ORIGINAL ARTICLE

Nursing students' pain beliefs and attitudes toward pain assessment: A descriptive study

⬤ **Burçin Irmak,**[1] ⬤ **Nurgül Bölükbaş,**[1] ⬤ **Ayşe Gümüş,**[2] ⬤ **Yüsranur Günday**[3]

[1]Department of Surgical Nursing, Ordu University Faculty of Health Sciences, Ordu, Türkiye
[2]Department of Surgery, Şebinkarahisar State Hospital, Giresun, Türkiye
[3]Department of Intensive Care Unit, Ünye State Hospital, Ordu, Türkiye

SUMMARY

Objectives: This study investigated nursing students' pain beliefs and attitudes toward pain assessment.

Methods: The sample consisted of 365 nursing students from a state university in the Central Black Sea Region of Türkiye. The research was conducted between May 5th and June 9th, 2023. Data were collected using a student information form, the Pain Beliefs Questionnaire (PBQ), and the Nursing Students' Attitudes Scale toward Pain Assessment (NSASPA). The data were analyzed using descriptive statistics, the independent sample t-test, the One-Way ANOVA test, the Tukey test, and the Pearson correlation test.

Results: Participants had a mean PBQ and NSASPA score of 3.13±0.52 and 57.66±7.47, respectively. Fourth-year students had significantly higher mean NSASPA total and subscale scores than first-year students (p=0.000). Participants who knew about pain assessment tools had significantly higher mean NSASPA total and subscale scores than those who did not (p=0.000). Participants who had used a standardized measurement tool for pain assessment before had significantly higher mean NSASPA total and subscale scores than those who had not (p=0.000). The PBQ total scores were very weakly correlated with the NSASPA total scores (r=0.125, p=0.017).

Conclusion: Participants' attitudes toward pain assessment were negatively correlated with their pain beliefs. Therefore, nursing educators should revise the curriculum to help nursing students develop positive pain beliefs and positive attitudes toward pain assessment.

Keywords: Nursing; nursing students; pain; pain assessment; pain beliefs.

Introduction

Pain is an unpleasant experience that people encounter at various points in their lives, prompting them to seek assistance from healthcare professionals.[1,2] Zimmer et al.[3] analyzed 52 countries and reported that the prevalence of pain ranged from 9.9% to 50.3%. Eti Aslan and Çınar[2] found that the majority of Turkish adults experienced pain at various points in their lives (80.84%). Nurses care for many patients with pain symptoms.[4] Pain is one of the most frequently identified nursing diagnoses by both nurses[4,5] and nursing students.[6,7] Pain is a complex and multifactorial sensation influenced by various cognitive, behavioral, sensory, environmental, and cultural factors.[2] Beliefs are critical cognitive factors affecting pain.[8,9]

Pain assessment and management are common nursing practices.[10] Effective pain management is crucial for maintaining quality care, shortening hospital stays, and reducing mortality and morbidity rates.[11,12] Nurses should conduct comprehensive physical examinations and clinical interviews to gather information about the location, source, type, intensity, duration, and psychosocial effects of pain.[13,14] Evaluating pain can be challenging due to its subjective nature and considerable variability between individuals.[1,15] To accurately diagnose and treat pain, standard assessment tools that are both valid and reliable are required. These tools help in identifying differential diagnoses, determining appropriate treatments, and assessing the need to continue or modify treatment plans.[16]

Research shows that care outcomes and pain levels depend on nurses' knowledge, attitude, and behavior.[1,17] The effectiveness of pain management is not solely determined by nurses' knowledge level; their attitudes toward pain also play a significant role.[13] Nurses should strive to excel in data collection, patient interaction, assessment, and clinical decision-making related to pain management. This is crucial because experiencing pain can have adverse effects on individuals.[1,4] Research shows that nurses' attitudes and misconceptions play a significant role in pain assessment and management decisions, often more so than the patients' actual conditions.[9,13] Nursing students are expected to actively engage in and take responsibility for the treatment and management of pain as part of their nursing care processes.[18] While some researchers have assessed nursing students' pain beliefs[9,19] and attitudes toward pain assessment,[13,20] no researchers have ever examined the relationship between nursing students' pain beliefs and attitudes toward pain assessment. Therefore, we believe that our results will encourage educators to revise the nursing curriculum.

Research Questions

- What are nursing students' pain beliefs?
- What are nursing students' attitudes toward pain assessment?
- Is there a relationship between nursing students' pain beliefs and attitudes toward pain assessment?

Material and Methods

Design

This study had a descriptive design.

Participants and Sample Size

The research was conducted at the Nursing Department of the Faculty of Health Sciences of a state university in the Central Black Sea Region from May 5th, 2023, to June 9th, 2023. The study population consisted of 475 nursing students, including 108 first-grade, 113 second-grade, 113 third-grade, and 141 fourth-grade students in the spring semester of the 2022-2023 academic year. No sampling was performed. Eight students were absent during the study, five students failed to complete the data collection tools,
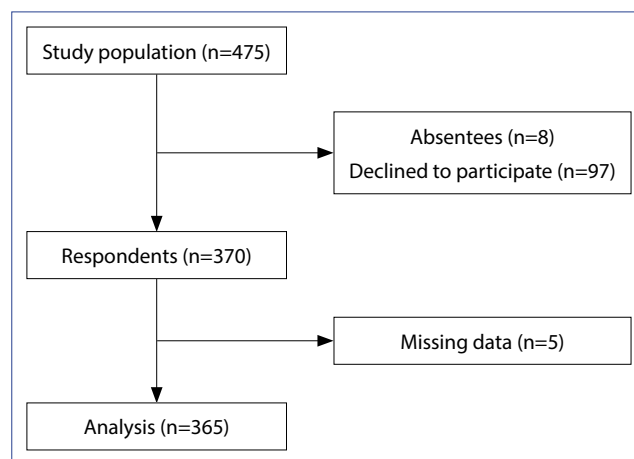

Figure 1. Flow diagram.

and 97 students declined to participate. Therefore, the final sample consisted of 365 nursing students (participation rate: 76.84%) (Fig. 1).

Data Collection Tools

- Student Information Form: Developed by the researchers,[9,13,19] this form consisted of eight items (age, gender, grade, pain experience, use of non-pharmacological methods for pain management, observation of a patient experiencing pain, knowledge of pain assessment tools, and the use of a pain assessment tool).

- Pain Beliefs Questionnaire (PBQ): The PBQ was developed by Edwards et al.[21] and adapted into Turkish by Sertel Berk.[8] It consists of 12 items divided into two subscales: (1) organic beliefs and (2) psychological beliefs. The organic subscale suggests that pain is primarily of organic origin, while the psychological subscale suggests that the pain experience is influenced by psychological factors. The items are rated on a six-point Likert-type scale (1=never to 6=always). Subscale scores are calculated by dividing the total score of the subscale by the number of items in that subscale. Higher scores indicate stronger pain beliefs.

- Nursing Students' Attitudes Scale toward Pain Assessment (NSASPA): The NSASPA was developed by Bulut et al.[13] It consists of 15 items across two subscales: (1) significance (items 1-12) and (2) interest (items 13-15). The items are rated on a five-point Likert scale (1=strongly disagree to 5=strongly agree). Items in the significance subscale are reverse-scored. Total scores range from 15 to 75, with higher scores indicating more positive attitudes toward pain assessment.

Procedures

This was a single-stage study. All students were briefed on the research purpose and procedure. Face-to-face interviews were held from May 5th to June 9th, 2023. It took each participant 10–15 minutes to complete the data collection tools.

Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS, v18.0) with a significance level of 0.05. The independent variables were descriptive characteristics, while the dependent variables were scale scores. Skewness and kurtosis values were used for normality testing, with values ranging from +1.5 to -1.5, indicating normal distribution.[22] Descriptive statistics, including means, standard deviations, percentages, minimum, and maximum values, were used. An independent group t-test was employed for two-group comparisons, while one-way analysis of variance (ANOVA) was used for multiple-group comparisons. Relationships between scale scores were analyzed using Pearson's correlation test.

Ethical Considerations

Authorization was obtained from the developers or adapted of the scales. The study was approved by the Non-Invasive Clinical Research Ethics Committee of Ordu University (No. 38, date: 03.02.2023). Permission was obtained from the higher education institution (No. E-81515450-900-0830295, date: 31.01.2023). Verbal and written consent was obtained from all participants. The study adhered to the ethical principles outlined in the Declaration of Helsinki.

Results

Participants had a mean age of 21.08±1.87 years. More than a quarter of the participants were second-year students (28.8%). Most participants were women (78.9%). The majority of participants had experienced pain at least once in the past (90.7%). Most participants used non-pharmacological methods to manage pain (78.9%). Almost all participants had cared for a patient in pain (97.5%). The majority of participants were aware of standard measurement tools for pain assessment (78.1%). More than half of the participants had used a standard measurement tool for pain assessment before (65.8%) (Table 1).

Table 1. Descriptive characteristics (n=365)

Variables	n	%
Age (years), Mean±SD (Min–Max)	21.08±1.87 (18–38)	
Gender		
Female	288	78.9
Male	77	21.1
Grade level		
First-year	89	24.4
Second-year	105	28.8
Third-year	81	22.2
Fourth-year	90	24.7
Have you ever experienced pain?		
Yes	331	90.7
No	34	9.3
Have you used non-pharmacological methods for pain management before (n=331)?*		
Yes	261	78.9
No	70	21.1
Have you ever cared for a patient in pain?		
Yes	356	97.5
No	9	2.5
Do you know about pain assessment tools?		
Yes	285	78.1
No	80	21.9
Have you used pain assessment tools before?		
Yes	240	65.8
No	125	34.2

SD: Standard deviation; Min: Minimum; Max: Maximum; *: Only participants with previous pain experience.

Table 2. PBQ and NSASPA mean scores (n=365)

Scale	Min–Max	Mean±SD
PBQ total	1.67–5.50	3.13±0.52
Organic beliefs	1.75–5.63	3.46±0.54
Psychological beliefs	1.00–5.25	2.47±0.71
NSASPA total	36.00–73.00	57.66±7.47
Significance	27.00–60.00	47.72±6.22
Interest	3.00–15.00	9.94±2.32

PBQ: Pain Beliefs Questionnaire; NSASPA: Nursing Students' Attitudes Scale toward Pain Assessment; SD: Standard deviation; Min: Minimum; Max: Maximum.

Participants had a mean PBQ total score of 3.13±0.52. They had mean PBQ "organic belief" and "psychological belief" subscale scores of 3.46±0.54 and 2.47±0.71, respectively. They had a mean NSASPA

Table 3. The effect of descriptive characteristics on PBQ and NSASPA scores (n=365)

Variables	n (%)	OB Mean±SD	PB Mean±SD	PBQ (T) Mean±SD	Sig. Mean±SD	Interest Mean±SD	NSASPA (T) Mean±SD
Gender							
Female	288 (78.9)	3.47±0.53	2.47±0.69	3.14±0.50	47.80±6.06	10.00±2.30	57.81±7.34
Male	77 (21.1)	3.42±0.59	2.47±0.79	3.10±0.58	47.42±6.85	9.70±2.37	57.12±7.99
Test		t=0.770	t=0.011	t=0.542	t=0.471	t=1.027	t=0.711
p		p=0.442	p=0.991	p=0.588	p=0.638	p=0.305	p=0.478
Grade level							
First-year	89 (24.4)	3.47±0.48	2.50±0.74	3.15±0.50	45.89±6.01	8.85±2.24	54.75±6.97
Second-year	105 (28.8)	3.39±0.59	2.48±0.73	3.09±0.57	46.58±5.99	9.84±2.44	56.42±7.20
Third-year	81 (22.2)	3.54±0.50	2.56±0.60	3.21±0.43	49.33±6.58	10.40±2.16	59.74±7.74
Fourth-year	90 (24.7)	3.46±0.57	2.36±0.75	3.09±0.54	49.42±5.63	10.71±1.95	60.13±6.76
Test		F=1.197	F=1.151	F=1.120	**F=8.221**	**F=11.953**	**F=11.757**
p		0.311	0.328	0.341	**0.000**	**0.000**	**0.000**
Have you ever experienced pain?							
Yes	331 (90.7)	3.47±0.55	2.45±0.70	3.13±0.52	47.63±6.16	9.98±2.28	57.62±7.46
No	34 (9.3)	3.40±0.44	2.69±0.78	3.16±0.47	48.61±6.85	9.50±2.63	58.11±7.72
Test		t=0.716	t=-1.891	t=-0.361	t=-0.876	t=1.168	t=-0.367
p		0.474	0.059	0.719	0.381	0.243	0.714
Have you used non-pharmacological methods for pain management before (n=331)?*							
Yes	261 (78.9)	3.49±0.54	2.48±0.70	3.15±0.51	47.66±6.15	10.06±2.18	57.73±7.40
No	70 (21.1)	3.39±0.59	2.36±0.70	3.04±0.55	47.52±6.25	9.68±2.63	57.21±7.72
Test		t=1.359	t=1.264	t=1.522	t=0.162	t=1.247	t=0.515
p		0.175	0.207	0.129	0.872	0.213	0.607
Have you ever cared for a patient in pain?							
Yes	356 (97.5)	3.46±0.54	2.46±0.71	3.13±0.52	47.82±6.22	9.94±2.30	57.77±7.46
No	9 (2.5)	3.38±0.43	2.91±0.55	3.23±0.36	43.88±5.25	9.66±2.95	53.55±7.51
Test		t=0.421	t=-1.867	t=-0.555	t=1.878	t=0.361	t=1.674
p		0.674	0.063	0.579	0.061	0.719	0.095
Do you know about pain assessment tools?							
Yes	285 (78.1)	3.46±0.54	2.45±0.70	3.12±0.52	48.35±6.34	10.19±2.31	58.55±7.59
No	80 (21.9)	3.47±0.55	2.57±0.73	3.17±0.52	45.47±5.22	9.03±2.11	54.51±6.11
Test		t=-0.161	t=-1.327	t=-0.717	**t=3.722**	**t=4.030**	**t=4.376**
p		0.872	0.185	0.474	**0.000**	**0.000**	**0.000**
Have you used pain assessment tools before?							
Yes	240 (65.8)	3.45±0.55	2.43±0.72	3.11±0.52	48.84±6.38	10.33±2.35	59.17±7.67
No	125 (34.2)	3.48±0.53	2.55±0.70	3.17±0.52	45.58±5.31	9.18±2.06	54.76±6.15
Test		t=-0.611	t=-1.425	t=-1.077	**t=5.176**	**t=4.632**	**t=5.956**
p		0.541	0.155	0.282	**0.000**	**0.000**	**0.000**

PBQ: Pain Beliefs Questionnaire; NSASPA: Nursing Students' Attitudes Scale Toward Pain Assessment; (T): Total; OB: Organic beliefs; PBQ: Psychological beliefs; Sig: Significance; SD: Standard deviation; t: Independent sample t-test; F: One-way ANOVA; *: P<0.05.

Table 4. Correlation between the PBQ and NSASPA scores

Scales	PBQ total	Organic beliefs	Psychological beliefs	NSASPA total	Significance	Interest
	r	r	r	r	r	r
PBQ total	1	0.916**	0.790**	-0.125*	-0.133*	-0.045
Organic beliefs		1	0.478**	-0.051	-0.067	0.015
Psychological beliefs			1	-0.196**	-0.191**	-0.121*
NSASPA total				1	0.959**	0.649**
Significance					1	0.407**
Interest						1

PBQ: Pain Beliefs Questionnaire; NSASPA: Nursing Students' Attitudes Scale Toward Pain Assessment; r: Pearson's correlation test, significant at *: P<0.05; **: Significant at p<0.01.

total score of 57.66±7.47. They had mean NSAS-PA "significance" and "interest" subscale scores of 47.72±6.22 and 9.94±2.32, respectively (Table 2).

Fourth-year students had significantly higher mean NSASPA total and subscale scores than first-year students (p=0.000). Participants who knew about pain assessment tools had significantly higher mean NSASPA total and subscale scores than those who did not (p=0.000). Participants who had used a standardized measurement tool for pain assessment before had significantly higher mean NSASPA total and subscale scores than those who had not (p=0.000). Other descriptive characteristics did not affect participants' NSASPA total and subscale scores (p>0.05). Additionally, descriptive characteristics did not affect participants' PBQ total and subscale scores (p>0.05) (Table 3).

The PBQ "organic beliefs" subscale scores were strongly correlated with the PBQ total scores (r=0.916, p=0.000). There was a strong correlation between the PBQ "psychological beliefs" subscale scores and the PBQ total scores (r=0.790, p=0.000). However, the PBQ total scores were very weakly correlated with the NSASPA total scores (r=-0.125, p=0.017) and "significance" subscale scores (r=-0.133, p=0.011). There was a moderate correlation between the PBQ "organic beliefs" and "psychological beliefs" subscale scores (r=0.478, p=0.000). The PBQ "psychological beliefs" subscale scores were weakly correlated with the NSASPA total scores (r=-0.196, p=0.000) and "significance" (r=-0.191, p=0.000) and "interest" subscale scores (r=-0.121, p=0.021). The NSASPA total scores were

strongly correlated with the NSASPA "significance" subscale scores (r=0.959, p=0.000). However, the NSASPA total scores were moderately correlated with the NSASPA "interest" subscale scores (r=0.649, p=0.000). There was a weak correlation between the NSASPA "significance" and "interest" subscale scores (r=0.407, p=0.000) (Table 4).

Discussion

Pain is a multifaceted symptom that encompasses biological, psychological, and social aspects, often leading to a substantial decline in quality of life and productivity.[23] Everyone experiences pain at some point in their lives, and most nurses care for patients in pain.[4] Nurses and nursing students who provide holistic care for pain can play a vital role in pain management, positively contributing to medical treatment processes.[9,13,24]

Most of our participants had experienced pain at least once in the past, consistent with findings in the literature.[13,23,25] The majority of participants (78.9%) reported using non-pharmacological methods to manage pain. Gök and Yıldızeli Topçu[26] found that one in two nursing students preferred pharmacological treatments for pain management, while two out of five preferred non-pharmacological methods. Kılıçarslan and Erek Kazan[9] reported that most nursing students used non-pharmacological pain management methods. Uzunçakmak and Kılıç[23] documented that more than a quarter of nursing students used non-pharmacological methods. The preference for non-pharmacological methods is thought to be

due to factors such as cost-effectiveness, ease of application, prevention of drug side effects, and the absence of negative effects.

Most participants in our study had cared for patients in pain, were familiar with standard pain assessment tools, and had used such tools before. Gök and Yıldızeli Topçu[26] conducted research on second-year Turkish nursing students and reported several findings. First, one in five students assessed pain by observing patients' behavioral responses. Second, three in ten students used pain scales to assess their patients' pain levels. Third, less than a quarter of participants did not assess pain at all. Bulut et al.[13] found that most nursing students observed patients in pain and performed pain assessments. However, Kutlutürkan and Urvaylıoğlu[24] reported that more than half of the nurses did not believe pain should be evaluated as the fifth vital sign. Özveren et al.[4] documented that while more than half of nurses performed pain assessments in clinics, less than half used standardized measurement tools. Çelik et al.[27] found that more than a quarter of nurses used pain assessment scales, while less than a quarter never used them. The familiarity of our participants with standard pain assessment tools and their usage likely stems from the emphasis on pain assessment in the nursing curriculum and nursing care plans.

The Pain Beliefs Questionnaire (PBQ) assesses beliefs about pain caused by psychological factors (e.g., anxiety, depression) and organic factors (e.g., damage, injury, trauma).[8,21] Participants in this study had mean PBQ total, "organic beliefs," and "psychological beliefs" subscale scores of 3.13±0.52, 3.46±0.54, and 2.47±0.71, respectively. In contrast, Babadağ and Balcı Alparslan[19] found that nursing students had mean "organic beliefs" and "psychological beliefs" subscale scores of 3.46±0.51 and 4.81±0.76, respectively. These results indicate that our participants attributed the origin of pain more to organic factors than psychological factors.

Nursing students engage in activities focused on assessing, treating, and managing pain.[26] Effective pain assessment requires evaluating nursing students' knowledge, skills, and attitudes toward pain assessment.[13] Our participants' attitudes toward pain assessment became more positive as their grade level increased. Dede Akkaya et al.[10] also found that grade level influenced health students' pain beliefs. However, other studies have reported that senior nursing students lack sufficient knowledge and attitudes toward pain management.[20,28] Gök and Yıldızeli Topçu[26] found that the type of high school attended and the clinical units where students completed clerkships impacted their attitudes toward pain assessment. They revealed that students who worked in units with high postoperative pain severity (e.g., cardiovascular or thoracic surgery) had greater knowledge of pain and more positive attitudes toward it. Our participants' attitudes toward pain assessment improved as their grade level increased, likely due to gaining more theoretical and clinical experience as they advanced. Increased experience enables nursing students to prepare more care plans and conduct pain assessments on patients and healthy individuals.

Our participants who knew about standardized pain assessment tools and had used them for pain assessment demonstrated more positive attitudes toward pain assessment than those who did not. This aligns with the findings of Özveren et al.,[4] who reported that nurses who received training on pain assessment and used standardized measurement tools developed more positive attitudes toward pain. These results suggest that nursing students who frequently use standardized pain measurement tools become more aware of pain and develop more positive attitudes toward pain assessment.

There was a moderate positive correlation between the PBQ "organic beliefs" and "psychological beliefs" subscale scores in our study. Similarly, Babadağ and Balcı Alparslan[19] reported a weak positive correlation between these subscales among nursing students. These findings suggest that nursing students associate pain with both organic and psychological causes, highlighting the multifactorial nature of pain perception.

Our results indicated a weak negative correlation between nursing students' pain beliefs and attitudes toward pain assessment. As students' pain beliefs increased, their attitudes toward pain assessment became more negative. According to Dede Akkaya et al.,[10] health students' pain beliefs are influenced

by factors such as age, grade level, and education. Our findings further indicate that grade level, along with prior knowledge and experience with pain assessment, plays a significant role in shaping nursing students' attitudes toward pain assessment. This underscores the importance of integrating practical experiences and theoretical knowledge into the nursing curriculum to enhance students' understanding and attitudes toward pain management.

Limitations

The study's generalizability is limited due to its single higher education institution setting. Additionally, the findings are restricted to the nursing students who participated in the research.

Conclusion

Nursing students have low "psychological beliefs" scores and moderate "organic beliefs" scores. Their pain beliefs are weakly correlated with their attitudes toward pain assessment. As nursing students' pain beliefs increase, their attitudes toward pain assessment become more negative. Therefore, educators should revise the undergraduate nursing curriculum to address and reduce negative pain beliefs while promoting positive attitudes toward pain assessment.

References

1. Akbaş M, Köse Tosunöz İ. Knowledge and approaches of nurses about pain related interventions. Cukurova Med J 2019;44:136-43. [CrossRef]

2. Eti Aslan F, Çınar F. Prevalence of pain in adult population in Türkiye. Agri 2023;35:83-95. [CrossRef]

3. Zimmer Z, Fraser K, Grol-Prokopczyk H, Zajacova A. A global study of pain prevalence across 52 countries: Examining the role of country-level contextual factors. Pain 2022;163:1740-50. [CrossRef]

4. Özveren H, Faydalı S, Gülnar E, Faydalı Dokuz H. Attitude and applications of nurses to evaluate pain. J Contemp Med 2018;8:60-6. [CrossRef]

5. Özer Z, Bahçecioğlu Turan G, Çelikbilek F. Relationship between pain beliefs and pain management in hemodialysis patients. J Nephro Nurs 2020;15:226-34. [CrossRef]

6. Bölükbaş N, Irmak B, Bulut G, Özdemir DA, 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]

7. Aydın N, Dal Yılmaz Ü. Investigation of nursing diagnosis of orthopedic patients by clinical practice students. Gümüşhane Univ J Health Sci 2022;11:257-63. [CrossRef]

8. Sertel Berk HÖ, Bahadır G. The experience of chronic pain and pain beliefs: The Turkish validation study of the pain beliefs questionnaire. Doctoral Thesis. Istanbul: Istanbul University; 2006. [In Turkish]

9. Kılıçarslan FN, Erek Kazan E. Analysis of the relationship between pain beliefs and fears of pain of nursing students. J Health Sci 2021;30:316-25. [CrossRef]

10. Dede Akkaya A, Yıldırım M, Yorulmaz H. Determination of beliefs and approaches of nursing and first and emergency department students about pain. JAMER 2019;4:47-56. [CrossRef]

11. Campbell E. Faculty perspectives of teaching pain management to nursing students. Pain Manag Nurs 2020;21:179-86. [CrossRef]

12. Ford C. Adult pain assessment and management. Br J Nurs 2019;28:421-3. [CrossRef]

13. Bulut H, Güler S, Mercan Annak İ, Berk Özcan Ç. Development of nursing students' attitudes scale toward pain assessment. Agri 2022;34:245-53. [CrossRef]

14. Clauw DJ, Essex MN, Pitman V, Jones KD. Reframing chronic pain as a disease, not a symptom: Rationale and implications for pain management. Postgrad Med 2019;131:185-98. [CrossRef]

15. Giusti GD, Reitano B, Gili A. Pain assessment in the emergency department. Correlation between pain rated by the patient and by the nurse. An observational study. Acta Biomed 2018;89:64-70.

16. Werner P, Lopez-Martinez D, Walter S, Al-Hamadi A, Gruss S, Picard RW. Automatic recognition methods supporting pain assessment: A survey. IEEE Trans Affect Comput 2019;13:530-52. [CrossRef]

17. Acar E, Tokem Y, Acar YA, Karakus Yılmaz B. Factors affecting the knowledge level and attitudes of nurses about pain management. İKÇÜ SBFD 2021;6:93-7. [CrossRef]

18. Yazıcı G, Aktaş D, Koçaşlı S, Bulut H, Yılmaz K. Use of distraction by nursing students to care patients' pain: A focus-group study. Health Care Acad J 2022;9:272-9. [CrossRef]

19. Babadağ B, Balcı Alparslan G. The pain beliefs of nursing students. STED 2017;26:244-50. [CrossRef]

20. 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]

21. Edwards LC, Pearce SA, Turner-Stokes L, Jones A. The pain beliefs questionnaire: An investigation of beliefs in the causes and consequences of pain. Pain 1992;51:267-72. [CrossRef]

22. Tabachnick BG, Fidell LS. Using multivariate statistics. 6th ed. Boston, MA: Pearson; 2013. p.497-516.

23. Uzunçakmak T, Kılıç M. Pain experience of nursing students and the methods used to cope with pain. Agri 2017;29:117-21. [CrossRef]

24. Kutlutürkan S, Urvaylıoğlu AE. Evaluation of pain as a fifth vital sign: Nurses' opinions and beliefs. Asia Pac J Oncol Nurs 2019;7:88-94. [CrossRef]

25. Diğin F, Mercan Y, Kiyat I. Fear of pain of nursing and midwifery students and affecting factors. BANU J Health Sci Res 2023;5:222-9. [CrossRef]

26. Gök F, Yıldızeli Topçu S. Pain management knowledge and attitudes for surgical nursing students. Pain Manag Nurs 2023;24:e61-7. [CrossRef]

27. Çelik S, Baş BK, Korkmaz ZN, Karaşahin H, Yıldırım S. Determination of knowledge and behaviour of nurses about pain management. Med J Bakirkoy 2018;14:17-23. [CrossRef]

28. Okubai T, Fessehaye S, Gebray AY, Kahsay DT. Final-semester nursing students' knowledge and attitude regarding pain management in resources limited setting. Int J Africa Nurs Sci 2023;18:100542. [CrossRef]