closeness	5.85 (1.45)	5.81 (1.3)	5.92 (1.48)	5.89 (1.27)	5.86 (1.38)
Compassion	4.93 (1.69)	5.12 (1.66)	5.29 (1.54)	4.79 (1.72)	5.04 (1.66)
Diligence	4.51 (1.79)	4.79 (1.68)	5.03 (1.82)	5.04 (1.69)	4.78 (1.75)
Efficiency	5.7 (1.19)	5.85 (1.01)	5.7 (1.49)	5.7 (1.06)	5.75 (1.18)
Empathy	5.9 (1.27)	5.78 (1.48)	5.91 (1.21)	5.94 (1.29)	5.87 (1.33)
Fidelity	5.69 (1.39)	6 (1.18)	5.89 (1.37)	5.64 (1.5)	5.82 (1.34)
Honesty	6.03 (0.93)	6.02 (1)	6.25 (1.06)	5.87 (1.33)	6.05 (1.05)
Justice	5.41 (1.43)§	5.86 (1.43)	6 (1.45)†	5.51 (1.86)	5.69 (1.51)
Abnegation	2.9 (2.32)	3.5 (2.31)	3.49 (2.18)	2.66 (2.42)	3.17 (2.32)
Prudence	5.94 (1.03)	6.04 (1.06)	6.08 (1.07)	5.96 (1.38)	6.00 (1.10)
Simplicity	4.76 (1.73)	5.06 (1.63)	5.18 (1.52)	5.02 (1.64)	4.98 (1.64)
Tolerance	5.73 (1.2)	6.03 (1.11)	6.17 (1.2)	5.89 (1.27)	5.94 (1.19)

n = number of subjects, PV = professional values, SD = standard deviation.

*$P < .01$ versus second.

†$P < .001$ versus first.

‡$P < .01$ versus fourth.

§$P < .001$ versus third.

and fourth year in comparison with the first; respect to patients autonomy (χ^2 (3) = 8.54, $P = .036$, CC = 0.16), with differences between fourth and first educational year; and in vocation to serve (χ^2 (3) = 9.51, $P = .023$, CC = 0.17), with a higher score on first and third year in relation to fourth year. There were not significant differences between groups in any of the nonshared PV ($P > .05$).

Table 3 shows the level of importance of each PV by educational year. There is a statistically significant difference for the level of importance of the PVs between groups in scientific quality $F(3, 328) = 4.35$, $P = .005$, $\eta^2p = 0.04$; justice $F(3, 326) = 2.88$, $P = .036$, $\eta^2p = 0.03$; respect for life $F(3, 328) = 3.22$, $P = .023$, $\eta^2p = 0.03$; respect to patient's autonomy $F(3, 326) = 4.23$, $P = .006$, $\eta^2p = 0.04$; and sincerity $F(3, 328) = 2.86$, $P = .037$, $\eta^2p = 0.03$.

The post hoc analysis showed that first-year students showed a significantly lower score in their level of importance for shared PV: scientific quality ($P = .010$, Cohen $d = 0.44$) compared to second-year, respect for life ($P = .041$, Cohen $d = 0.44$) when compared to third year, and respect to patient's autonomy compared to second ($P = .025$, Cohen $d = 0.40$) and fourth year ($P = .033$, Cohen $d = 0.47$). In relation to nonshared PV, first-year students had lower significant differences than third-year students in justice ($P = .049$, Cohen $d = 0.41$). However, there were no significant statistical differences between groups in the rest of the variables ($P > .05$).

3.2. Perception about knowledge regarding professional ethics

There were statistically significant differences between groups for PKPEPT scores [$F(3, 346) = 92.56$, $P < .001$, $\eta^2p = 0.45$].

Table 4 shows total score in the PKPEPT questionnaire by educational year and the results of pairwise comparisons between groups. Perception of KPE was significantly lower in first-year students compared to the following years ($P < .001$ vs second, third, and fourth; Cohen $d = 2.46$, 1.31, and 1.64, respectively). Second-year students had significantly higher perception of KPE than those of the rest of the educational years ($P < .001$ vs first and third; $P = .006$ vs fourth; Cohen $d = 2.46$, 0.79, and 0.63, respectively). There were no significant differences among third and fourth-year students.

4. Discussion

The present study analyzed physical therapy students' PV and perception of KPE from first to fourth educational year of the Physical Therapy Degree. The results suggested that those PV highly considered by the students, were mainly shared PV, with equity and responsibility ranked highest, and abnegation lowest. Furthermore, second-year students had a well-established perception of KPE, showing a significant higher perception of KPE when compared to students of the rest of the educational years.

Table 4

Perception of Knowledge Regarding Professional Ethics in the 4 studied groups.

	First year n = 108		Second year n = 108		Third year n = 87		Fourth year n = 48	
	Mean (SD)	95% CI	Mean (SD)	95% CI	Mean (SD)	95% CI	Mean (SD)	95% CI
PKPEPT	36.29 (8.54)*,†,‡	34.66–37.92	55.65 (7.23)†,‡,§	54.25–57.05	48.68 (10.35)*,§	46.47–50.88	50.57 (8.84)*,§	48.98–53.17

CI = confidence interval, n = number of subjects, PKPEPT = Perception of Knowledge Regarding Professional Ethics, SD = standard deviation.

*$P < .01$ versus second.

†$P < .001$ versus third.

‡$P < .01$ versus fourth.

§$P < .001$ versus first.

To our best knowledge, this is the first cross-sectional study to assess PV and perception of KPE among physical therapy students. Although there is currently a growing interest in this subject, there is scarce literature that has focused on professional ethics in physical therapy.[1,4,16–19] In addition, few assessment tools for measuring perception of KPE for physical therapy students have been developed.[3,33,36]

In our study, there were differences in PV among the 4 educational years, with an increase of the importance of shared PV (such as scientific quality, respect for life, and respect for patient's autonomy), and nonshared PV (such as justice) in the second, third, and fourth year. A greater awareness of ethical and PV may be due to contact with reality through clinical practices implemented in the degree, and to increase of age, maturity, and emotional intelligence skills of the students throughout the training.[37]

This is in line with previous studies which assessed PV among nursing students.[37–44] Kaya et al[24] found differences in social values in 4-year nursing education. Specifically, students in second year had higher score in terms of social values than those in third year, and majority of students ranked human dignity as first, followed by justice. Lin et al[38] reported that total scores obtained for the revised Nurses Professional Values Scale during the senior year of the nursing program were significantly higher than upon program entry and students scored significantly higher on the professionalism and activism subscales at senior year. Aydin et al[45] reported that there were differences between first and fourth-year students, with the latter placing a greater emphasis on the attributes the students are expected to acquire through the training program and clinical experience, as in the present study.

Thus, PV have shown a trend of change in a positive direction between the beginning and the end of the university education.[45] In this line, in our study, professional autonomy and respect to patients autonomy increased from 57.41% to 80.85% and from 87.40% to 100%, respectively. However, nonshared PV were rated as less compulsory for the profession. Surprisingly, compassion was one of the PV considered less compulsory (71.51%), although it has been recognized as a key aspect of high-quality healthcare, particularly in palliative care.[46] Therefore, in order to improve students' perceptions of professional self-concept and PV, it is thought that students' awareness should be increased on these topics.[42] In addition, it is recommended that PV education is delivered with more effective methods, because this reflects positively in patient care.[47]

In this regard, the recent study of Kulju et al[19] showed that most of the physical therapists evaluated themselves highly ethically competent in all areas of ethical competence, subscales being strength, awareness, skills, and will. Willingness to do good was evaluated as highest, while character strength, including the strength to support ethical processes and speak on behalf of the patient, was evaluated the lowest. However, Aguilar et al[27] observed that the most important physical therapy PV went beyond philanthropic values, to values that guided every day practice, professional relationships, and the responsibilities of being a professional. In this regard, considering that education has a vital role in the acquisition and maintenance of PV,[24,45] and the influence of educational, cultural, and individual factors on the development of PV, it is recommended to emphasize the content related to ethical values in the students' study curriculum.[22,48]

Regarding students' perception of KPE, the PKPEPT questionnaire was used, which may be recommended to explore outcomes from a quantitative perspective.[36] Our results showed that first-year students had significantly lower perception of KPE than those of the other educational years, perhaps because in the first year the approach to physical therapy is carried out in a general way, without focusing on ethical issues. However, on the second year, students are taught about ethics, and this fact may explain the highest level of perception of KPE when compared to the rest of the years. Surprisingly, perception of KPE in the last 2 educational years of the degree was lower when compared to the second year. This fact should be considered in future planning of educational content about professional ethics. The last 2 educational years seem to be important when facing future ethical problems that may be presented to the students in their practices or even to future physical therapists in their daily practice as health professionals. Finally, no significant differences were observed between third and fourth educational years, although it is outstanding that their perception of KPE was maintained on a steady trend these 2 years. Other authors have assessed KPE in nurses, resident doctors, and physicians, concluding that KPE is essential to bridge the gap regarding the ethically sensitive situations they face in clinical practice.[7,49–52] This is in line with the idea that healthcare ethics implies various professions including nurses, physicians, physical therapists, or lab staffs.[49]

Moreover, the assessment of perception of KPE may allow to point out the needs and deficits of students. Ethical conduct of future professionals assures quality healthcare, thus knowledge about ethics is absolutely necessary.[53] Paying attention to ethical contents taught during the degree in order to provide quality care is important,[54] since lack of KPE can affect the professional routine of future physical therapists.

On the other hand, identifying the level of perception of KPE of physical therapy students according to different university years could influence the teaching methodologies, help their development in the curriculum and generate impact in the future practice. Therefore, it is necessary to publish new studies that include the level of perception of KPE of physical therapy students, in order to establish, with a solid base, the university curriculum for all levels. In addition, this event will ultimately have an obvious impact on clinical practice, taking into account how future professionals are trained. A solid foundation on professional ethics in university education should involve greater perception of KPE at a future work level, since KPE and its philosophical and axiological foundations should be used by physical therapists.[29] The increase of ethical issues in education, the acquisition of KPE and the use of innovative teaching-learning methodologies could be carried out and, therefore, contribute to the conception of professional ethics as a relevant issue in physical therapy students.

In summary, it is necessary to incorporate an adequate assessment of PV and perception of KPE in physical therapy students to adapt the teaching methods of ethics according to the detected needs. In addition, it could provide quality care in cooperation with other healthcare professionals.

4.1. Strengths and limitations

This study involved physical therapy students in only 1 physical therapy faculty, thus results cannot be generalized to all other physical therapy institutions. In addition, this study relied solely on the students' personal judgment on health PV and their perception of KPE, therefore this might be related to a lack of objective information. Our results may only reflect the partial reaching of KPE, although ethical competence of participants may not be guaranteed. Moreover, future research may include a greater sample. Our results have to be viewed with caution since results might not be representative of the wider physical therapy student population.

5. Conclusion

Students of the 4 educational years of the Physical Therapy Degree, considered equity as a highly compulsory PV and abnegation as the lowest compulsory PV. The level of importance of some of the values, and the perception of KPE among students varies depending on the educational year. In addition, physical therapy students from the second year have a well-established perception of KPE, showing significantly higher scores compared to the students of the rest of the years. Physical therapy educators might consider these findings for addressing teaching strategies which could guide students in developing awareness of professional values and perception of knowledge regarding professional ethics. Further research on the effectiveness of current ethics teaching would support the implementation of more evidence-based ethics education and training, and it could improve students' ability to resolve ethical dilemmas and probably their capacity in clinical daily practice.

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