

Araştırma Makalesi/ Research Article

Determination of Nursing Students' Perceived Preoperative Nursing Care Competence and Related Factors: A Cross-Sectional Study

Hemşirelik Öğrencilerinin Algılanan Ameliyat Öncesi Hemşirelik Bakımı Yetkinliği ve İlişkili Faktörlerin Belirlenmesi: Kesitsel Bir Çalışma

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ABSTRACT

Objective: This study aimed to determine nursing students' perceived preoperative nursing care competence and identify the related factors. **Methods:** This cross-sectional study was conducted with 284 nursing students from a university in western Turkey between April and June 2024. Data were collected using the "Sociodemographic Information Form" and the "Perceived Preoperative Nursing Care Competence Scale for Nursing Students." The data were analysed using SPSS version 23.0, employing descriptive statistics (frequencies, percentages, means, standard deviations), and inferential statistical methods, including independent samples t-tests, one-way analysis of variance (ANOVA), and Pearson correlation tests.

Results: The findings indicated that the overall perceived preoperative nursing care competence among nursing students was relatively high (95.89±11.284). The highest scores were recorded in the subscale "ability to fulfil legal responsibilities and adherence to ethical principles," while the lowest scores were observed in the "research and professional development" subscale. Factors such as age, gender, cohabitation status, and cumulative grade point average (CGPA) were not found to be significantly related to perceived preoperative nursing care competence. However, students residing in urban areas demonstrated significantly higher competence in fulfilling legal responsibilities and adhering to ethical principles compared to their rural counterparts ($p=0.046$, $p=0.010$, respectively).

Conclusion: The study results suggest that nursing students have a generally adequate level of perceived preoperative care competence. Further research should aim to examine additional factors that may affect nursing students' preoperative care competence.

Keywords: Preoperative care, nursing care, nursing students, competence

ÖZ

Amaç: Bu çalışmanın amacı hemşirelik öğrencilerinin algılanan ameliyat öncesi hemşirelik bakımı yetkinliği ve ilişkili faktörlerin belirlemektir.

Yöntem: Kesitsel olarak yapılan bu çalışma Nisan 2024 ile Haziran 2024 arasında Türkiye'nin batısındaki bir üniversitenin 284 hemşirelik öğrencisi ile yürütüldü. Veriler "Sosyodemografik Bilgi Formu" ve "Hemşirelik Öğrencileri için Algılanan Ameliyat Öncesi Hemşirelik Bakım Yetkinliği Ölçeği" kullanılarak elde edildi. Verilerin analizi SPSS 23.0 programı kullanılarak sayı, yüzde, ortalama, standart sapma, bağımsız örneklem t-testi ve tek yönlü ANOVA ve Pearson Korelasyon testleri kullanılarak yapıldı.

Bulgular: Veriler hemşirelik öğrencilerinin algılanan ameliyat öncesi hemşirelik bakımı yetkinliği genel düzeyinin yüksek olduğunu (95.89±11.284) gösterdi. Ayrıca ölçeğin "Yasal sorumlulukları yerine getirme ve etik ilkelere uyma yeteneği" alt boyutundan en yüksek puanlar alınırken, "Araştırma ve Mesleki" alt boyutundan en düşük puanlar elde edilmiştir. Yaş, cinsiyet, birlikte yaşadığı kişiler ve kümülatif not ortalamasının algılanan ameliyat öncesi hemşirelik bakımı yetkinliği ile ilişkili olmadığı bulundu. Araştırmada, şehirde yaşayan öğrencilerin yasal sorumlulukları yerine getirme ve etik ilkelere uyma yeteneğinin diğer öğrencilere göre daha yetkin oldukları tespit edildi (sırasıyla $p=0.046$, $p=0.010$).

Sonuç: Çalışmanın sonuçları, hemşirelik öğrencilerinin algılanan ameliyat öncesi bakım yetkinlik düzeylerinin yeterli olduğunu göstermektedir. Hemşirelik öğrencilerinin ameliyat öncesi yetkinliği etkilemesi düşünülen çeşitli faktörleri araştırmak için daha fazla araştırma yapılmalıdır.

Anahtar Kelimeler: Ameliyat öncesi bakım, hemşirelik bakımı, hemşirelik öğrencileri, yetkinlik

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Introduction

'Competence' refers to the knowledge, skills, abilities, behaviors, and capacities required to perform tasks accurately and proficiently. It is a fundamental criterion for nursing practice (Nabizadeh-Gharghozar et al., 2021). Nursing competencies can be categorized into professional, clinical, and expert competence. Professional competence consists of general nursing-related knowledge and skills, while clinical competence focuses primarily on the knowledge and skills essential for clinical practice. It is widely recommended that competence development begin prior to graduation, with a focus on acquiring foundational competencies during this period (Karahan & Kav, 2018; Munangatare et al., 2024). Preoperative care, as a special area of nursing, demands a comprehensive set of knowledge and skills (da Silva et al., 2021). Providing effective nursing care during the preoperative period is crucial for alleviating preoperative stress and its associated physiological effects. Appropriate preoperative care can facilitate faster recovery, prevent complications, reduce healthcare costs, and improve the overall quality of care (Aydal et al., 2023; Ruiz Hernández et al., 2021). The positive impact of thorough surgical preparation on surgical outcomes is also well-established (Nestler, 2019).

The ability of nurses to effectively perform their complex roles and responsibilities during the preoperative care process, ensure patient safety, and enhance the quality of care is intrinsically related to their competence in this specialized area (Nestler, 2019). Nursing competencies are often defined according to specific branches of the profession. In the context of surgical nursing, the European Operating Room Nurses Association (EORNA) has identified five core competence areas for perioperative nursing care: "professional/ ethical/ legal practice," "nursing care and perioperative nursing practice," "interpersonal relationships and communication", "organization, management and leadership skills" and "education, research, and professional development" (EORNA, 2019).

Although preoperative nursing education practices vary globally, surgical nursing education typically includes both theoretical instruction and clinical practice (Şimşek et al., 2023). In Turkey, preoperative nursing care is integrated into the curriculum for second-year nursing students as part of the surgical diseases nursing course. Research suggests that competence in this area increases with clinical experience. However, newly graduated

nurses entering surgical units are expected to take full responsibility for patient care during the surgical process and address all patient care needs (Willman et al., 2020). The high students-to-faculty ratio limited clinical practice opportunities in surgical settings, and the mismatch between theoretical knowledge and practical application may adversely affect students' ability to acquire the necessary competences for working in surgical clinics prior to graduation. Therefore, assessing nursing students' competence during their education is essential to ensure they are fully prepared to meet their responsibilities in preoperative care (Şimşek et al., 2023).

To date, there is only one study in the literature that examines nursing students' competence in preoperative nursing care. This study found that students' perceived competence in preoperative care was generally sufficient. In addition, it identified a correlation between students' place of residence and their level of competence in preoperative care (Alnjadat & Etoom, 2024). In contrast, no similar research has been conducted in Turkey to explore the factors affecting nursing students' perceptions of preoperative nursing care. This study aims to enhance the understanding of the level of preoperative nursing care among nursing students. Furthermore, it is anticipated that the findings will inform the development of more effective educational programmes for nursing students, identifying key areas of preoperative nursing care that require greater emphasis. Therefore, this study was designed to determine nursing students' perceived preoperative care competence and the demographic factors associated with these perceptions.

Research Questions:

- What is the level of perceived competence among nursing students regarding preoperative nursing care?
- Which sociodemographic factors affect the perceived competence of nursing students in preoperative nursing care?

Methods

Study Design

The study employed a cross-sectional design.

Sampling and Sample Size

The study was conducted with nursing students at a university in Western Turkey. The inclusion criteria were as follows: i) being 18 years of age or older, ii) volunteering to participate, iii) being a second-, third-, or fourth-year nursing

undergraduate, iv) having successfully completed the Surgical Nursing course.

No sampling method was applied in the study, and all students meeting the inclusion criteria were invited to participate to reach the entire population of eligible students. A total of 326 students were invited to complete the survey, and 294 responses were received. However, 10 responses were excluded due to incomplete survey data. The study included 284 participants with a participation rate of 87.11%.

Data Collection Process

The data for the study were collected by the researchers through face-to-face administration of the survey in a classroom setting between April and June 2024. After explaining the purpose and objectives of the study, the researchers obtained informed consent from students who met the inclusion criteria. Following consent, the students completed the survey. Throughout the data collection process, the researchers were available to address any questions or concerns raised by the participants.

Data Collection Instruments

Two instruments were used for data collection in this study: "Sociodemographic Information Form" and "Perceived Preoperative Nursing Care Competence Scale for Nursing Students."

Sociodemographic Information Form: This form was developed by the researchers based on a review of relevant literature (Alnjadat & Etoom, 2024; Şimşek et al., 2023). It consists of six questions: two open-ended and four multiple-choice. The questions included the following sociodemographic variables: age, gender, academic year, cumulative grade point average (CGPA), place of residence and cohabitation status.

Perceived Preoperative Nursing Care Competence Scale for Nursing Students (PPreCCNS): This scale was developed by Şimşek et al. (2023), and its psychometric properties were tested. It consists of 22 items, structured on a five-point Likert scale. The total score ranges from 22 to 110, with higher scores indicating greater perceived competence in providing preoperative nursing care. There are no reverse-coded items in the scale. The total score is calculated by summing the responses to each item based on the following scoring system: "Strongly disagree": 1 point; "Partially disagree": 2 points; "Undecided": 3 points; "Partially agree": 4 points; "Strongly agree": 5 points. The scale includes five subscales: "ability to fulfil legal responsibilities and adherence to ethical principles,"

"evaluation and follow-up of the patient", "preoperative patient preparation", "communication", and "research and professional development". The internal consistency of the scale has been established, with Cronbach's alpha values ranging from 0.79 to 0.96 for the subscales and 0.94 for the total scale (Şimşek et al., 2023). In this study, Cronbach's alpha values ranged from 0.83 to 0.90 for the subscales and 0.94 for the total scale.

Statistical Analysis

Data analysis was conducted using IBM SPSS Statistics version 23. Descriptive statistics (mean, standard deviation, and percentage) were used to summarise the sociodemographic information and scale scores. The normality of the data for quantitative variables was assessed by examining the skewness and kurtosis values. A normal distribution was assumed if the absolute skewness value was below ± 2.0 and the kurtosis value was below 7.0 (Kim, 2013). The quantitative data were found to follow a normal distribution, and parametric tests were applied accordingly. To examine differences in nursing students' perceived competencies regarding preoperative nursing care and their subscale scores based on sociodemographic characteristics (academic year, gender, place of residence, and cohabitation status), Independent Sample t-tests and One-Way ANOVA tests were used. Bonferroni-corrected Pearson correlation tests were employed to assess the correlations among nursing students' perceived competencies in preoperative care, subscale scores, age, and cumulative grade point average (CGPA). Statistical significance was set at $p < 0.05$.

Ethical Considerations

Ethical approval for the study was granted by the Usak University Non-Interventional Clinical Research Ethics Committee (Date: 04.04.2024, Approval Number: 363-364-22). Institutional permission was obtained from the dean of the relevant faculty. Written informed consent was obtained from all students who participated in the study. Additionally, permission to use the Perceived Preoperative Nursing Care Competence Scale was obtained from the scale's copyright holder via email. The study was conducted in accordance with the principles outlined in the Declaration of Helsinki.

Results

Demographic Characteristics of Participants

A total of 326 nursing students were surveyed in this study, with 284 participants completing the

survey, resulting in a participation rate of 87.11%. The average age of the participants was 22.06 ± 1.95 years (range: 18–30), and the majority were female (77.50%). Regarding academic year, 29.20% were second-year students, 36.30% were third-year students, and 34.50% were fourth-year students. The mean cumulative grade point average (CGPA) of the participants was 3.01 ± 0.38 (range: 1.84–3.88). Most students (86.60%) resided in urban areas. In terms of cohabitation status, 44.00% lived in dormitories with other students, while 43.00% lived with their families. The demographic characteristics of the participants are summarised in Table 1.

Table 1. Demographic characteristics of nursing students (n=284)

Characteristics	n (%)	Mean \pm SD
Age (years)		22.06 ± 1.95 (min:18-max:30)
Gender		
Female	220 (77.50)	
Male	64 (22.50)	
Academic Year		
Second	83 (29.20)	
Third	103 (36.30)	
Fourth	100 (34.50)	
Cumulative grade point average		3.01 ± 0.38 (min:1.84-max:3.88)
Place of residence		
Urban	246 (86.60)	
Village	38 (13.40)	
Cohabitation status		
With family	122 (43.00)	
With friends at home	21 (7.40)	
With students at dormitory	125 (44.00)	
Alone	16 (5.60)	

SD=Standard Deviation

PPreCC-NS Scores of the Participants

The mean score for the Perceived Preoperative Nursing Care Competence Scale for Nursing Students (PPreCC-NS) was 95.89 ± 11.28 (range: 64–110). The mean scores for the subscales were as follows: ability to fulfil legal responsibilities and adherence to ethical principles— 22.77 ± 2.68

(range: 10–25), evaluation and follow-up of the patient— 20.62 ± 3.52 (range: 9–25), preoperative patient preparation— 17.59 ± 2.47 (range: 8–20), communication— 17.88 ± 2.49 (range: 6–20), and research and professional development— 17.04 ± 2.59 (range: 9–20). The mean scores for the PPreCC-NS total scale and subscales are presented in Table 2.

Table 2. Scores of the nursing students on the PPreCCNS (n=284)

Scale and subscales	Mean \pm SD	Min-Max
PPreCC-NS	95.89 ± 11.28	64-110
Ability to fulfil legal responsibilities and adherence to ethical principles	22.77 ± 2.68	10-25
Evaluation and follow-up of the patient	20.62 ± 3.52	9-25
Preoperative patient preparation	17.59 ± 2.47	8-20
Communication	17.88 ± 2.49	6-20
Research and professional development	17.04 ± 2.59	9-20

SD=Standard deviation

Correlations between the PPreCC-NS scores and demographic characteristics

The differences and correlations between PPreCC-NS total scale and subscale scores, in relation to demographic characteristics, are summarised in Table 3. No significant differences were found in the total PPreCC-NS score and its subscales based on gender or cohabitation status ($p > 0.05$). However, the score for the subscale ‘evaluation and follow-up of the patient’ was significantly higher for second-year students compared to third-year students ($p < 0.05$). In addition, the score for the subscale ‘ability to fulfil legal responsibilities and adherence to ethical principles’ was higher among students residing in urban areas compared to those in rural areas ($p < 0.05$) (Table 3).

No significant correlation was found between the total PPreCC-NS score, its subscales and either age or cumulative grade point average (CGPA) ($p > 0.05$) (Table 4).

Table 3. Difference and correlation between mean PPreCC-NS scores and demographic characteristics (n=284)

	PPreCC-NS	Ability to fulfil legal responsibilities and adherence to ethical principles	Evaluation and follow-up of the patient	Preoperative patient preparation	Communication	Research and professional development
Characteristics	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Gender						
Female (220)	95.64±11.29	22.84±2.69	20.44±3.57	17.52±2.46	17.86±2.52	16.97±2.58
Male (64)	96.78±11.28	22.53±2.65	21.25±3.29	17.81±2.50	17.94±2.39	17.25±2.64
t- test	t*=-0,714, p=0.476	t=0.812 p=0.415	t=1.621 p=0.106	t=-0.826 p=0.410	t=-0.221 p=0.825	t=-0.751 p=0.453
Academic Year						
Second (83)	97.59±11.44	23.24±2.41	21.22±3.37	17.77±2.66	18.00±2.76	17.36±2.73
Third (103)	94.53±11.02	22.79±2.66	19.97±3.51	17.34±2.51	17.83±2.34	16.60±2.41
Fourth (100)	95.89±11.28	22.36±2.86	20.81±3.57	17.69±2.24	17.82±2.42	17.21±2.62
ANOVA	F*=1.694 p=0.186	F=2.467 p=0.087	F=3.120 p=0.046 2>3	F=0.837 p=0.434	F=0.144 p=0.866	F=2.345 p=0.098
Place of residence						
Urban (246)	96.30±11.03	22.93±2.57	20.71±3.52	17.67±2.45	17.95±2.47	17.04±2.59
Village (38)	93.26±12.64	21.74±3.11	20.05±3.50	17.08±2.53	17.39±2.56	17.00±2.67
t-test	t=1.548 p=0.123	t=2.579 p=0.010	t=1.073 p=0.284	t=1.367 p=0.187	t=1.282 p=0.201	t=0.090 p=0.929
Cohabitation status						
With family (122)	95.74±10.73	22.80±2.43	20.46±3.80	17.57±2.54	17.94±2.27	16.97±2.44
With friends at home (21)	92.76±13.50	21.76±3.23	20.29±3.55	16.71±2.68	17.52±2.92	16,48±3.29
With students at dormitory (125)	96.26±11.42	22.90±2.85	20.74±3.16	17.66±2.34	17.84±2.65	17.12±2.65
Alone (16)	98.31±11.38	22.94±2.17	21.38±4.09	18.25±2.46	18.13±2.30	17.63±2.33
ANOVA	F=0.835 p=0.475	F=1.106 p=0.347	F=0.442 p=0.723	F=1.304 p=0.273	F=0.229 p=0.876	F=0.670 p=0.571

*t=Independent samples t-test, F=One-way, ANOVA, Bonferroni < 0.05.

Table 4. Correlations between PPreCC-NS and age and cumulative grade point average (n=284)

	PPreCC-NS	Ability to fulfil legal responsibilities and adherence to ethical principles	Evaluation and follow-up of the patient	Preoperative patient preparation	Communication	Research and professional development
Age (years)	r=-0.023 p=0.701	r=-0.060 p=0.312	r=0.032 p=0.578	r=0.071 p=0.230	r=0.004 p=0.942	r=0.046 p=0.444
Cumulative grade point average	r=-0.023 p=0.698	r=0.111 p=0.062	r=-0.018 p=0.767	r=0.051 p=0.394	r=0.008 p=0.891	r=-0.46 p=0.436

Discussion

This study aimed to determine nursing students' perceived preoperative care competence and identify related demographic factors. The findings indicate that nursing students perceive their preoperative care competence to be at a high level. Since the scale used in this study is a newly developed measurement instrument, only one comparable study was found in the existing literature. Consistent with the current findings, a study by Alnjadat and Etoom (2024) also reported high perceived competence in preoperative care among nursing students (Alnjadat & Etoom, 2024). In Turkey, nursing students typically receive training in preoperative care during the Surgical Nursing/Surgical Diseases Nursing course, which is offered in the second year of their education. Previous studies have emphasised that clinical practice, in addition to theoretical education, enhances nursing students' learning and skill development (Şendir et al., 2018; Tang & Chan, 2019). Clinical experience in surgical units further enriches students' knowledge base, highlighting the importance of providing opportunities for practice in surgical settings to enhance their preoperative care competence.

In the study by Alnjadat and Etoom (2024), nursing students received the highest scores in the subscale "ability to fulfill legal responsibilities and adherence to ethical principles" (Alnjadat & Etoom, 2024), a finding that aligns with the results of the present study. This outcome is likely related to the ethical guidelines emphasised during hospital orientations, where students receive training on nursing care documentation and the importance of adhering to health laws. In addition, national and international nursing associations have established ethical principles and responsibilities, which are integrated into the nursing curriculum (ICN, 2021; THD, 2009). These factors are considered to enhance students' ethical sensitivity. Supporting evidence from the literature also indicates that nursing students exhibit a strong commitment to ethical guidelines (Kırca et al., 2020; Paşlı Gürdoğan et al., 2018; Tuveson & Lützén, 2017). On the other hand, both the present study and existing literature report low scores in the "research and professional development" subscale of the Perceived Preoperative Nursing Care Competence Scale (PPreCC-NS) (Alnjadat & Etoom, 2024). This finding may be attributed to students' anxiety regarding research activities, insufficient knowledge of scientific research, and limited participation in

research-related events such as conferences and seminars in the nursing field. Previous studies have highlighted that nursing students often experience high levels of research-related anxiety (Gerçek et al., 2016; Güleç & Saruhan, 2013), and that their involvement in scientific research remains low (Ertürk Yavuz et al., 2024). To address these issues, it is essential to encourage students to engage in scientific activities during their undergraduate education. Incorporating students into the planning and execution of research projects, as well as integrating both theoretical and practical aspects into research courses, may help foster greater interest and competence in research (Ertürk Yavuz et al., 2024; Kes & Öztürk Şahin, 2019).

In this study, second-year students demonstrated high perceived competence in the "evaluation and follow-up of the patient" subscale. The data collection for this study was carried out at the end of the semester, after the second-year students had completed the Surgical Diseases Nursing course. It is hypothesised that these students rated themselves as more competent in-patient evaluation and follow-up due to their recent completion of this course. This finding suggests that knowledge retention may decrease over time after the course, which could subsequently impact clinical competence. Literature supports this notion, indicating that failure to reinforce learnt content and its lack of application in practice within a short time frame negatively affects the consolidation of knowledge and its translation into behaviour (Peyrovi et al., 2005; Yılmaz, 2009). To enhance knowledge retention and foster the integration of theoretical knowledge into practice, it is crucial to incorporate active learning strategies in nursing education. Methods such as game-based learning (Dayan et al., 2024; Tavares, 2022), the Jigsaw technique (Batdı, 2014; Filiz & Dikmen, 2017), drama-based methods (Sayar & Çapık, 2021), the Six Thinking Hats technique, concept mapping (Culha, 2019), simulation-based learning (Aqel & Ahmad, 2014), the flipped classroom model (Özkan & Demirbağ, 2023), case examples, case studies, the teach-back method (Ergin Doğan & Aslan, 2024), and problem-based learning (Beers & Bowden, 2005) have been shown to support deeper learning and improve knowledge retention in nursing education.

The study also found that students residing in urban areas perceived themselves as more competent in preoperative care than those living in rural areas, particularly in the subscale of "ability to fulfill legal responsibilities and adherence to ethical

principles". Similarly, in the study conducted by Alnjadat and Etoom (2024), it was found that students living in urban areas reported higher perceived competence in preoperative nursing care among students from urban areas (Alnjadat & Etoom, 2024). The social and cultural backgrounds of students may influence their ethical development. A qualitative study by Dehghani suggested that factors such as personal motivations, interpersonal interactions, and family values significantly contribute to the development of ethical sensitivity in nursing students (Dehghani, 2020). In addition, studies in the literature have supported the current study findings, indicating that nursing students from rural areas tend to exhibit lower levels of ethical sensitivity compared to those from urban regions (Hançerlioğlu et al., 2020). Another study highlighted that enhancing ethical sensitivity among surgical nurses positively influenced their perception of care quality (Mert Boğa et al., 2020). These findings emphasise the importance of incorporating ethics courses into undergraduate nursing curricula to foster greater ethical sensitivity among nursing students.

Conclusion and Recommendations

In conclusion, the perceived preoperative care competence levels among nursing students were found to be adequate. The study identified a correlation between students' academic year and place of residence and their perceptions of preoperative care competence. To improve the preoperative care competence of nursing students, it is crucial to provide opportunities for practice in surgical clinics and operating rooms throughout their education. Furthermore, in addition to the theoretical training, offering practical experiences in these settings can contribute to further improving students' perceived care competence. It is also recommended that future studies explore additional factors that may influence perceived preoperative care competence. Conducting one-on-one or focus group interviews with students could provide a more profound understanding of their perceptions and experiences related to preoperative care competence. This study has several limitations. Firstly, the findings may not be applicable to the nursing students at this particular university. Second, the data were solely based on self-reported measures from the students, which may introduce biases. Finally, the study examined a limited number of variables that could potentially affect perceived preoperative nursing care competence.

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What did the study add to the literature?

- The study demonstrated that nursing students perceive their preoperative nursing care competence to be high.
- It revealed that demographic factors such as age, gender, cohabitation status, and cumulative grade point average (CGPA) were not significantly correlated with perceived preoperative nursing care competence.
- It was identified that students residing in urban areas perceive themselves as more competent in fulfilling legal responsibilities and adhering to ethical principles compared to those living in rural areas.

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