

Development of the Professional Attitudes of Health Discipline Students' Scale

Sağlık Disiplini Öğrencilerinin Mesleki Tutum Ölçeğinin Geliştirilmesi

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ÖZET

Amaç: Bu araştırma, Sağlık Disiplini Öğrencilerinin Mesleki Tutumları Ölçeğini geliştirmek, güvenilirliğini ve geçerliliğini test etmek amacıyla yapılmıştır.

Yöntem: Bu, metodolojik bir araştırma çalışmasıdır. Araştırmanın evrenini Sağlık Bilimleri Fakültesi'nin tüm bölümlerinde öğrenim görmekte olan öğrencilerden oluşmuştur. Veriler, son sınıf 630 lisans öğrencisinden toplanmıştır. İstatistiksel analiz, açıklayıcı/doğrulamalı faktör analizini, iç tutarlılığı ve yapı geçerliliği kullanıldı.

Bulgular: Öğrencilerin %79,4'ünün kadın, %74,6'sının mesleğinden memnun olduğu belirlenmiştir. Öğrencilerin %61,6'sı bilimsel etkinliklere katılırken, %67,8'i herhangi bir sosyal etkinliğe katılmamıştır. Ölçeğin kapsam geçerlik indeksi 0.91 olarak tespit edilmiştir. Açıklayıcı faktör analizinde yer alan ölçek maddeleri, öz değeri 1'in üzerinde olan beş faktörde toplanmıştır; bu beş faktör genel varyansın %60,11'ini açıklamaktadır. Ölçeğin genel Cronbach alfa katsayısı .91'dir.

Sonuç: Bu bulgular sonucunda Sağlık Disiplini Öğrencilerinin Mesleki Tutumları Ölçeği geçerli ve güvenilir bulunmuştur. Bu ölçeğin öğrencilerin mesleki tutumlarının belirlenmesine, eksikliklerin giderilmesine, profesyonelliğin geliştirilmesine yönelik eğitim stratejilerinin geliştirilmesine ve farklı disiplinler arasında karşılaştırmalı araştırma yapılmasına olanak sağlamasına katkı sağlayacağı düşünülmektedir.

Anahtar Kelimeler: Profesyonellik, sağlık personelinin tutumu, öğrenciler, sağlık meslekleri, psikometri, anketler ve soru formları

ABSTRACT

Aim: This study was conducted to develop the Professional Attitudes of Health Discipline Students' Scale and for testing its reliability and the validity.

Methods: This is a methodological research study. The population of the study comprised the students who were studying in all departments of the Faculty of Health Sciences. Data was collected from 630 final-year undergraduate students. Statistical analysis examined exploratory/ confirmatory factor analysis, internal consistency, and construct validity.

Results: Our analysis showed that 79.4% of the students were female, 74.6% were satisfied with their discipline. 61.6% of the students participated in scientific activities, and 67.8% of them did not participate in any social activity. The content validity index of the scale was identified as 0.91. The scale items in the exploratory factor analysis were collected in five factors with eigenvalues over 1; these five factors explain 60.11% of overall variance. The overall Cronbach's alpha coefficient of the scale was .91.

Conclusions: As a result of these findings, the Professional Attitudes of Health Discipline Students' Scale was found to be valid and reliable. It is thought that this scale will contribute to determining the professional attitudes of the students, overcoming any deficiencies, developing educational strategies aimed at the development of professionalism, and allowing comparative research to be performed between different disciplines.

Key words: Professionalism, healthcare personnel attitude, students, health professions, psychometrics

Açıklama/Disclosure: Yazarların hiçbir, bu makalede bahsedilen herhangi bir ürün, aygıt veya ilaç ile ilgili maddi çıkar ilişkisine sahip değildir. Araştırma, herhangi bir dış organizasyon tarafından desteklenmedi. Yazarlar çalışmanın birincil verilerine tam erişim izni vermek ve derginin talep ettiği takdirde verileri incelemesine izin vermeyi kabul etmektedirler.

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INTRODUCTION

Universities are foundational institutions that equip aspiring professionals with the knowledge, skills, and attitudes necessary to meet societal needs through theoretical and clinical training (1,2). In the healthcare sector, cultivating professionalism is a paramount objective of this process, as it reflects a profession's progress toward achieving social status and standardized excellence (3). While the importance of instilling professional behaviors is widely recognized, achieving a cohesive professional identity remains a primary global challenge for healthcare programs (2,4). Developing professional attitudes such as autonomy, scientific contribution, and participation in professional organizations is essential for healthcare professionals to fulfill their roles competently. Although the literature extensively examines these criteria, current research predominantly focuses on single-discipline evaluation particularly within nursing (3-5). However, healthcare delivery is inherently an interdisciplinary team effort. A critical gap exists in the current literature: There is no valid and reliable measurement tool capable of assessing and comparing the professional attitudes of students across diverse health disciplines (nursing, dietetics, physiotherapy, midwifery, etc.) within a unified framework and common terminology. This deficiency hinders the development of holistic educational strategies and limits comparative research across disciplines.

Therefore, this study was conducted to develop the "Professional Attitudes of Health Discipline Students Scale" with an interdisciplinary approach. This scale will fill a methodological gap by providing a comprehensive tool to identify students' professional strengths and guiding the design of integrated educational programs aimed at enhancing professionalism across the entire healthcare team.

Aim: This study aimed to develop a scale of professional attitudes of health discipline student.

METHOD

Research Design

This study was conducted as a methodological research aimed at developing and psychometrically testing the "Professional Attitudes of Health Discipline Students' Scale" (3, 6). The study followed a systematic process including conceptualization, item generation, expert review, and field testing for validity and reliability.

Participants and Sampling

The study population consisted of 835 senior undergraduate students from the departments of Midwifery, Nursing, Nutrition and Dietetics, Physiotherapy and Rehabilitation, and Social Services at a public university. A stratified sampling method was employed to ensure representation from each discipline.

- Final Sample: 630 students participated in the study, which is considered "very good" to "excellent" for factor analysis (10).

- Test-Retest Group: 35 students were included in the stability analysis with a four-week interval.

- Inclusion Criteria: Being a senior student, being present during data collection, and providing voluntary consent.

Research Instruments and Scale Development Process

The development of the scale followed a multi-stage process based on the Professionalism Model by Miller (1988).

Item Generation: A literature review and focus group interviews were conducted with 18 students (three sessions) using a semi-structured guideline. The interviews focused on autonomy, scientific contribution, professional organization, social responsibility, and ethical values (7,9,12). An initial pool of 34 items was created.

Content Validity: A panel of 13 experts (representing all included health disciplines and psychometrics) evaluated the items using the Lawshe technique. The Content Validity Index (CVI) was calculated as 0.88. Based on expert feedback and a CVI threshold of 0.80, 5 items were removed, resulting in a 29-item draft scale.

Pilot Study: The first 40 surveys were analyzed as a pilot phase. No issues were identified in terms of clarity or statistical distribution, and these were included in the final sample.

Data Collection Procedures

Data were collected between September 2021 and May 2022. The researcher visited classrooms, explained the study's purpose, and distributed the questionnaires. The instruments included: Personal Information Form: 9 questions regarding socio-demographics and professional satisfaction. Draft Professional Attitudes Scale: A 5-point Likert-type scale ("1: Completely Disagree" to "5: Completely Agree").

Construct Validity of Professional Attitudes of Health Discipline Students' Scale: Confirmatory Factor Analysis (CFA)

For the construct validity of the prospective Professional Attitudes of Health Discipline Students' Scale, in order to verify the compliance of the six-factor (sub-dimensional) construct determined as a result of the EFA conducted with the half of the sample (N: 315), and the five-factor construct in which the Organization and Social Responsibility factors were combined, CFA was conducted with half of the sample (N: 315). The factor loads of the scale were found to be between .30 and .89 in the analysis conducted with six factors, and between .30 and .91 in the analysis conducted with five factors. As the compliance values were seen as valid, the analyses were continued with the five-factor construct.

Statistical Analysis

The data were analyzed using SPSS software. The following statistical procedures were performed:

- **Descriptive Statistics:** Percentages, means, and standard deviations for demographic data.

- **Construct Validity:** Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to determine and verify the sub-dimensions of the scale (4, 9).

- **Reliability Analysis:** Internal consistency was assessed using Cronbach's alpha (total and sub-dimensions). Pearson correlation and paired t-tests were used for the test-retest reliability to evaluate time-constancy. The Cronbach alpha reliability coefficient of the Professionalism Attitude Towards Students Scale was found to be Cronbach alpha= .91 for the entire scale.

- **Content Validity:** Lawshe's technique and CVI calculation.

RESULTS

Our analysis showed that 79.4% of the students were female, 74.6% were satisfied with their discipline. 61.6% of the students participated in scientific activities, and 67.8% of them did not participate in any social activity (Tablo 1). Researchers create an item pool by drawing on their professional experiences and previous studies, the literature, and the results of focus group sessions (3, 9). While creating the item pool and the semi-structured questions, the professionalism model developed by Miller (1998) and the study of Çelik et al. (2012), named "Instrument of Professional Attitude for Student Nurses (IPASN): A confirmatory factor analytic study" were taken into account.

The focus group interviews were conducted to identify the attitudes of the health disciplines students about professionalism. Interviews were performed three times each with six students (total 18). The semi-structured questions were: 1) Can a scientific contribution towards the profession be made? If yes, how? 2) Is there any professional autonomy in your profession? If there is, what does it consist? 3) Is there any professional organization in your profession? If there is, what is it? 4) Do professionals have any social responsibility? If so, how? 5) Are there any ethical values in your profession? If yes, what are they? (7, 9, 12). Statements about the students' attitudes towards professionalism were obtained as a result of these sessions. Focus group interview data were organized into common/similar themes through descriptive analysis. Based on the findings, five themes were identified: students' "scientific contribution to the profession," "professional autonomy," "professional organization," "professional responsibility," and "ethical values." Statements about the students' attitudes towards professionalism were obtained as a result of these sessions.

An expert panel was first conducted to determine the content validity of the 34 statements of the draft scale. As a result of the evaluation of the experts, five items were removed.

The statements of the students about their professional attitude consisted of 29 items and eight sub-dimensions. The sub-dimensions were: 1) Scientific contribution to the profession 2) Professional autonomy; 3) Professional organization participation; 4) Social responsibility; 5) Continuing education; 6) Professional competence; 7) Ethics; and 8) Theory.

Content Validity

The scale was sent to five experts to assess its content validity. Four of these experts were professionals who have conducted studies in this field and work in universities as faculty members. The other expert have worked in the field of statistics and were faculty members in the Department of Statistics. The experts were asked to answer the following questions: 1. Do the items have an interrogative feature? 2. Do the items evaluate attitudes towards professionalism? Content Validity Ratios (CVR) were calculated using Lawshe technique according to the views of the experts for each item as "appropriate or highly appropriate" using the following formula (12, 13):

$$[CVI = \text{Number of experts who label items Applicable and Very Applicable} / \text{Number of experts}]$$

The result showed that the scale had good content validity. The experts gave a scores of 3 or 4 to the 80% of the items. So the scale received a CVI score of 0.80 and above. It is recommended that items' CVI values should not be under 0.78 (Kitiş, Hisar, & Hisar 2020). While the CVI value of 15 items was 0.80, the others were found to be 1.00. Overall, the CVI value of the scale was identified as 0.912 and it was seen to be valid because the CVI was higher than 0.80.

Construct Validity

For the construct validity of the Professional Attitudes of Health Discipline Students' Scale explanatory/exploratory factor analysis was conducted with half of the sample (n: 315).

Item analysis

Descriptive statistics from, and the item-overall score correlations for, the Professional Attitudes of Health Discipline Students' Scale were prepared (n: 630). Because the item "I think about working towards protecting the health of society" (item 26) of the scale was not answered by the majority of the participants, this item was eliminated. When the skewness coefficients of the entire scale were evaluated, the skewness coefficient was found to be -1.76. When the item-overall score correlations of the remaining 28 items were considered for the reliability study of the scale, the correlation reliability coefficient of the item of "I am not thinking about doing a doctorate in my profession" (item 2) was found as $r = .08$, as well as being at a statistically significant level. It was identified that the item-overall score reliability coefficients of the other 27 items were between $r = .34$ and $.73$, positive-biased and statistically significant at quite an advanced level ($p < .001$). It

Table 1. Distribution of Descriptive Characteristics of Students Participating in the Study (n: 630)

Variables	N	%
Sex		
Female	500	79.4
Male	130	20.6
Type of High School Graduated		
Health Vocational High School	5	.8
Anatolian High School	395	62.7
High School	128	20.3
Science High School	93	14.8
Super High School	9	1.4
Working status		
Yes	47	7.5
No	583	92.5
Satisfaction with the department		
Satisfied	470	74.6
Not Satisfied	160	25.4
Reason for choosing the department *		
voluntarily	371	58.9
For his family's request	127	20.2
For ease of finding a job	164	26.0
Because the points are enough	84	13.3
Participation in scientific activities		
Yes	388	61.6
No	242	38.4
Participating in social activities		
Yes	203	32.2
No	427	67.8
Reselecting the section		
Yes	298	47.3
No	332	52.7

*More than one option is selected.

is 0.54. One item was eliminated from the scale because of a lack of answers and one item was eliminated from the scale because the item-overall score reliability coefficient was under $r = .25$. The reliability and validity analyses continued with the remaining 27 items of the prospective scale after these two items were eliminated.

The item "I intend to participate in activities to protect the health of the society" (item 26) of the Professionalism Attitude Towards Students scale was removed from the scale due to incomplete participant responses and the item "I do not intend to do a doctorate in my profession" (item 2) was removed from the scale due to its correlation reliability coefficient being below $r = .25$. The item-total score reliability coefficient of the other 27 items was found to be between $r: .34$ and $.73$, positively and statistically very significant ($p < .001$, Table 1). Validity and reliability analyses were conducted with the remaining 27 items of the scale, two of which were removed.

When the relationship between the sub-dimensions of the Professionalism Attitude Towards Students Scale and the total scale score was examined with Pearson correlation analysis, it

was determined that the reliability coefficients were between $r: .44$ and $.90$, positive and statistically very significant ($p < .001$, Table 3). The Cronbach alpha reliability coefficient of the Professionalism Attitude Towards Students Scale was found to be Cronbach $\alpha = .91$ for the entire scale. The internal consistency reliability number of the sub-dimensions of the scale was found to be $.87$ in the first (scientific contribution) sub-dimension, $.69$ in the second (autonomy) sub-dimension, $.81$ in the third (collaboration and community service) sub-dimension, $.83$ in the fourth (competence and continuing education) sub-dimension, and $.67$ in the fifth (ethics and theory) sub-dimension. (Table 3).

Exploratory Factor Analysis (EFA)

For the construct reliability of the Professional Attitudes of Health Discipline Students' Scale EFA was conducted. In examining the factor structure, Principal Components Analysis and the varimax rotation method were used. In the EFA conducted with the 27 items of Professional Attitudes of Health Discipline Students' Scale, the Kaiser-Meyer Olkin (KMO) coefficient was found to be $.87$ and the result of Bartlett's test was found to be significant in at quite an

Table 2. Descriptive Statistics and Item-Total Score Correlations of the Items of the Professionalism Attitude Scale Towards Students (n: 630)

Draft Scale Items	Min-Max	± SS	r	p
1. I am thinking of doing a master's degree in my profession	1-5	3.94±1.13	.53	.000
2. I do not plan to do a doctorate in my profession. (T)	1-5	2.91±1.32	.08	.000
3. I am thinking of writing articles in scientific journals on my field after beginning the profession.	1-5	3.26±1.25	.57	.000
4. I want to develop my knowledge about, and skills in, conducting research.	1-5	4.31±.93	.67	.000
5. I am considering participating in research related to my field/health.	1-5	4.17±1.00	.71	.000
6. I want to lead a research project.	1-5	3.96±1.10	.73	.000
7. Each profession's services must be managed by its own members.	1-5	4.70±.69	.34	.000
8. There must be a representative from each profession on the hospital board of directors.	1-5	4.46±.89	.36	.000
9. Decisions regarding each profession are made by the members of that profession.	1-5	4.47±.84	.36	.000
10. I am thinking of becoming a project manager/executive	1-5	3.71±1.11	.66	.000
11. I do not plan to become a member of international professional organizations related to my field. (T)	1-5	3.50±1.20	.45	.000
12. I do not plan to become a member of health organizations outside my field. (T)	1-5	3.57±1.17	.44	.000
13. I do not intend to participate in activities aimed at protecting the social rights of society. (T)	1-5	3.85±1.17	.44	.000
14. I plan to use the ethical codes related to my profession in my practices.	1-5	4.38±.84	.56	.000
15. I think I should have a certificate issued by the Ministry of Health related to my field.	1-5	4.43±.91	.42	.000
16. I think I should have a certificate (course certificate) issued by universities or professional organizations related to my field.	1-5	4.32±1.00	.48	.000
17. I think I should have a certificate issued by other institutions (hospital, etc.) related to my field.	1-5	4.21±1.04	.47	.000
18. I am considering becoming a member of associations/general purpose associations related to my field.	1-5	4.01±.98	.70	.000
19. I am considering becoming a member of special branch associations related to my field.	1-5	3.88±1.02	.60	.000
20. I am considering subscribing to periodicals (magazines, etc.) related to my field.	1-5	4.22±.90	.63	.000
21. I would like to take part in studies on quality assurance.	1-5	4.03±.99	.61	.000
22. I want to take part in ethics committees.	1-5	3.98±1.01	.65	.000
23. I plan to contribute to student education after graduation.	1-5	4.00±1.05	.56	.000
24. I would like to serve as a consultant/expert on issues related to my field.	1-5	4.10±.98	.64	.000
25. I am considering working in organizations that benefit society.	1-5	4.23±.87	.59	.000
26. I am considering participating in efforts to protect the health of society. (n= 249)	1-5	4.32±.79	-	-
27. I think I should have a copy of the National Code of Ethics relevant to my profession.	1-5	4.23±.88	.56	.000
28. I plan to benefit from models/theories related to my field in the planning of professional services.	1-5	4.36±.81	.63	.000
29. I do not intend to benefit from models/theories of disciplines outside my field in the planning of professional services. (T)	1-5	3.78±1.15	.35	.000

r: Pearson correlation analysis

Table 3. Correlations of Sub-Dimension Scores of the Professionalism Attitude Scale Towards Students with Total Scale Scores and Cronbach's Alpha Reliability Coefficients (n: 630)

Scale and Sub-Dimensions Coefficients	Sub-Dimension-Total Scale Correlation □		
	r	p	Cronbah alfa
Total Scale			.91
1. Providing scientific contribution to the profession	.90	.000	.87
2. Professional autonomy	.44	.000	.69
3. Organization and service to society	.84	.000	.81
4. Continuing Professional Development and Professional Competence	.53	.000	.83
5. Ethics and Theory	.72	.000	.67

Table 4. Exploratory Factor Analysis Results of The Professional Attitudes of Health Discipline Students' Scale (n: 315)

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1. I am thinking of doing a master's degree in my profession.	0.64					
2. I am thinking of writing articles in scientific journals on my field after beginning the profession.	0.66					
3. I want to develop my knowledge about, and skills in, conducting research.	0.68					
4. I am thinking about participating in research related to my field/health.	0.66					
5. I want to lead a research project.	0.71					
6. I am thinking about being a project coordinator/supervisor.	0.74					
7. I am thinking of subscribing to periodicals (journal etc.) related to my field.	0.61					
8. I am thinking of participating in student education after graduation.	0.55					
9. I want to become a leading expert/advisor in the subjects related to my field.	0.51					
10. The services offered by every profession should be managed by its own members.		0.74				
11. There must be a representative from all professions on the hospital management board.		0.73				
12. The decisions about every profession are made by the members of that profession.		0.78				
13. I am not thinking about being a member of international professional organizations related to my field. (T)*			0.81			
14. I am not thinking about being a member of health organizations not related to my field. (T)			0.81			
15. I am not thinking about participating in work that protects people's social rights. (T)			0.74			
16. I think that I should have a certificate related to my field given by the Ministry of Health.				0.71		
17. I think that I should have a certificate (course document) related to my field given by a university or professional organization.				0.85		
18. I think that I should have a certificate related to my field given by other institutions (hospitals etc.).				0.80		
19. I am thinking about becoming a member of organizations /general-purpose associations related to my field.					0.69	
20. I am not thinking about becoming a member of specialist associations related to my field.					0.70	
21. I want to participate in work about safeguarding the quality of services					0.62	
22. I want to be involved in ethical committees.					0.57	
23. I am thinking about working in social service organizations/charities					0.49	
24. I think of using the ethical codes related to my profession in my practice.						0.57
25. I think that there should be a copy of the national Ethical Codes related to my profession.						0.41
26. I am thinking about benefitting from the models/theories related to my field in planning professional services.						0.55
27. I am not thinking about benefitting from the models/theories of disciplines not related to my field in planning professional services. (T)						0.61
Eigenvalue	4.34	3.61	2.27	2.21	2.02	1.79
Variance explained by factors (%)	16.08	13.36	8.39	8.17	7.49	6.62
Explained total variance (%)			60.11			

T* Will be reverse scored

advanced level ($\chi^2 = 3611.624$; df: 351 p: .000). (Table 4).

Deciding the number of factors

In the EFA, the scale items were collected in six factors with eigenvalues over 1 (between 1.79 and 4.34) While the variance explained by the factors was between 6.62% and 16.08%, six factors explained 60.11% of the total variance. The factor loads of the scale items was found to be between .41 and .85. The first factor was named "Participating in the Increase of Scientific Knowledge", the second factor was named "Autonomy", the third factor "Organizing and Social Responsibility 1", the fourth factor "Competence and Continuing Education", the fifth factor "Organizing and Social Responsibility 2", and the sixth factor "Ethics and Theory". It was decided to approach the items in the third and fifth factors, which had common traits, as single factor because when they combined in a single dimension their compliance values and item-overall score reliability coefficients were confirmed by confirmatory factor analysis (Table 3).

Reliability findings of the scale

For the reliability test of this study, item analysis and internal consistency analysis were conducted. The reliability coefficients between the item scores and the overall scores of the Professional Attitudes of Health Discipline Students' Scale were found to have a positive bias and be statistically significant at a quite advanced level ($p < .001$) including r: .58 and .83 in the first factor (scientific contribution), r: .74 and .82 in the second factor (autonomy), r: .60 and .74 for the third factor (cooperation and social responsibility), r: .83 and .90 for the fourth factor (competence and continuing education), and r: .65 and .76 for the fifth factor (ethics and theory). When the relationship of the sub-dimensions of the Professional Attitudes of Health Discipline Students' Scale with the overall score of the scale was examined, it was found that their reliability coefficients were between r: .44 and .90, with a positive bias and at a statistically quite significant level ($p < .001$).

In the analysis conducted for testing the internal consistency of the Professional Attitudes of Health Discipline Students' Scale, the Cronbach's Alpha reliability coefficient was found to be $\alpha = .91$ for the entire scale. The internal consistency coefficient of the sub-dimensions of the scale was found to be .87 for the first sub-dimension (scientific contribution), .69 for the second sub-dimension (autonomy), .81 for the third sub-dimension (cooperation and social service), .83 for the fourth sub-dimension (competence and continuing education), and .67 for the fifth sub-dimension (ethics and theory). When the relation between the test-retest scores of the Professional Attitudes of Health Discipline Students' Scale and its sub-dimensions was examined, it was found that there was a positive bias and a statistically quite significant relation between them, including a very strong

relation between the overall scale score and the scores for the scientific contribution, ethics and theory sub-dimensions, and a strong relation between the overall scale score and the score for the organization and social responsibility sub-dimension ($p < .001$). It was also found that there were positive relationships at insignificant levels between the overall scale score and the autonomy sub-dimension scores obtained from the first and the second applications, which was a relation at a moderate level, and between the overall scale score and the competence and continuing education sub-dimension score, which was a relation at a weak level ($p > .05$).

Scoring the Scale

The professionalism attitude scale is a 5-point Likert-type scale. It has response keys of "Strongly disagree" (1), "Disagree" (2), "Undecided" (3), "Partially agree" (4), and "Strongly agree" (5). Items 12, 13, 14, and 27 are reverse-coded. Higher scores obtained after the reverse-coded items are translated indicate a high level of professionalism.

DISCUSSION

This study was conducted methodologically for the purpose of developing the Professional Attitudes of Health Discipline Students' Scale. Five factors were determined in the reliability and validity of this scale. These factors explained 60.11% of the total variance and the scale consisted of 27 items. The Cronbach's alpha reliability coefficient was $\alpha = .91$ for the entire scale and it had good cohesion criteria in the confirmatory factor analysis. For the validity of scale, content and construct validity methods were used. EFA was used for the construct validity. EFA is a multivariate statistical technique which aims to find conceptually significant and limited number of new variables through aggregating a large number of interrelated variables (10). Before EFA is performed for specifying the construct validity, the Bartlett's test is conducted and the KMO coefficient for evaluating the data cohesion is found. The result of the Bartlett's test is expected to be significant ($p < .05$) and the KMO value is expected to be over .50 (6). In evaluating the KMO value, a sample quantity of .90 and above is considered as excellent, between .80 and .90 as very good, between .70 and .80 as good, and between .50 and .70 as moderate. If the KMO value is under 0.50, it indicates that the sample quantity is insufficient for evaluation (8). While the KMO values in this study were supported by the criterion above, the sample quantity was found to be at a sufficient level and as significant at quite an advanced level.

For the validity of the scale, the distinctive features of the factor analysis were considered. FA was used within the framework of factor analysis. According to the results of the FA in our study, the scale consisted of five factors. The FA considered the correlation between the item and the factor and between the item and the entire scale, and to what extent the

factors explain the total variance (8, 14) . It is seen as sufficient when the variables included statistically in the analysis explain 2/3 of the total variance. However, it is difficult to reach this percentage in the social and behavioral sciences (10, 15). It is thus considered as sufficient in the social sciences when the variance rates are between 40% and 60% (3). When the variance explained is high, this is interpreted as an indicator that the related concept or construct is well-formed. In this study, the percentage can be considered as sufficient because the factors explain 60.11% of the total variance.

The overall Cronbach's alpha coefficient of the scale was .91 and the Cronbach's alpha coefficients of the sub-factors were between 0.77 and 0.87 .While the Cronbach's alpha coefficient in a Likert-type scale should be as close as possible to 1, values of .70 and above are considered as sufficient for the test reliability (5, 13) . Generally, if the reliability coefficient is around .70, this is considered as "sufficient", if it is around .80, this is considered as "very good" and if it is around .90, this is considered as "excellent" (8). The Cronbach Alpha coefficient obtained in the reliability analyses of the scale is 0.91, indicating a high level of internal consistency, similar to the findings of other researchers who developed scales in the health field in Türkiye (16,17) This shows that the instrument yields stable results in different health disciplines. The strength of the psychometric analyses makes our study methodologically compliant with Psychometrics standards. When the average scores of the Professional Attitudes of Health Discipline Students' Scale and its sub-dimensions obtained from the first application and the second application performed four weeks later were compared, it was found that there was no statistically significant difference in average scores for both the overall scale and the five sub-dimensions ($p > .05$). The fact that there was no difference between the scores for the first and the second measurements after a four-week interval is a sign of the reliability of the scale (8).

In particular, the "Professional Attitude Inventory in Nursing (HPTE)" developed by Geckil (2012) and the scales developed by Demirören et al. (2016) for medical students offer powerful tools specific to the relevant professional groups (16,17). However, considering the fact that healthcare services today are a multidisciplinary team-based care, the possibility of making comparisons between different branches with these scales is limited. The scale developed in our study responds to the "interdisciplinary" need emphasized by King et al. (2010); it provides the opportunity to evaluate the attitudes of students in different disciplines such as nursing, midwifery, nutrition and dietetics on a common denominator (19). The dimensions "Participating in the Increase of Scientific Knowledge", "Autonomy", "Organizing and Social Responsibility 1", "Competence and Continuing Education", "Organizing and Social Responsibility 2", and "Ethics and

Theory", which emerged as a result of the construct validity of our scale, are consistent with classical professionalism models in the literature. For example, the "autonomy" and "service consciousness" factors in the "Professionalism Inventory" revised by Hall (1968) and later by Snizek (1972) show parallelism with the autonomy and Organizing and Social Responsibility dimensions in our scale (20,21). Furthermore, similar to previous studies, "ethical sensitivity" was identified as one of the fundamental building blocks of professional attitude in our scale (3,4,18).

While most studies in the literature treat "professionalism" solely as a professional identity (3,4,18), this scale contributes to the creation of a common professional language for students in the health discipline. This will form the basis for designing educational programs that will support future health professionals in developing a "team member" consciousness while they are still students (3,4). Professionalism, in traditional educational models, often remains an abstract concept acquired through a "hidden curriculum." However, as emphasized concretizing professional values and attitudes in the early stages of the educational process is critically important (1,2). The data obtained from our scale allows educators to identify which sub-dimensions of professionalism (e.g., autonomy or ethical sensitivity) are lacking and to strengthen their curricula with simulation or clinical training modules that support these specific areas. This will ensure that building blocks such as "commitment to the profession" and "autonomy," as defined are acquired through systematic training, not by chance (3,4, 20,21).

CONCLUSION

These findings demonstrate that the Health Discipline Students' Professional Attitudes Scale is valid and reliable. This scale is a five-point Likert-type, 27-item scale with five sub-dimensions. Items 12, 13, 14, and 27 were reverse-coded for the scale's evaluation. Higher scores obtained after reverse-coding indicate a higher level of professionalism. It is believed that this scale will contribute to determining students' professional attitudes, addressing shortcomings, developing educational strategies for professional development, and conducting comparative research across disciplines.

Limitations of the research

The research can only be generalized to the sample studied. This study did not use a stratified sampling method. Furthermore, the participants were senior students and predominantly female. These factors impact the study's limitations and the generalizability of the results.

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