

# Factors Affecting Nursing and Midwifery Students Knowledge Regarding Preoperative Nursing Care

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**Background:** Preoperative competence is a crucial aspect of nursing and midwifery students' education to improve the quality of care and patient safety. It assists nursing and midwifery students in maintaining and enhancing their practice by determining strength and areas that should be developed.

**Purpose:** This study aims to assess the level of nursing and midwifery students' knowledge regarding preoperative nursing care and determine the most influencing demographic variables.

**Methods:** A descriptive cross-sectional design using an online self-administered questionnaire was utilised among 202 nursing and midwifery students selected by simple random sampling. The Perceived Preoperative Nursing Care Competence Scale for Nursing students (PPreCC-NS) was used to assess the perceived preoperative nursing care competence of nursing and midwifery students. Descriptive statistics were obtained, and multiple regression was used for data analysis.

**Results:** The overall level of perceived preoperative nursing care competence was adequate 99.09 ( $SD = 10.81$ ). The highest mean score was recorded for ability to fulfil legal responsibilities and adherence to ethical principles ( $M = 23.6$ ,  $SD = 2.53$ ). The lowest mean score was obtained for research and professional development ( $M = 17.6$ ,  $SD = 2.60$ ). The regression analysis showed that place of residency explained significantly about 4.53% of the variance in the nursing and midwifery students' knowledge regarding preoperative nursing care, and it was the strongest predictor ( $B = 0.218$ ,  $p = 0.002$ ).

**Conclusion:** The perceived level of preoperative nursing care among nursing and midwifery students was found to be adequate and associated with place of residence. Future research should be conducted to explore factors affecting nursing and midwifery students' preoperative competence in different cultures and contexts.

**Keywords:** competence, nursing, knowledge, nursing students, preoperative care

## Introduction

Preoperative care refers to the physical and psychosocial care used for preparing a patient to undergo surgery safely.<sup>1</sup> It begins with the patient's decision to be operated and ends with their transfer to the operating room.<sup>2</sup> Preoperative care aims to identify risk factors that could lead to complications for patients after surgery.<sup>3</sup> Patients should be prepared physically, physiologically, and emotionally, and spiritually for surgery to have a positive post-operative recovery.<sup>4</sup> It was found that preoperative patients with high religiosity levels had lower levels of anxiety.<sup>5</sup> In addition, preoperative teaching is crucial to surgical patients to minimize anxiety and post-operative complications.<sup>6</sup> Thus, a detailed pre-operative assessment and evaluation leads to decreases in postoperative complications, morbidity, and mortality.<sup>7</sup>

Competent nursing care should be provided to surgical patients to ensure that they receive safe and patient-centered care.<sup>8</sup> About 321 million operations occur annually worldwide, with an estimated 4664 surgical procedures carried out per 100,000 people.<sup>9</sup> Major complications following inpatient surgical procedures occur at a rate of up to 22%, and death rates reach 0.8%. Approximately seven million individuals will suffer from significant problems as a result of surgical procedures each year, and one million patients can die as a consequence of complications after an operation.<sup>10</sup> In Jordan, thousands of patients received surgeries, and approximately 1,176,425 procedures were conducted between 2014 and 2018.<sup>11</sup>

Several studies were conducted to determine knowledge, attitude, practice, and barriers to preoperative nursing care in many areas; nevertheless, gaps exist in the level of nursing and midwifery students' knowledge regarding preoperative nursing care.

In Jordan, approximately 5318 nursing students were enrolled in 14 nursing faculties and 33 government hospitals.<sup>12</sup> Students need highly specialized competencies to diagnose accurately patient conditions and predict and deal with problems that may arise within the course of nursing care.<sup>13</sup> Thus far, the preoperative nursing care knowledge of nursing and midwifery students has not been assessed.

The proposed study is expected to increase our understanding about the level of preoperative nursing care among nursing students. This study would fill knowledge gaps in the literature and has the potential to influence clinical practice. In addition, results would increase the awareness of university academic staff in terms of the requirements to improve the level of preoperative nursing care. This work also helps determine which areas of preoperative nursing care need greater focus in designing better educational programs for nursing students. Based on the evidence, this study aims to assess the level of nursing and midwifery students' knowledge regarding preoperative nursing care and determine the most influencing demographic factors affecting nursing and midwifery students' knowledge regarding preoperative nursing care.

## Methods

### Design

A descriptive cross-sectional design using an online self-administered questionnaire was utilized to assess nursing and midwifery students' knowledge regarding preoperative nursing care. This study was conducted among Jordanian nursing and midwifery students who were above the age of 18 years. The data collection was conducted over a period of time extending from July 3, 2023, to August 7, 2023.

### Participants

A probability random sampling method was used to select the study participant, using an online questionnaire. The inclusion criteria were able and willing to participate in the study, being nursing and midwifery students 18 years or older with internet access, male and female, and being able to read Arabic. There was no restriction on the sample size. All nursing and midwifery students in the approached university who met the inclusion criteria were invited to participate in this study. Based on a medium effect size, significance level of 0.05, power level 0.8, and using multiple regression for six predictors a minimum of 98 participants required.<sup>14</sup> Over sampling was intended to overcome attrition or incomplete responses. Therefore, a total of 118 students were anticipated.

### Study Instruments

The study tool was consisted of self-administered questionnaire. Google forms were used to collect the data, which was then extracted as an Excel file. Google form link contains study questionnaire and was shared by the researcher to study participants in a specific Microsoft teams class designed for the current study aims.

The first part of the instrument was the demographic data (age, gender, years level, cumulative average, housing method, and place of residency). The second part is the Perceived Preoperative Nursing Care Competence Scale for Nursing Students (PPreCC-NS), which was developed by Simsek et al.<sup>15</sup> It consists of 22 items covering five domains:<sup>5</sup> items in the subdimension of ability to fulfill legal responsibilities and adherence to ethical principles,<sup>5</sup> items in the subdimension of evaluation and follow-up of the patient,<sup>4</sup> items in the subdimension of preoperative patient preparation,<sup>4</sup> items in the subdimension of communication, and<sup>4</sup> items in the subdimension of research and professional development.<sup>15</sup>

The response is measured on a 5-point Likert scale,<sup>1-5</sup> where "1" denotes strongly disagree and "5" denotes strongly agree. By adding the responses to each item, the total score is calculated. The lowest and highest possible scores are 22 and 110 respectively. Increasing the score obtained from this scale indicates an increased perceived competence level among nursing and midwifery students in providing preoperative care.<sup>15</sup>

The level of perceived competence for preoperative nursing care can be determined for nursing and midwifery students using this scale, which is a valid and reliable measurement tool.<sup>15</sup> The reliability test of the Arabic version of PPreCC-NS revealed that the Cronbach's alpha values of the five domains ranged from 0.70 to 0.85, and the total scale of Cronbach's alpha is  $> 0.7$ .<sup>16</sup>

## Statistical Analysis

The Statistical Package for Social Sciences (SPSS, version 26) for windows was used for data analysis. Descriptive statistics (mean, standard deviation, and frequency) were used to describe and review the demographic data based on the level of measurements. Inferential statistics including multiple linear regression were used to identify the factors affecting nursing and midwifery students' knowledge regarding preoperative nursing care.

## Results

### Demographic Characteristics of Participants

In the current study, 206 nursing and midwifery students received the questionnaire. The study's questionnaire was completed by 202 students in total, yielding a 98% response rate. The results showed that the mean age for participating students was 20.83 ( $SD = 2.32$ ). Most of participating students were females (76.2%,  $n = 154$ ). Also, more than half were nursing and midwifery students in their second years (51%,  $n = 103$ ). In addition, the participating nursing and midwifery students mean cumulative average was 70.3 ( $SD = 6.65$ ). Furthermore, it was found that more than half of participating students (52.5%,  $n = 106$ ) lived in villages. Moreover, the highest percentage of participants lived with their families (95.5%,  $n = 193$ ). (Table 1) shows the demographic characteristics of the participants.

### Level of Nursing and Midwifery Students Preoperative Care

The overall mean total score for nursing and midwifery students preoperative care was 99.09 ( $SD = 10.81$ ). The highest mean score was for ability to fulfil legal responsibilities and adherence to ethical principles ( $M = 23.6$ ,  $SD = 2.53$ ), then evaluation and follow-up of the patient ( $M = 21.3$ ,  $SD = 3.50$ ), followed by preoperative patient preparation ( $M = 18.5$ ,  $SD = 2.21$ ), then communication ( $M = 17.8$ ,  $SD = 2.69$ ), and the lowest mean score was for research and professional development ( $M = 17.6$ ,  $SD = 2.60$ ) (Table 2).

**Table 1** Participants Demographic Data

Variable	Categories	N	%	M	SD
Age				20.83	2.32
Gender	Male	48	23.8		
	Female	154	76.2		
Years Level	First Year	88	43.6		
	Second Year	103	51		
	Third Year	11	5.4		
Cumulative Average				70.3	6.65
Place of residency	Town	96	47.5		
	Village	106	52.5		
Living status	With Family	193	95.5		
	With Friends	2	1		
	With Students	2	1		
	Alone	5	2.5		

**Note:** Total N= 202.

**Abbreviations:** N, Number of Participants; M, Mean; SD, Standard Deviation.

**Table 2** Level of Nursing and Midwifery Students Preoperative Care

	Number of Items	Actual Total Score	Mean for Observed Total Score	SD
Ability to fulfil legal responsibilities and adherence to ethical principles	5	5–25	23.6	2.53
Evaluation and follow-up of the patient	5	5–25	21.3	3.50
Preoperative patient preparation	4	4–20	18.5	2.21
Communication	4	4–20	17.8	2.69
Research and professional development	4	4–20	17.6	2.60
Total	22	22–110	99.03	10.81

Note: Total N= 202.

Abbreviation: SD, Standard Deviation.

Regarding the PPreCC-NS items. The lowest mean score was for the determination of the complications that may develop during the operation process (perioperative process) by evaluating the preoperative patient data ( $M = 4.08$ ,  $SD = 0.999$ ). On the other hand, the highest mean score was for ensuring the confidentiality and security of written, verbal and electronic patient information in line with ethical principles ( $M = 4.83$ ,  $SD = 0.551$ ) (Table 3).

## Factors Affecting Nursing and Midwifery Students' Knowledge Regarding Preoperative Nursing Care

Results from multiple linear regression analysis revealed that demographic characteristics accounts for 8.1% of the variance in the nursing and midwifery students' knowledge regarding preoperative nursing care (Model 1) ( $R^2 = 0.081$ ,  $F(210.84) = 1.87$ ,  $p = 0.057$ ) (Table 4). In addition, place of residency explained significantly about (4.53%) of the variance in the nursing and midwifery students' knowledge regarding preoperative nursing care, and it was the strongest predictor ( $B = 0.218$ ,  $p = 0.002$ ).

## Discussion

The study aimed to assess the level of knowledge of nursing and midwifery students regarding preoperative nursing care and determine the most influencing demographic variables.

Nursing students must acquire the necessary competence during their nursing education to perform safely their tasks.<sup>17</sup> In the present study, nursing and midwifery students have adequate knowledge regarding preoperative nursing care. Nursing and midwifery students are educated on preoperative nursing care in their courses of Fundamentals of Nursing and Medical Surgical Nursing. Moreover, the clinical practice of students in surgical units could increase their level of knowledge. Durmaz Edeer et al<sup>3</sup> reported that clinical practice can improve learning abilities. However, comparing the preoperative care competence of nursing and midwifery students is difficult because of relatively limited studies in this area. Research in the literature examined different samples of nurses and different topics as preoperative patient education. In this regard, future research in this area is important.

Since the International Council of Nurses was established in 1899, ethical issues have traditionally gained focus in the nursing profession.<sup>18</sup> The nursing profession's code of ethics enables nurses to offer ethical, competent and safe care.<sup>19</sup> The American Nurses Association encourages ethical commitment in all interactions, even among nursing and midwifery students.<sup>20</sup> As soon as a student enters a university or a place of employment, the process of learning professional values begins.<sup>21</sup> In the current study, the highest mean score was recorded for ability to fulfil legal responsibilities and adherence to ethical principles. The highest mean score in the scale items ensured that the confidentiality and security of written, verbal and electronic patient information are in line with ethical principles. This result could be related to academic instructions given to the students at the university and to the importance of code of ethics in hospitals. In Jordan, the code of ethics was published in 2013 not for health sector alone but for all public sectors. Rahmani et al<sup>22</sup> reported good moral

**Table 3** Level of Nursing and Midwifery Students Preoperative Care in Different Items

Item	Category						
	Mean	SD	Strongly Disagree	Somewhat Disagree	Undecided	Somewhat Agree	Strongly Agree
1. I can comply with the basic ethical principles in nursing practices that should be performed before surgery	4.67	0.762	(3) 1.5%	(1) 0.5%	(15) 7.4%	(22) 10.9%	(161) 79.7%
2. I can make sure that the patient/guardian/legal guardian is informed about the surgical intervention, and that the informed consent document is signed by the patient/guardian/legal guardian	4.73	0.732	(3) 1.5%	(2) 1%	(10) 5%	(16) 7.9%	(171) 84.7%
3. I can ensure that the patient delivers their valuables to their relative/security officer/head nurse in accordance with the relevant procedure	4.72	0.736	(3) 1.5%	(2) 1%	(10) 5%	(19) 9.4%	(168) 83.2%
4. I can ensure the confidentiality and security of written, verbal and electronic patient information in line with ethical principles	4.83	0.551	(1) 0.5%	(2) 1%	(4) 2%	(17) 8.4%	(178) 88.1%
5. I can take precautions to ensure patient safety in preoperative care (environmental safety, safety of treatment and care service, etc.)	4.72	0.680	(3) 1.5%	(1) 0.5%	(5) 2.5%	(32) 15.8%	(161) 79.7%
6. I can assess the patient regarding the effects and side effects of drugs administered before surgery (during preoperative period) *	4.43	0.797	(1) 0.5%	(1) 0.5%	(30) 14.9%	(48) 23.8%	(122) 60.4%
7. I can use the medical devices for patient monitoring (bedside monitor, ECG, etc.) in preoperative patient care in accordance with the instructions	4.45	0.919	(4) 2%	(6) 3%	(18) 8.9%	(42) 20.8%	(132) 65.3%
8. I can recognize emergencies that may develop in the preoperative period	4.10	0.977	(5) 2.5%	(6) 3%	(39) 19.3%	(66) 32.7%	(86) 42.6%
9. I can check whether there is a sufficient quantity of necessary supplies and medicines for emergencies	4.29	0.903	(0) 0%	(9) 4.5%	(34) 16.8%	(48) 23.8%	(111) 55%
10. I can determine the complications that may develop during the operation process (perioperative process) ** by evaluating the preoperative patient data	4.08	0.999	(3) 1.5%	(14) 6.9%	(33) 16.3%	(66) 32.7%	(86) 42.6%
11. Before the operation, I can teach the patient the standard exercises (breathing-coughing, ROM, turning in bed, etc.) to be done after the operation	4.68	0.704	(2) 1%	(2) 1%	(10) 5%	(30) 14.9%	(158) 78.2%
12. I can support the patient regarding mobilization	4.59	0.736	(0) 0%	(7) 3.5%	(9) 4.5%	(44) 21.8%	(142) 70.3%
13. I can support the patient with regard to getting enough fluids and nutrients	4.58	0.770	(1) 0.5%	(3) 1.5%	(20) 9.9%	(31) 15.3%	(147) 72.8%
14. I can ensure that oral intake is discontinued before the operation according to the recommendations of evidence based guidelines	4.73	0.605	(0) 0%	(2) 1%	(11) 5.4%	(26) 12.9%	(163) 80.7%

(Continued)

Table 3 (Continued).

Category							
Item	Mean	SD	Strongly Disagree	Somewhat Disagree	Undecided	Somewhat Agree	Strongly Agree
15. Before the operation, I can inform the patient and his/her family about the operation process	4.51	0.859	(0) 0%	(8) 4%	(25) 12.4	(25) 12.4	(144) 71.3
16. I can ensure a suitable communication environment for the patient to express their concerns about the surgery by using effective communication techniques	4.49	0.755	(0) 0%	(2) 1%	(26) 12.9%	(46) 22.8	(128) 63.4
17. I can strengthen the patient's strategies for coping with fear of surgery by using interpersonal communication skills	4.41	0.843	(1) 0.5%	(4) 2%	(29) 14.4%	(45) 22.3%	(123) 60.9%
18. I can ensure positive communication and cooperation with patients and their relatives in order to increase participation in patient care	4.40	0.963	(5) 2.5%	(6) 3%	(21) 10.4%	(42) 20.8%	(128) 63.4%
19. I can share experiences and exchange information on preoperative nursing care with my fellow students and nurses	4.55	0.792	(2) 1%	(2) 1%	(20) 9.9%	(37) 18.3%	(141) 69.8%
20. I can utilize scientific resources with high evidential value that can be used for professional development	4.32	0.887	(0) 0%	(7) 3.5%	(36) 17.8%	(44) 21.8%	(115) 56.9%
21. I can follow current research on preoperative nursing care	4.28	0.906	(1) 0.5%	(10) 5%	(26) 12.9%	(59) 29.2%	(106) 52.5%
22. I try to contribute to scientific research in order to improve preoperative nursing care	4.48	0.842	(1) 0.5%	(6) 3%	(22) 10.9%	(40) 19.8%	(133) 65.8%
<b>Total</b>	<b>99.03</b>	<b>10.81</b>					

**Notes:** Adapted from Nurse Education Today. Volume 120. Perihan Şimşek, Gül Çakır Özmen, Ayşegül Sarioğlu Kemer, Ruveyde Aydın, Enes Bulut, Dilek Çilingir. Development and psychometric testing of Perceived Preoperative Nursing Care Competence Scale for Nursing Students (PPreCC-NS). 105632, Copyright 2023, with permission from Elsevier. N = 202. \*\*"Before surgery" refer to the preoperative period (not immediately before the surgical operation). \*\*\*"Operation process" is used to mean "perioperative process". You may prefer the term "perioperative process" in tenth item.

**Abbreviation:** SD, Standard deviation.

**Table 4** Factors Affecting Nursing and Midwifery Students' Knowledge Regarding Preoperative Nursing Care

Predictors	Unstandardized $\beta$ coefficients	Standard Error	Standardized Coefficients Beta	t	p	Semi-Partial Correlation	F	p	R <sup>2</sup>
Age	-0.317	0.343	-0.068	-0.924	0.356	-0.064			
Gender Male=0 Female=1	1.23	1.78	0.049	0.659	0.488	0.048			
Years Level									
• First year vs second year	0.574	1.60	0.025	0.342	0.733	0.024			
• First year vs third year	-2.77	3.53	-0.058	-0.785	0.433	-0.054			
Cumulative average	0.191	0.118	0.118	1.61	0.108	0.112	1.87	0.057	0.081
Place of residency Town=1 Village=2	4.70	1.52	0.218	3.08	<b>0.002</b>	0.213			
Living Status									
• With family vs with friends	6.88	7.57	0.063	0.909	0.365	0.063			
• With family vs with students	-5.59	7.69	-0.051	-0.728	0.468	-0.050			
• With family vs alone	-7.16	7.88	-0.103	-1.46	0.144	-0.101			

**Notes:** Model 1:  $F(210.84) = 1.87$ ;  $df=$ ;  $R^2 = 0.081$ ; Adjusted  $R^2 = 0.038$ ,  $p = 0.057$ . Bold values denote statistical significance at the  $p < 0.05$  level.

awareness among nursing students. Khamis Mohamed et al<sup>23</sup> found that a professional ethics dimension had the highest mean score rated by nursing students. Bijani et al<sup>24</sup> found that the adherence to ethical codes was higher among nursing and midwifery students than among practicing nurses. Other researchers found that students had a moderate level of ethical awareness.<sup>25,26</sup>

The results on the confidentiality and security of patient information are similar to the reports of Alnajjar and Abou Hashish,<sup>25</sup> who found that nursing and midwifery students understood that violating patients' privacy or confidentiality is unethical. Another work conducted by Poorchangizi et al<sup>21</sup> stated that the caring category, which included "protecting the confidentiality of the patient" and "protecting the patient's right to privacy, received the highest mean scores for professional values. Bijani et al, (2017) found that the ethical rule that deals with "respecting the client/patients" privacy when performing nursing interventions' received the highest average score from nursing students and practicing nurses. By contrast, Sinclair et al<sup>27</sup> found that the patient's right to confidentiality, privacy, dignity or respect was violated by more than two thirds of respondents.

Research is a scientific process that collects and examines data to improve our comprehension of a certain issue or topic.<sup>28</sup> Nursing research aims to obtain information involving the creation and comprehension of a problem through observation or any other approach.<sup>29</sup> Starting research during the academic year is recommended so nursing students should be knowledgeable about research and should adopt a more positive attitude toward it.<sup>30</sup> The International Council of Nurses underlined the significance of incorporating research into nursing students education.<sup>31</sup> In the present study, the lowest mean score was recorded for the research and professional development dimension. This could be related to lack of students' participation in scientific research. Moreover, the majority of nursing and midwifery students in this study were in the first and second year of studying, which means that they did not take the nursing research course. In addition, this result could be related to the lack of attendance for seminars, conferences and training courses in nursing research and the lack of research grants or funding in developing countries. A previous study reported that researchers in developing countries had low funding, high research costs and very low-rate grants.<sup>32</sup>

Hussain and Afzal<sup>33</sup> found that the overall knowledge about research among nursing students is low. By contrast, Bamila N et al<sup>30</sup> found that more than half of nursing students had adequate level of knowledge in nursing research. Moreover, Grande et al<sup>34</sup> found that most nursing students were aware with the nursing research. Hanibernia S<sup>29</sup> found that majority of nursing students had good knowledge in nursing research.

This preoperative assessment aims to identify patient factors that significantly increase the risk for perioperative problems.<sup>35</sup> In the present study, based on the evaluation of the preoperative patient data, the lowest mean score was recorded for the determination of complications that may develop during the operation (perioperative process). Although the result is low, it could be considered satisfactory given that most of the participating students reported that they agree to determine the complications that may develop during the operation.

To our knowledge, this study is the first to assess the relative contribution of demographic characteristics to perceived preoperative competence. Based on multiple linear regression, the place of residency is the most significant predictor of the preoperative competence of nursing students. The difference in academic achievement between urban and rural students is a global issue,<sup>36</sup> and could be related to the fact that most students lived in villages. In Jordan, more than 90% of individuals reside in urban areas.<sup>37</sup> In addition, the discrepancy could be attributed to their different learning capabilities and cumulative average. A previous study reported the significant difference in academic achievement between first- and second-year students in rural and urban areas.<sup>38</sup> Another research reported that the academic performance of rural students was significantly worse than that of urban students.<sup>39</sup>

Nursing competency is related to level of experience.<sup>40</sup> The present study did not find an association between students' age and preoperative competency level. This finding could be explained by the inadequate experience of nursing and midwifery students in clinical settings. Female students obtained higher scores in preoperative care competence, but this finding could be related to the fact that most of the study participants were females. In addition, a previous study reported that female students performed better academically than male students due to their greater effort and attendance in class.<sup>41</sup> Furthermore, males were more addicted to social media, which negatively affected their academic performance.<sup>42</sup> Cho and Kim<sup>43</sup> found that age and gender did not affect global health and cultural competencies. By contrast, a previous work by Madjid et al<sup>44</sup> reported that females and students aged 23 years were predictors of clinical competencies.

This study found no association between the cumulative average and level of perceived preoperative nursing care. The cumulative average results are more frequently utilized to assess performance on written examinations or in theory sections but not for practical sessions.<sup>41</sup> This socio-demographic characteristic is not examined in the literature.

In this work, students who lived alone and with other students had the lowest score in the preoperative knowledge. This finding could be related to the huge difference in samples among these categories. Moreover, moving away from home and starting an independent life might present difficulties, such as loneliness.<sup>45</sup> DEMİR<sup>46</sup> found that second year nursing students who lived alone felt unsatisfied with their academic performance, utilized the Internet in the morning and had more afternoon sleepiness.

## Implications and Recommendation

The findings may be helpful for nursing educators, nursing managers and decision-makers to develop effective methods for enhancing preoperative nursing care. This study suggests the integration of preoperative instruction through various academic levels, along with clinical training, in the undergraduate curriculum. Understanding the significance of preoperative nursing care requires the creative use of teaching and evaluation techniques. Preoperative nursing care should be improved using inspiring educational methods to increase the proficiency of nursing and midwifery students in preoperative care. In addition, clinical settings are crucial to the process of learning; as such, communication and cooperation between universities and hospitals should be improved. Faculty members in universities and policymakers can use the study's findings to develop useful strategies, such as routine training, creating rules and ongoing in-service education.

Future research should validate the present results. Other factors that might affect preoperative competence should be investigated. Mixed-method and qualitative studies should also be conducted to provide in depth understanding of the perceived preoperative nursing care competence.

## Strength and Limitation

This study is the first to assess the level and factors affecting the perceived preoperative nursing care of nursing and midwifery students. The sample size and response rate in the study is sufficient. Nevertheless, the study has limitations



that should be considered when interpreting the findings. Firstly, the cross-sectional quantitative design adopted may not be sufficient to identify all potential factors influencing the preoperative care competence of nursing students. Secondly, the use of online questionnaires could limit the generalizability of the results. Other activities that occurred concurrently with the survey's completion could have affected the results. Consequently, "history" might have influenced how students responded to the survey.<sup>47</sup>

## Conclusion

The knowledge of nursing and midwifery students in preoperative care plays an important role in perioperative nursing care. The perceived level of preoperative nursing care among nursing and midwifery students was found to be adequate. In addition, place of residence was associated with preoperative nursing care competence.

## Data Sharing Statement

The data that support the findings of this study are available from the corresponding author RA upon reasonable request.

## Ethics Approval and Consent to Participate

Approval from the Institution Review Board (IRB) was obtained from the Al-Balqa Applied University (1067/2/3/26) to collect data. This current study was conducted in accordance with the relevant guidelines and regulations. Online consent form was obtained from each participants. The purpose of this study and its expected results were explained by the researchers. The participants were informed that participation is voluntary, and they have the right to refuse or withdraw participation at any time without explanation and with no penalties. The participants were given assurances that their responses would be confidential.

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## Disclosure

The authors declare that they have no competing interests for this work.

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