Agri 2022;34(4):245–253
doi: 10.14744/agri.2022.90018

ORIGINAL ARTICLE

Development of nursing students' attitudes scale toward pain assessment

Hemşirelik öğrencilerinin ağrı değerlendirmesine yönelik tutum ölçeğinin (HÖADTÖ) geliştirilmesi

Hülya BULUT,[1] Sevil GÜLER,[1] İnci MERCAN ANNAK,[1] Çiğdem BERK ÖZCAN[2]

Summary

Objectives: This study aims to the development of nursing students' attitudes scale toward pain assessment and establish its validity and reliability.

Methods: This was a methodological study conducted in the 2017–2018 academic year. The sample consisted of 300 nursing students attending at the Department of Nursing of Gazi and Selçuk Universities. First, a 51-item draft was developed based on a literature review and interviews with 25 students. Five experts were consulted for content validity. The items were revised, and six items were removed based on their feedback. The 45-item final version was applied to participants. Afterward, exploratory and confirmatory factor analyses were performed to determine the scale structure. Test-retest reliability was determined on 190 participants selected randomly from the sample.

Results: A 51-item draft was developed based on a literature review and interviews. Five experts were consulted for content validity, and six items were removed based on their feedback. The rotated principal component analysis revealed 15 items loaded on two factors. The total scale had internal consistency reliability (Cronbach's alpha; α) of 0.918 and test-retest reliability of 0.738.

Conclusion: Factor analyses showed that the scale had satisfactory construct validity and a two-factor structure. All α values were higher than 0.70, indicating that the scale had a satisfactory level of reliability. All in all, it is a valid and reliable scale that can be used to measure nursing students' attitudes toward pain assessment.

Keywords: Attitude scale; nursing; nursing student; pain assessment.

Özet

Amaç: Bu çalışmanın amacı, hemşirelik öğrencilerinin ağrı değerlendirmesine yönelik tutumlarını ölçmek için kullanılabilecek bir ölçek geliştirmek, geliştirilen ölçeğin geçerlilik ve güvenilirliğini değerlendirmektir.

Gereç ve Yöntem: 2018 eğitim öğretim yılında öğrenim gören 300 öğrenci ile metodolojik olarak yapıldı. Literatür taraması ve öğrenci görüşleri ile 51 maddelik bir ölçek oluşturuldu. Ölçek beş uzmanın görüşüne sunuldu, içerik ve kapsam değerlendirmesi yapıldı ve 45 maddelik son haline getirildi. Ölçek yapısının belirlenmesi için açıklayıcı ve doğrulayıcı faktör analizleri yapıldı. Ölçeğin güvenilirliğine ilişkin olarak, Cronbach Alfa (Crα) iç tutarlık katsayıları ve 190 öğrenci üzerinde ise test tekrar test güvenilirliği hesaplandı.

Bulgular: Yapılan döndürülmüş temel bileşenler analizi sonucunda ölçek 15 maddeden oluşan iki faktörlü bir yapıya ulaştı. Birinci faktör 12, ikinci faktör üç maddeden oluşmaktadır. Bu iki faktör tutum değişkenine ait toplam varyansın %65,953'ünü açıklamaktadır. Ölçeğin madde test korelasyonları hesaplandı ve 0,463 ile 0,924 arasında değerler bulundu. Yapılan iç tutarlılık güvenilirlik testi sonucunda ölçeğin Crα değeri 0,918; test tekrar test Crα değeri de 0,738 bulundu.

Sonuç: Faktör analizi sonucu ölçeğin, tatmin edici düzeyde yapı geçerliğine ve iki faktörlü yapıya sahip olduğunu belirtmektedir. Madde test korelasyonu bulguları ise ölçek maddelerinin geçerliğini ve aynı yapıyı ölçtüğünü göstermektedir. Ayrıca bütün Crα değerlerinin 0,70'ten yüksek olması ölçeğin tatmin edici düzeyde güvenilirliğe sahip olduğunu açıklamaktadır. Ölçeğin geçerlilik ve güvenilirliğine ait bulgular, üniversitede öğrenim gören hemşirelik öğrencilerinin ilgili özelliğe ilişkin tutumlarını belirlemek üzere kullanılabilir nitelikte olduğunu göstermektedir.

Anahtar sözcükler: Tutum ölçeği; hemşirelik; hemşirelik öğrencisi; ağrı değerlendirmesi.

[1]Department of Nursing, Gazi University Faculty of Health Sciences, Ankara, Türkiye
[2]Department of Nursing, Selcuk University, Akşehir Kadir Yallagöz Faculty of Health, Konya, Türkiye

Submitted ***(Başvuru):*** **04.08.2021** **Revised** ***(Revizyon):*** **18.10.2021** **Accepted** ***(Kabul):*** **29.11.2021** **Available online** ***(Online yayımlanma):*** **13.10.2022**

Correspondence: Öğr. Gör. İnci Mercan Annak. Gazi Üniversitesi, Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Ankara, Türkiye.
Phone: +90 - 312 - 216 26 01 **e-mail:** incimercanannak@gmail.com

Introduction

Pain is a universal and complex health problem experienced by all people through time. Pain is a personal, subjective experience influenced by the past experiences and emotional, social, and cultural factors.[1] The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience associated with actual or resembling that associated with, actual or potential tissue damage."[2] In the United States, more than 76 million people are estimated to experience acute, chronic, or post-surgical pain.[3] In Türkiye, 50–92% of patients experience pain.[4–9] According to Koçoğlu and Özdemir,[5] 78.6% of people have experienced pain in the past year, 77.1% have frequently experienced pain throughout their lifetime, and 38.8% experienced chronic pain. Acar et al.[4] found that 77.3% of surgical patients experienced pain. Kuru et al.[6] stated that 92.8% of 232 adults experienced pain in the 7 days, while Aydoğdu and Yilmaz[10] reported that 75% of the patients discharged after day surgery, within the first 24 h; they stated that 35.6% of them experienced pain within 2–7 days. Pain is a common problem, the treatment of which is still inadequate despite advances in health care.[11–14] If left untreated, pain reduces the quality of life, prolongs hospital stay, and increases mortality and morbidity.[3,4,11,13–18]

Pain should be prevented or taken under control because it has adverse health effects exacerbated by ineffective pain management. The first step of effective pain management is pain assessment. The right assessment allows us to reduce or control pain.[3,4,6,19,20] Health-care professionals should assess pain as regularly as blood pressure and follow it up as the fifth vital sign in all patients, especially after physical examination and surgery.[3,17,19,21–23] Pain, if not taken under control, causes physiological and mental disorders. Pain assessment is critical in pain management, but most health-care professionals are not fully informed about it.[1,4,15,24] Pain management depends not only on health-care professionals' knowledge but also on their attitudes toward pain.[13,14,16,18,25–27] Accurate pain assessment depends on health-care professionals' knowledge and interventions as well as patients' cultural values, beliefs, and perceptions. Health-care professionals should conceptualize pain as a subjective experience and recognize that each patient perceives pain differently.[17,23,28] However, some nurses have negative attitudes toward pain management and have a hard time believing that patients experience pain.[1,3,18,29,30] Research shows that nurses cannot assess pain accurately, or at all, due to lack of information, limited communication, workload, cultural differences, etc.[13,15,16,23,24,28] Sloman et al.[31] found that patients reported more post-operative pain than assessed by nurses. Özveren et al.[32] conducted that it was stated that most of the nurses did not find it necessary to evaluate the patients' pain and they evaluated the pain by observing the behavior of the patients. van Dijk et al.[23] determined that health-care professionals took into account their own cultural values rather than those of patients when assessing pain. All in all, nurses' attitudes toward pain play a crucial role in its assessment.

Nurses should be made more cognizant of pain to make sure that they can assess it accurately. The more information the nurses have on pain assessment, the more aware they are of it. Undergraduate education should also provide information and awareness training to ensure that students can assess pain accurately when they start out as professional nurses. Pain is one of the most frequently identified nursing diagnoses by nursing students in the literature.[33,34] Research shows that nursing students do not know much about pain assessment and, therefore, cannot perform it accurately.[1,35] Students can be turned into nurses who can perform accurate pain assessment not only by effective training but also by evaluating their attitudes toward pain assessment.[1,36] Yilmaz et al.[36] argued that nursing students receive adequate pain assessment training but have a hard time performing it accurately because they have negative attitudes toward it. Nursing students are expected to play an active role in pain treatment and management. Therefore, their attitudes toward it are of critical importance. There are published studies examining nursing students' thoughts on pain assessment.[1,3,18,24,36] However, there is no scale measuring their attitudes toward pain assessment. Therefore, this study aimed to develop a scale measuring nursing students' attitudes toward pain assessment.

Material and Methods

Research type

This methodological study aims to the development of nursing students' attitudes scale toward pain assessment (NSASPA) and establish its validity and reliability.

Population and sample

The study population consisted of all nursing students from the Nursing Departments of Gazi and Selçuk Universities in the 2017–2018 academic year. The sample consisted of 300 voluntary nursing students (2nd, 3rd, and 4th year students). The 1st year students were excluded because although they take the "pain assessment and management" course in the spring semester, they do not do clinical practice.

Research questions

Is the "NSASPA" developed by the researchers a valid and reliable measurement tool for determining nursing students' attitudes toward pain assessment?

Scale development

The first stage of scale development was to perform a literature review and conduct interviews with 25 nursing students to identify indicators regarding their attitudes toward pain assessment. A pool of 51 items was developed based on the literature review and interviews. Five experts were consulted for content validity. According to expert opinions, six items ("I use a pain rating scale in pain assessment," "I evaluate the patient's behavior in the assessment of pain," "I have sufficient knowledge in pain assessment," "I find the training I have received on pain assessment sufficient," "I'm curious about everything in pain assessment," and "I read articles on pain assessment") were removed from the scale and expression arrangements were made on two items. The remaining 45 items were revised based on expert feedback. Of the 45 items, 25 were positive statements, while 20 were negative statements about attitudes toward pain assessment. Nursing students used a 5-point Likert-type scale (1=Strongly disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, and 5=Strongly Agree) to evaluate the items. Afterward, exploratory and confirmatory factor analyses were used to determine the scale structure, and the internal consistency coefficient (Cronbach's alpha; Crα) was measured. Thirty items were removed because they were either unsuitable to the scale structure or were loaded on more than 1 factor. The remaining 15 items constituted the final version of the scale (Fig. 1).

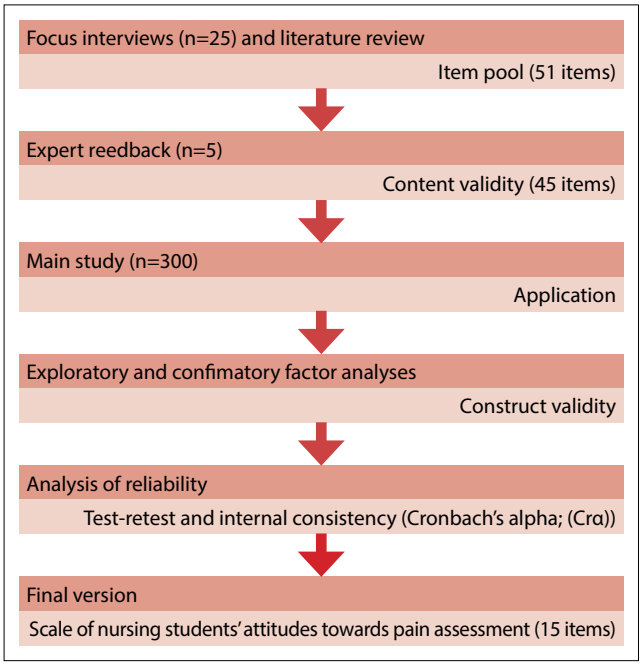

Figure 1. Stages of scale development

Data collection tools

Data were collected using a descriptive characteristics form (DCF) and NSASPA. The DCF consisted of nine items on age, gender, employment, pain experience, and views on pain assessment. NSASPA consisted of 45 items scored on a 5-point Likert-type scale (1=Strongly disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, and 5=Strongly agree). Thirty items were removed because they were either unsuitable to the scale structure or were loaded on more than 1 factor. The remaining 15 items were loaded on two factors with an eigenvalue (λ) of >1. Eigenvalue provides information on the importance and weight of each factor in a scale structure. Factor 1 consisted of 12 reverse-scored negative items about the significance of pain assessment (1=Strongly agree, 2=Agree, 3=Neither agree nor disagree, 4=Disagree, and 5=Strongly disagree). Factor 2 consisted of three positive items (1=Strongly disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, and 5=Strongly agree). The total score ranged from 15 to 75. Higher scores indicated more positive attitudes toward pain assessment.

Data collection

The 45-item NSASPA was applied to participants (n=300). Data collection lasted about 15 min.

Ethical and legal considerations

The study was carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki). Furthermore, it was approved by the Ethics Commission of Gazi University (Permission dated May 10, 2018, and numbered E.75218). Written permission was obtained from the Nursing Departments of Gazi (permission December

13, 2017, dated and E.177503 numbered) and Selçuk Universities (permission December 12, 2017, dated, E.126611 numbered). Students were informed about the study, and consent was obtained from those who agreed to participate.

Data analysis

Data were analyzed with SPSS 22.0, Lisrel and Amos to establish the validity and reliability of the scale using the following steps:

- Test-retest and Crα for reliability
- Item-test correlation for item validity
- The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity for principal component analysis
- Confirmatory factor analysis for scale – data agreement and construct validity
- The goodness-of-fit indices (Chi-square goodness [χ^2/df], goodness-of-fit index [GFI], root mean square error of approximation [RMSEA], comparative fit index [CFI], and normed fit index [NFI]) were used to determine how well the model fit the data.

Results

This section addressed the participants' demographic characteristics and the construct validity and reliability of the scale.

Demographic characteristics

Table 1 shows the participants' demographic characteristics.

Table 1. Demographic characteristics

Characteristics	n	%
Gender		
Woman	241	80.3
Man	59	19.7
Age (years)		
18–20	95	13.7
20–25	204	68
>25	1	0.3
University		
Gazi	183	61
Selçuk	117	39
Employment		
Yes	20	6.7
No	280	93.3
Pain experience		
Yes	296	98.7
No	4	1.3
Pain observation		
Yes	264	88
No	36	12
Presence of pain in the family		
Yes	296	88
No	4	12
Pain assessment status		
Yes	275	91.7
No	25	8.3

Construct validity

A rotated principal component analysis was used to determine the construct validity of the scale. The KMO measure of sampling adequacy was performed for sampling adequacy, while Bartlett's test of sphericity (Chi-square) was conducted to determine whether the data were suitable for principal component analysis. The closer the KMO is to 1, the more suitable the data are for factor analysis. The KMO was 0.939, for which the Bartlett's test of sphericity was significant (χ^2=3451.172; p<0.05), indicating sampling adequacy and a correlation between the items for factor analysis.

Factor analysis was used to achieve construct validity and to determine the structure or structures (factors) that the items measure. Thirty items were removed because they were either unsuitable to the scale structure or were loaded on more than one factor. The remaining 15 items were loaded on two factors with an eigenvalue of >1. The first factor (significance) consisted of 12 items (12, 13, 14, 19, 20, 21, 22, 25, 26, 28, 33, and 36) and had an eigenvalue of 7.955, accounting for 53.032% of the total variance. The second factor (interest) consisted of three items (16, 17, and 23) and had an eigenvalue of 1.938, accounting for 12.922% of the total variance. The two factors explained 65.955% of the total variance. The items had factor loadings of 0.463–0.924 (Table 2). These results indicated that NSASPA had satisfactory construct validity and a two-factor structure.

Item-test correlation was measured for item validity and homogeneity. The item-test correlations ranged from 0.406 to 0.902 (Table 3), suggesting that the items had validity and measured the same structure.

Table 2. Factor loadings

Items	F1	F2
12 I think that pain assessment is unnecessary.	0.899	
13 I do not like performing pain assessment.	0.831	
14 I would remove pain training from the undergraduate curriculum if I could.	0.876	
19 I do not think that pain assessment reflects the actual pain experienced by the patient.	0.463	
20 I do not think that pain assessment is necessary.	0.861	
21 I conduct a pain assessment because I have to.	0.871	
22 I think that it is a waste of time conducting a pain assessment.	0.924	
25 I get bored when conducting a pain assessment.	0.855	
26 I have a hard time concentrating when conducting a pain assessment.	0.864	
28 I do not believe that pain assessment is effective.	0.835	
33 I am hesitant to perform a pain assessment.	0.742	
36 I am aware of my own culture and family values regarding pain assessment.	0.627	
Factor 1 (significance) eigenvalue of 7.955 explaining 53.032% of the total variance		
16 I would like to receive more pain assessment training.		0.824
17 I volunteer to conduct pain assessment.		0.869
23 I enjoy conducting pain assessment.		0.684
Factor 2 (interest) eigenvalue of 1.938 explaining 12.922% of the total variance		
Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy coefficient	0.939	

Reliability

The 45-item scale had a Cronbach's alpha of 0.815, indicating that it was highly reliable. The 15-item scale (after factor analysis) had a Cronbach's alpha of 0.918. Test-retest reliability was determined on 190 participants selected randomly from the sample 3 months after the first test. Cronbach's alpha and item-test correlations were calculated for reliability and homogeneity (Table 3). NSASPA had a Crα of 0.939 and test-retest reliability of 0.738. Factor 1 had a Crα of 0.952 and test-retest reliability of 0.874. Factor 2 had a Crα of 0.709 and test-retest reliability of 0.792. These results showed that the scale had satisfactory reliability. The correlations between the scale and subscales ranged from 0.406 to 0.902 ($p<0.01$), indicating that the factors were the components of the scale.

Confirmatory factor analysis results

Confirmatory factor analysis was performed to evaluate the construct validity of the EFA model. The goodness-of-fit indices (χ^2/df, GFI, RMSEA, CFI, and NFI) were used to determine how well the model fit the data. The confirmatory factor analysis results (NFI=0.927; CFI=0.951; GFI=0.893) showed that the goodness-of-fit values were within acceptable ranges (Table 4).

The Chi-square goodness of fit (χ^2/df) was 2.69 ($p=0.000$). A χ^2/df of <2.5 in small sample sizes ($n<250$) or a χ^2/df of <3 in large sample sizes ($n>250$) indicates a perfect fit.[37,38] Our result showed a perfect fit for the data. The confirmatory factor analysis showed that NSASPA had a RMSEA of 0.075, suggesting that the scale and its subscales had acceptable compatibility with the data (Fig. 2).

Discussion

Nurses care for many patients with pain, which is a critical nursing intervention. The first step of treatment and care is accurately assessing pain. Basic training should focus on teaching nursing students how to adopt the right approach to patients with pain. Nursing students practice treating and managing pain during basic training. Health-care professionals' attitudes affect the care of patients with pain.[13,14,16,18,25,27] We should determine nurses' knowledge levels and attitudes to help them evaluate pain correctly. However, there is no scale measuring nursing students' attitudes toward pain assessment.

This is the first study to establish the validity and reliability of the NSASPA. It is a valid and reliable two-

Table 3. Mean (M), standard deviation (SD), item-test correlation, and Cronbach's alpha (Crα) values

Factor	Items no item	M	SD	Item-test correlation	Crα
Factor 1 significance					
	12 I think that pain assessment is unnecessary.	1.9067	1.34063	0.869	0.945
	13 I do not like performing pain assessment.	2.1567	1.25594	0.796	0.947
	14 I would remove pain training from the undergraduate curriculum if I could.	1.9633	1.38385	0.840	0.946
	19 I do not think that pain assessment reflects the actual pain experienced by the patient.	2.6100	1.08095	0.413	0.958
	20 I do not think that pain assessment is necessary.	2.0033	1.23087	0.829	0.946
	21 I conduct a pain assessment because I have to.	2.1867	1.20693	0.842	0.946
	22 I think that it is a waste of time conducting a pain assessment.	2.0500	1.26471	0.902	0.943
	25 I get bored when conducting a pain assessment.	2.2933	1.08530	0.822	0.947
	26 I have a hard time concentrating when conducting a pain assessment.	2.2533	1.13436	0.828	0.946
	28 I do not believe that pain assessment is effective.	2.2400	1.22505	0.798	0.947
	33 I am hesitant to perform a pain assessment.	2.4133	1.09841	0.697	0.950
	36 I am aware of my own culture and family values regarding pain assessment.	2.4567	1.02549	0.573	0.953
Factor 2 Interest					
	16 I would like to receive more pain assessment training.	3.8100	0.86587	0.552	0.587
	17 I volunteer to conduct pain assessment.	3.8433	0.89150	0.635	0.476
	23 I enjoy conducting pain assessment.	3.4567	0.88925	0.406	0.762
Factors	1. Factor	26.5333	11.64248		0.952
	2. Factor	11.11	2.10380		0.709
Total					0.939

factor instrument for nursing students. The 51-item draft scale was administered to 300 undergraduate nursing students.

The sampling adequacy of KMO and Bartlett's test of sphericity was used to determine the adequacy of the data for principal component analysis. The KMO was 0.939, for which Bartlett's test of sphericity was significant (χ^2=3451.172, p<0.05). The KMO should be >0.60.[39] A KMO of >0.90 indicates that the scale data have a multivariate normal distribution and a perfect fit for factor analysis.

Our KMO and Bartlett's test of sphericity results showed that the scale data were suitable for factor analysis.[40] The factor analysis revealed that the scale consisted of 15 items loaded on two factors: "Significance" (12 items) and "attention" (three items). In the factorial structure of the scale, factor eigenvalues in the two-factor construct ranged from 1.938 to 7.955, and the two factors explained 65.955% of the total variance.

Table 4. Model fit indices

Fitness indices	Value	Acceptable compatibility	Perfect compatibility
NFI	0.927	≥0.90	≥0.95
CFI	0.951	≥0.95	≥0.97
GFI	0.893	≥0.85	≥0.90
RMSEA	0.075	0.05–0.08	0.00–0.05
χ^2/df	2.69	<5	<3

NFI: Normed fit index; CFI: Comparative fit index; GFI: Goodness-of-fit index; RMSEA: Root mean square error of approximation; df: degree of freedom.

The items were then evaluated to check whether the values of overlap and factor loadings met the accep-

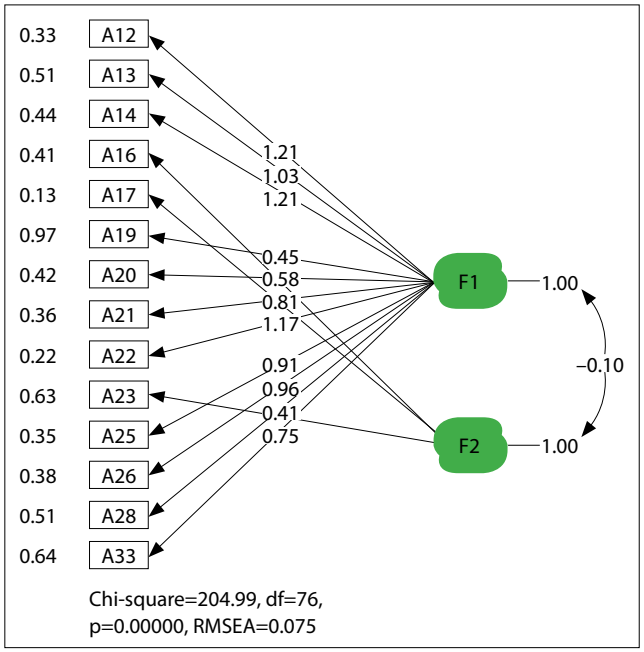

Figure 2. Confirmatory factor analysis.
df: degree of freedom; RMSEA: Root mean square error of approximation.

tance level. A factor loading >0.40 is often suggested for adequate item correlation with factors (subscales). In a multifactor construct, if an item is loaded on more than one factor with high loading values, the difference between the two load values should be at least 0.10. An item with high loading on more than 1 factor is removed from the scale because it is considered an overlapping item.[38,41] In the present study, scale item test correlations ranged from 0.406 to 0.902. All these results indicate that the scale has satisfactory construct validity.

For reliability, Crα values were calculated, and test-retest reliability was examined. A Crα of >0.70 indicates that the scale has satisfactory reliability.[42,43] An alpha coefficient smaller than 0.40 indicates unreliability, 0.40–0.59 poor reliability, 0.60–0.79 fair reliability, and 0.80–1.00 high reliability.[41,44] The NSASPA had a Crα of 0.918, indicating high reliability. Test-retest reliability analysis was performed with 190 students. The scale had a Crα of 0.939, indicating high reliability. Therefore, the NSASPA is a reliable instrument for measuring nursing students' attitudes toward pain assessment.

Confirmatory factor analysis was performed to test the fit of the scale with the sample data and the construct validity of the items under the factor. The fit indices, GFI, CFI, NFI, χ^2/df, and RMSEA, were used to evaluate the fit and to reveal the adequacy of the model. A χ^2/sd of <3 indicates "perfect fit." An RMSEA of smaller than 0.08, a GFI of >0.85, an NFI of >0.90, and a CFI of >0.95 indicates "acceptable fit."[37,38,45–47] The analysis showed that the NSASPA had an χ^2/df, GFI, NFI, CFI, and RMSEA of 2.69, 0.893, 0.927, 0.951, and 0.075, respectively. The goodness-of-fit values were within "acceptable and excellent" limits, confirming the two-factor structure of the model.

The remaining 15 items were loaded on two factors with an eigenvalue (λ) >1. Factor 1 consisted of 12 reverse-scored negative items on the significance of pain assessment (1=Strongly agree, 2=Agree, 3=Neither agree nor disagree, 4=Disagree, and 5=Strongly disagree). Factor 2 consisted of three positive items (1=Strongly disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, and 5=Strongly agree). The total score ranged from 15 to 75. Higher scores indicated more positive attitudes toward pain assessment.

The results show that the NSASPA is a valid and reliable instrument for measuring nursing students' attitudes toward pain assessment. Researchers should evaluate the validity and reliability of the scale on students and professionals from different fields. This study had one limitation. The results are sample specific and, therefore, cannot be generalized to the whole population.

Ethical Approval: The study was approved by The Gazi University Ethics Committee (Date: 10/05/2018, No: E.75218).

Conflict-of-interest issues regarding the authorship or article: None declared.

Financial Disclosure: This study has no funding or sponsor.

Peer-review: Externally peer-reviewed.

References

1. Dirimeşe E, Özdemir FK, Şahin ZA. Nursing students' knowledge of related to pain management, cultural awareness and competence. Gümüşhane Univ J Health Sci 2016;5:1–6.
2. International Association for the Study of Pain (IASP). Terminology. Available at: https://www.iasp-pain.org/Education/Content.aspx?ItemNumber=1698. Accessed May 16, 2019.
3. Baker DW. History of the joint commission's pain standards: Lessons for today's prescription opioid epidemic. JAMA 2017;317:1117–8. [CrossRef]
4. Acar K, Acar H, Demir F, Aslan FE. Determining the satisfaction level of patients after postsurgical pain treatment. J Nurs 2016;19:86–91. [CrossRef]

5. Koçoğlu D, Özdemir L. The relation between pain and pain beliefs and sociodemographic-economic characteristics in an adult population. Ağrı 2011;23:64–70.
6. Kuru T, Yeldan İ, Zengin A, Kostanoğlu A, Tekeoğlu A, Akbaba YA, et al. The prevalence of pain and different pain treatments in adults. Ağrı 2011;23:22–7. [CrossRef]
7. Ada M, Yılmaz E. Pain behaviors in patients under mechanical ventilatory support during intravascular interventions. J Health Sci Kocaeli Univ 2020;6:138–44. [CrossRef]
8. Sayar S, Ergin D. Examination of the effect of music upon the postoperative pain management in pediatric patients who are hospitalized in the orthopedics service. Dokuz Eylul Univ Fac Nurs Elec J 2019;12:67–73.
9. Yurtseven Ş, Deniz Doğan S, Arslan S, Nazik E, Erden Yüksekkaya S. Assessment of postoperative pain intensity using different pain scales. Turkiye Klinikleri J Nurs Sci 2021;13:1–7. [CrossRef]
10. Aydoğdu Ö, Yılmaz DÜ. Patient's experiences and difficulties at home following day surgery. Turkiye Klinikleri J Nurs Sci 2020;12:1–9. [CrossRef]
11. Aslan F, Dikmen BT. The knowledge of pain management among nursing students. Cyprus J Med Sci 2021;6:222–9.
12. Chou R, Gordon DB, de Leon-Casasola OA, Rosenberg JM, Bickler S, Brennan T, et al. Management of postoperative pain: A clinical practice guideline from the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, executive committee, and administrative council. J Pain 2016;17:131–57.
13. Medrzycka-Dabrowka W, Dąbrowski S, Gutysz-Wojnicka A, Gawroska-Krzemińska A, Ozga D. Barriers perceived by nurses in the optimal treatment of postoperative pain. Open Med (Wars) 2017;12:239–46. [CrossRef]
14. Yılmaz F, Atay S. Clinical pain management of nursing students. J Hacettepe Univ Fac Nurs 2014;1:32–41.
15. Collados-Gómez L, Camacho-Vicente V, González-Villalba M, Sanz-Prades G, Bellón-Vaquerizo B. Neonatal nurses' perceptions of pain management. Enferm Intensiva (Engl Ed) [Article in Spanish, English] 2018;29:41–7. [CrossRef]
16. Dikmen Y, Usta YY, İnce Y, Gel KT, Kaya MK. Determining of nurses' knowledge, behavior and clinical decision making regarding pain management. J Complement Med 2012;2:162–72.
17. Mandell BF. The fifth vital sign: A complex story of politics and patient care. Cleve Clin J Med 2016;83:400–1. [CrossRef]
18. Nesbitt J, Moxham S, Ramadurai G, Williams L. Improving pain assessment and managment in stroke patients. BMJ Qual Improv Rep 2015;4:u203375.w3105. [CrossRef]
19. Gordon-Williams R, Trigo A, Bassett P, Williams A, Cone S, Lees M, et al. An interactive pain application (MServ) improves postoperative pain Management. Pain Res Manag 2021;2021:8898170. [CrossRef]
20. Lowey SE. Management of severe pain in terminally Ill patients at home: An evidence-based strategy. Home Healthc Now 2020;38:8–15. [CrossRef]
21. Carroll KM. Use without consequences? A commentary on Bonn et al. (2020). J Stud Alcohol Drugs 2020;81:561.
22. Silva LMD, Paula ECD, Silveira SQ, Abib ADCV, Nunes WPDM, Sasaki HH. Impact of educational strategies on pain control quality indicators at a tertiary hospital. BrJP 2020;3:342–7. [CrossRef]
23. van Dijk JF, Schuurmans MJ, Alblas EE, Kalkman CJ, van Wijck AJ. Postoperative pain: Knowledge and beliefs of patients and nurses. J Clin Nurs 2017;26:3500–10. [CrossRef]
24. Mohamadamini Z, Namnabati M, Marofi M, Barekatein B. Four components of pain management in Iranian neonatal Intensive Care Units: The nurses' and physicians' viewpoint. J Educ Health Promot 2017;6:64.
25. Alkhatib GS, Al Qadire M, Alshraideh JA. Pain management knowledge and attitudes of healthcare professionals in primary medical centers. Pain Manag Nurs 2020;21:265–70.
26. Dharmalingam TK, Muniandy RK. Doctors' knowledge and attitudes on pain assessment and management in Queen Elizabeth Hospital, Kota Kinabalu, Sabah. Med J Malaysia 2020;75:68–73.
27. Makhlouf SM, Pini S, Ahmed S, Bennett MI. Managing pain in people with cancer-a systematic review of the attitudes and knowledge of professionals, patients, caregivers and public. J Cancer Educ 2020;35:214–40. [CrossRef]
28. Jang JH, Park WH, Kim HI, Chang SO. Ways of reasoning used by nurses in postoperative pain assessment. Pain Manag Nurs 2020;21:379–85. [CrossRef]
29. Alotaibi K, Higgins I, Chan S. Nurses' knowledge and attitude toward pediatric pain management: A cross-sectional study. Pain Manag Nurs 2019;20:118–25. [CrossRef]
30. El-Aqoul A, Obaid A, Jarrah I, Al-Rawashdeh K, Al Hroub A. Effectiveness of education program on nursing knowledge and attitude toward pain management. Asia Pac J Oncol Nurs 2020;7:382–8. [CrossRef]
31. Sloman R, Rosen G, Rom M, Shir Y. Nurses' assessment of pain in surgical patients. J Adv Nurs 2005;52:125–32. [CrossRef]
32. Özveren H, Faydalı S, Gülnar E, Dokuz HF. Attitude and applications of nurses to evaluate pain. J Contemp Med 2018;8:60–6. [CrossRef]
33. Basit G, Korkmaz F. The effect of web-based nursing process teaching on senior nursing students' care planning skills. Int J Nurs Knowl 2021;32:4–19. [CrossRef]
34. Bölükbaş N, Irmak B, Bulut G, Özdemir DAÖ, Bayrak HY. Evaluation of nursing diagnoses and interventions determined by students in surgical diseases nursing summer internship files. Ordu Univ J Nurs Stud 2020;3:1–9. [CrossRef]
35. Kusi Amponsah A, Kyei-Dompim J, Kyei EF, Oduro E, Afaya RA, Ahoto CK. Final year nursing students' knowledge and attitudes regarding children's pain. Pain Res Manag 2020;2020:7283473. [CrossRef]
36. Yılmaz M, Özüm Ü, Gürler H, Çifçi ES. Sağlık alanında eğitim alan üniversite öğrencilerinin ağrı kavramına ilişkin bilgileri. Hemşirelikte Araştırma Geliştirme Derg 2010;12:17–27.
37. Byrne BM. Structural Equation Modeling with AMOS basic concepts, applications, and programming. 3rd ed. New York: Routledge; 2016. [CrossRef]
38. Çokluk Ö, Şekercioğlu G, Büyüköztürk Ş. Sosyal bilimler için çok değişkenli istatistik ve lisrel uygulamaları. 5. Baskı. Ankara: Pegem Akademi Yayıncılık; 2018. p.271.

39. Büyüköztürk Ş. Sosyal bilimler için veri analizi el kitabı. Ankara: Pegem Akademi Yayıncılık; 2020.
40. Kılcan B, Ergür Ş. Finansal Tutum Ölçeğinin (FTÖ) geliştirilmesi: Geçerlik ve güvenirlik çalışmaları. Gelecek Vizyonlar Derg 2019;3:59–68. [CrossRef]
41. Tavşancıl, E. Tutumların ölçülmesi ve SPSS ile veri analizi. 5. Basım. Ankara: Nobel Akademik Yayıncılık; 2014.
42. Çetin Ş, Çetin F. Öğrenmeye yönelik tutum ölçeği (ÖYTÖ) geliştirme çalışması. Türk Eğitim Bilimleri Derg 2019;17:140–57.
43. Ghasemi V, Ebadi A, Kariman N, Ozgoli G, Gharenaz MS, Fakari FR, et al. Translation and psychometric evaluation of the Iranian version of Iowa infant feeding attitude scale (IIFAS). Int J Pediatr Mashhad 2018;6:8549–59.
44. Özdamar K. Paket programlar ile istatistiksel veri analizi. 1. Baskı. Eskişehir: Nisan Kitabevi; 2013.
45. Chan HWQ, Sun CFR. Scale development: Chinese irrational beliefs and rational attitude scale. PsyCh J 2019;8:122–36. [CrossRef]
46. Öncü E, Selvi H, Vayisoğlu SK, Ceyhan H. Development of an Attitude Scale for Brain Drain among nursing students: A reliability and validity study. Cukurova Med J 2018;43:207–15. [CrossRef]
47. Sun H, Teh PL, Linton JD. Impact of environmental knowledge and product quality on student attitude toward products with recycled/remanufactured content: Implications for environmental education and green manufacturing. Bus Strategy Environ 2018;27:935–45. [CrossRef]