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# Examining the knowledge and attitude of nursing and midwifery students of medical sciences universities of Mazandaran province in the field of pain management and related factors in 2023

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## Abstract:

Considering the importance of pain management and the complications of non-management by nurses, the present study was carried out with the aim of determining the knowledge and attitude of nursing and midwifery students of medical sciences universities of Mazandaran province in the field of pain management and related factors in 2022. The current research is a cross-sectional study (descriptive and analytical) that was conducted at Universities of Medical Sciences of Mazandaran Province. The sample size was calculated to be 207 people who were selected from nursing and midwifery students of the 5th to 8th semesters who were eligible to enter the study by systematic random sampling. The data collection tools were: a demographic profile questionnaire, a Nurses' Attitude Survey (NAS), a Nurses' Knowledge Assessment Questionnaire in the field of pain management, Pain Management Principles Assessment Test (PMPAT). Experiment and data analysis were conducted with SPSS software version 26. The average age of the students was 21.61. The gender of most people (207 people) was female. The average score of knowledge about pain management was  $41.53 \pm 10.30$  and the average score of attitude toward pain management was  $65.24 \pm 5.26$  (on average). The results of the Mann-Whitney test indicated that there was a statistically significant difference between the average knowledge and attitude toward pain management according to gender (female), educational background, university semester, having a student work experience ( $P < 0.05$ ). Also, Spearman's test showed that there is a positive and significant correlation between students' knowledge and attitude ( $R = 0.324$ ), which was statistically significant ( $P < 0.05$ ). The results of this study indicate that the amount of knowledge and attitude toward pain management in the studied nursing and midwifery students is average. In examining the factors related to pain management of patients, things like gender, education history, university semester, having a student work history are related to the level of knowledge and attitude. In this way, it seems necessary to carry out educational interventions in order to increase the knowledge and improve the attitude of students toward pain management.

## Keywords:

Attitude, effective factors, knowledge, pain management, students

## Introduction

The International Pain Society defines pain as an unpleasant sensation and

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emotional experience associated with actual or potential tissue damage.<sup>[1]</sup> Pain management is one of the most important components of patient care and the nurse

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plays a key role in pain management. Among the treatment team, nurses are the best source for assessing patients' pain due to their continuous communication with the patient.<sup>[2]</sup> Pain management is an important part of health care.<sup>[3]</sup> Knowledge means familiarity, awareness, or understanding of someone or something such as facts, information, descriptions, or skills that are obtained through experience or training with understanding and discovery or learning. Attitude also includes cognitive, emotional elements, and readiness for action. Attitude represents a cognitive-emotional effect instead of a personal experience of the object or social subject of the attitude and a desire to respond to that subject.<sup>[4]</sup> In the past, the goal of pain management was to reduce pain to a tolerable level, whereas today, the goal is to relieve pain. To achieve this goal, two pharmaceutical and non-pharmacological methods are used.<sup>[5]</sup> For drug treatment, mostly narcotic drugs and non-steroidal anti-inflammatory drugs are used.<sup>[6]</sup> Non-pharmacological treatments can treat moderate pain and severe pain experiences either completely or in addition to other methods.<sup>[7]</sup>

The benefits of non-pharmacological methods include: increasing the feeling of individual control, reducing the feeling of weakness, improving the level of activity and functional capacity, reducing stress and anxiety, reducing the focus on pain, reducing pain behavior, reducing the required dose of painkillers, and reducing the side effects of treatment.<sup>[8-12]</sup> Non-pharmacological methods used in pain management include: physical, cognitive, behavioral, other complementary methods, or invasive and non-invasive methods.<sup>[13,14]</sup> Among the non-invasive methods, the following can be mentioned: meditation, sleep, rhythmic breathing, biofeedback, touch therapy, transcutaneous electrical nerve stimulation, hypnosis, music therapy, acupressure, and cold and heat therapy.<sup>[15-19]</sup>

Nurses and midwives are in contact with the patients for a longer period of time than other medical personnel, and this requires proper decision-making by nurses regarding proper and effective pain control in patients.<sup>[20,21]</sup> Nurses' decision-making requires acquiring sufficient knowledge, awareness, and appropriate attitude regarding the proper management of pain, and nursing students' education and training centers should pay special attention to the sufficient empowerment of students in this field. Studies conducted in this regard on nursing and midwifery students and nurses in different regions of the country show that they have different levels of knowledge and attitude regarding pain management. Therefore, this study was conducted with the aim of determining the knowledge and attitude of nursing and midwifery students of medical sciences universities of Mazandaran province in the field of pain

management and related factors in 2022. It is hoped that the results of this study can be usefully used in the design and development of intervention programs to improve students' knowledge and attitudes.

## Materials and Method

### Study design and setting

The current research is a cross-sectional (descriptive-analytical) study. This study was carried out after approval of the project, obtaining permission from Mazandaran University of Medical Sciences Research and Technology.

### Study participants and sampling

The research environment in this study is the Faculty of Nursing and Midwifery and hospitals affiliated with Mazandaran University of Medical Sciences, where it is possible to access the subjects studied in these environments. To calculate the sample size, Aflatunian's study was used in 2016, and taking into account the drop of 20%, the sample size was calculated as 207 people.<sup>[21]</sup> The inclusion criteria were: studying in the 5<sup>th</sup> to 8<sup>th</sup> semester of nursing and midwifery and willingness to participate in the study. The exclusion criteria were: unwillingness to continue participating in any stage of data collection and desire to leave the study. Sampling was done in a systematic random manner according to the sample share of each of the studied faculties and by referring to the list of names of working students who met the conditions to enter the study.

### Data collection tool and technique

The research tool was a questionnaire consisting of three parts.

- 1) Questionnaire of personal and social characteristics of nurses
- 2) Questionnaire to evaluate nurses' attitude toward pain management (Nurses' Attitude Survey) NAS.
- 3) Questionnaire to assess the knowledge of nurses regarding pain management: Pain Management Principles Assessment Test (PMPAT).

The questionnaire of personal-social characteristics of nurses included: age, gender, student work experience, and extra-curricular education in the field of pain management. Two questionnaires to assess nurses' attitude toward pain management (Nurses' Attitude Survey (NAS)) and to evaluate nurses' knowledge toward pain management: Pain Management Principles Assessment Test (PMPAT) were designed by McMillan in 2000 to evaluate the attitude and knowledge of nurses toward pain management. The attitude questionnaire consisted of 25 questions to which the respondent chose an answer based on his opinion.

The scoring system was based on a 4-point Likert scale (strongly disagree = 4, disagree = 3, agree = 2, strongly agree = 1). Higher scores indicate a person's positive attitude, and if the respondent received a score of 70%, he had the highest and most positive attitude toward pain management. A score of 50%–70% indicates an average attitude and less than 50% indicates a negative attitude. The knowledge evaluation questionnaire consisted of 31 multiple-choice questions (three or five options) that measured the level of knowledge of the individual regarding the concept of pain, pain management methods, pain assessment, and pain medications. The correct option was marked according to the person's opinion. Each correct answer was given one point. The validity of these questionnaires has been evaluated and confirmed by McMillan in 2000. Its reliability was also reported based on the internal correlation coefficient and Cronbach's alpha (0.07).<sup>[22]</sup> The Persian version of this tool was psychometrically evaluated by Aflatunian *et al.* in Jiroft in 2016, and the reliability of the translated questionnaire based on the internal correlation coefficient and using Cronbach's alpha was reported to be 86%.<sup>[21]</sup>

### Ethical consideration

This study was conducted after the approval of the code of ethics from Tabriz University of Medical Sciences (IR.BPUMS.REC.1402.318). Written informed consent was obtained from all study participants.

### Data analysis

Descriptive statistics of data for qualitative variables, absolute and percentage frequency distribution tables and for quantitative variables, range of changes, central indices (mean), and dispersion indices (standard deviation) were summarized and reported. Kolmogorov–Smirnov (K–S) test was used to determine the normality or non-normality of the variable scores of knowledge and attitude. Due to the non-normality of the data, the Mann–Whitney test was used to examine the relationship between the variables and knowledge and attitude. Spearman's test was used to check the correlation between knowledge and attitude.

## Result

The distribution of demographic variables in students, including student work history, education history, university semester, gender, and student age, was presented in Table 1.

The results show that the average knowledge score was  $41.53 \pm 10.30$  (average) and the average attitude score was  $65.24 \pm 5.26$  (average) [Table 2].

Due to the non-observance of the distribution of knowledge and attitude variables from normal

distribution and the non-existence of continuity, non-parametric tests were used.

The results of the Mann–Whitney test indicated that the average knowledge and attitude according to gender, education history, work history, and university semester were significant ( $P < 0.05$ ) [Table 3]. Female gender, education history, work history, university semester were higher than the factors that had a direct and meaningful relationship with the level of awareness and attitude towards pain management.

Spearman's test was used to check the correlation between knowledge score and attitude. The results of this test showed that there is a strong positive and significant correlation between the two variables of knowledge and attitude in students. Spearman's test was used to check the correlation between knowledge score and attitude. The results of this test showed that there is a strong positive and significant correlation between the two variables of knowledge and attitude in students [Table 4].

The results of the regression test showed that there was no significant relationship between knowledge and attitude in the field of pain management with demographic variables [Tables 5 and 6].

## Discussion

The current study was conducted with the aim of investigating the knowledge and attitude of nursing and midwifery students of selected nursing-midwifery schools in Greater Region 2 in the field of pain management and related factors in 1401. This study was cross-sectional (descriptive-analytical). The

**Table 1: Frequency distribution of studied nursing and midwifery students according to demographic variables**

Demographic-social characteristics		
Variable	Variable levels	Frequency (percentage)
Student work history	Does not have	80 (6/38)
	Has it	127 (3/61)
Participation in extracurricular class	Does not have	125 (3/60)
	Has it	82 (6/39)
Gender	Female	134 (7/64)
	Male	73 (2/35)
Student's age	Mean±S.D	1.51±21.61
Academic semester	Semester 5 and 6	96 (3/46)
	Semester 7 and 8	111 (6/53)

**Table 2: The average knowledge and attitude of nursing and midwifery students studied in selected nursing-midwifery schools**

Variable	Mean±SD	95% confidence interval
Knowledge score	41.53±10.30	18.76–19.20
Attitude score	65.24±5.26	14-76–15.31

statistical population was the 5<sup>th</sup>–8<sup>th</sup> semester nursing and midwifery students of the Faculty of Nursing and Midwifery and hospitals affiliated with Tabriz University of Medical Sciences, and the sample size in this study was 207 students. The average score of knowledge about pain management was 41.53 ± 10.30, and the average score of attitude toward pain management was 65.24 ± 5.26.

**Table 3: Comparison of knowledge and attitude scores in the field of pain management according to demographic variables in nursing and midwifery students**

The investigated parameters	Gender		P, Mann–Whitney test
	Female	Male	
Knowledge score	45.61±3.15	41.52±3.01	0.031
Attitude score	65.51±2.46	62.13±1.93	0.023
The investigated parameters	Participation in extracurricular class		P, Mann–Whitney test
	Yes	No	
Knowledge score	46.73±2.19	41.54±3.19	0.031
Attitude score	66.11±1.72	62.61±2.21	0.013
The investigated parameters	Student work history		P, Mann–Whitney test
	Yes	No	
Knowledge score	45.71±1.32	41.57±3.21	0.032
Attitude score	65.59±2.51	61.80±1.11	0.044
The investigated parameters	Academic semester		P, Mann–Whitney test
	7 and 8	5 and 6	
Knowledge score	45.84±2.29	43.41±3.32	0.033
Attitude score	66.85±2.11	61.73±2.12	0.031

**Table 4: Correlation of knowledge and attitude variables**

Variable	Mean±SD	r	P	n
Knowledge score	41.53±10.30	0.324	0.001	207
Attitude score	65.24±5.26			207

**Table 5: The relationship between knowledge in the field of pain management with attitude and demographic variables in nursing and midwifery students**

Variable	B	Standard error	β	t	Sig
Constant*	92.540	56.055		1.651	0.099
Gender	-3.971	15.770	-0.097	-0.252	0.801
Participation in extracurricular class	0.702	2.652	0.013	0.265	0.791
Student work history	-0.386	2.238	-0.008	-0.173	0.863
Academic semester	13.659	40.532	0.143	0.337	0.736
Attitude	30.578	16.742	0.742	1.826	0.068

\*Dependent Variable: knowledge

**Table 6: The relationship between the attitude in the field of pain management with knowledge and demographic variables in nursing and midwifery students**

Variable	B	Standard error	β	t	Sig
Constant*	92.540	56.055		1.651	0.099
Gender	-0.060	0.091	-0.277	-0.654	0.513
Participation in extracurricular class	-46.823	60.481	-1.061	-0.774	0.439
Student work history	0.009	0.012	0.036	0.734	0.463
Academic semester	0.017	0.084	0.077	0.200	0.842
Knowledge	0.113	0.239	0.194	0.474	0.636

\*Dependent Variable: attitude

The results of the Mann–Whitney test indicated that female gender, having a history of education, having work experience, and university semester are higher than facilitating factors in the amount of knowledge and attitude toward pain management.

In explaining the results of the present study, it can be said that women will look for information in the field of pain management due to the presence of more feelings and more understanding.<sup>[9]</sup> The relationship between receiving education beyond the educational program and student work history and the semester of studying is also not far from expected due to more experience and information with knowledge and attitude toward pain.

The results of Zakerimoghadam *et al.*'s study (2021) entitled “Investigation of the relationship between nurses’ knowledge of pain and the satisfaction of patients undergoing coronary artery bypass surgery with pain relief” showed that 23% of nurses have high knowledge and 58% have average knowledge and 9% have low knowledge.<sup>[13]</sup> Manworren (2020)<sup>[14]</sup> studied the knowledge and attitude of nurses about children’s pain, and the results showed that the knowledge of nurses in the field of treating children’s pain is weak, and suggested designing educational programs based on care standards to improve the performance of nurses in relieving children’s pain. These studies still express the need for nurses to change their knowledge and attitude toward pain.

In a study in Hong Kong, Tse *et al.*<sup>[18]</sup> (2017) found a significant relationship between nurses’ previous training and clinical experiences and their correct response to pain. They believe that continuous and

more training is necessary to increase the awareness of nurses in Hong Kong. In Mamishi *et al.*'s<sup>[11]</sup> study (2016), 86.6% of nurses had a positive attitude toward reducing patients' pain, and there was no statistically significant relationship between demographic characteristics such as gender, workplace, and marital status with nurses' attitudes. These results are consistent with the results of our study. In the present study, this result indicates that as nurses' knowledge increases, their attitude increases and vice versa. In line with this research, in the study of Alzghoul *et al.* (2016), the findings showed that the attitude of nurses regarding pain management has an important and positive relationship with their performance in this field.<sup>[19]</sup> But the research results of Finley *et al.*<sup>[20]</sup> (2018) showed that there is a gap between the knowledge, attitude, and performance of nursing personnel, which is inconsistent with the present study.

Also, the results of the study by Aflatuni *et al.* (2017) also indicated that there is no statistically significant relationship between the knowledge score and the attitude of nurses (21).<sup>[21]</sup> which is not consistent with the results of the present study. It seems that it is better to continue the educational workshops and to hold them with more detailed and effective training that will lead to the improvement of the knowledge and attitude of nurses as much as possible.

Niekerk (2018) came to the conclusion that the training of Tasmanian nurses regarding pain control is insufficient and they need adequate training in the field of pain control.<sup>[1]</sup> The next result of this study is the relationship between knowledge and attitude. The current study showed that there is a correlation between the independent variables of knowledge and attitude, and this correlation is positive and strong. In this way, it can be said that with the increase of knowledge, it is expected to increase the attitude of people. Bölükbaş *et al.* (2021) concluded that there is a positive and significant correlation between knowledge and attitude in nurses. In their results, they pointed out that with its increase, we can expect an increase or a change in attitude in nursing and midwifery students.<sup>[22]</sup> In a review and systematic study, Loke *et al.* also mentioned the relationship between knowledge and attitude, and in explaining their results, they pointed to the high percentage of both in a dependent variable.<sup>[23]</sup>

Also, the results of this study showed that there is no significant relationship between knowledge and attitude in the field of pain management with demographic variables. In this regard, the study of Mohammad Aliha *et al.*<sup>[24]</sup> (2018) with the aim of determining the attitude and performance of nurses in relation to pain management of patients in emergency departments, there was no statistically significant difference between

the average scores of attitude and performance with demographic characteristics. Hosseinzadegan *et al.*'s<sup>[25]</sup> study (2016) was conducted with the aim of determining the knowledge, attitude, and performance of surgical ward nurses working in Urmia educational and treatment centers regarding the evaluation and management of patients' pain. The results showed that there was no statistically significant difference between the mean of the total scores of attitude and awareness and performance with demographic characteristics. In this study, the training history was also examined, and the results showed that there is a statistically significant relationship between the education history in the field of pain and the scores of the knowledge areas and nurses' attitudes<sup>[26-31]</sup>. The results of the study by Ghorbani Moghaddam *et al.*<sup>[26]</sup> aimed at determining the knowledge, attitude, and performance of nurses in pain management after surgery in the surgical departments of Shahada Persian Gulf Hospital in Bushehr in 2013 showed that only between the level of performance and the level of education, a statistically significant relationship was seen.

### Limitations and suggestions

The current research was a cross-sectional (descriptive and analytical) study, so more qualitative and observational research is needed to confirm the findings of the present study. It is also necessary to conduct interventional studies to evaluate the effect of educational programs on the level of knowledge and attitude of nursing and midwifery students in pain management. However, nursing and midwifery students are in contact with a wide range of patients in different departments, from infants to the elderly, so it is suggested to examine the knowledge and attitude of nursing and midwifery students in the field of pain management in different people and departments.

### Conclusion

The results of this study indicate that the amount of knowledge and attitude towards pain management in nursing and midwifery students is average and requires interventions. Also, these variables can be related to various factors that were investigated in the results of this study, such as female gender, having a history of education, having work experience, and a higher university semester. Therefore, it is expected to design educational programs in line with increasing students' knowledge and attitude toward pain management by knowing the related factors.

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### Conflicts of interest

There are no conflicts of interest.

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