

**THE IMPACT OF TEACHING NURSING STUDENTS ABOUT
PRESSURE INJURY CLASSIFICATION SCALE ON SPONGE TO
RECOGNIZE THEM THE LEVEL OF PRESSURE INJURY**

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ABSTRACT

Objective: This research was conducted to evaluate the effect of pressure injury classification on sponge on the levels of pressure injury recognition of nursing students.

Material and Method: In the analysis the post-test control group configuration was used. The universe of the study consisted of 70 nursing department students studying in the second and third years and volunteering to participate in the study. The data were collected using the data collection form created by the researchers and six materials in which the pressure injury phase was made three-dimensional on different sponges. Descriptive statistics (number, percentage) and “ χ^2 -cross tables” were used in the analyzes.

Results: The rate of correct responses given to “Which risk factors are correctly given for pressure injury?” This issue was greater than that of the control group for the students in the experimental group. There was a disparity between the groups in terms of the identification of stage 3 ($p = 0.000$), stage 4 ($p = 0.024$), non-staged pressure injury ($p = 0.001$) and deep tissue damage ($p = 0.000$) in the classification of pressure injuries.

Conclusion: It was found that the training given with the sponge positively affected the classification of pressure injury by the students. There was no difference between the groups in terms of knowledge levels of pressure injury.

Keywords: Education, Nursing Student, Pressure Injury.

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BASINÇ YARALANMASI SINIFLANDIRMASININ SÜNGER ÜZERİNDE ANLATIMININ HEMŞİRELİK ÖĞRENCİLERİNİN BASINÇ YARALANMASI TANIMA DÜZEYLERİNE ETKİSİ

ÖZ

Amaç: Hemşirelik öğrencilerinin basınç yaralanması tanıma düzeylerine basınç yaralanması sınıflandırmasının sünger üzerindeki etkisini değerlendirmek amacıyla bu araştırma yapılmıştır.

Yöntem: Araştırmada son test kontrol gruplu tasarım kullanıldı. Araştırmanın evrenini hemşirelik bölümü ikinci ve üçüncü sınıfta okuyan ve araştırmaya katılmaya gönüllü 70 öğrenci oluşturdu. Veriler araştırmacılar tarafından hazırlanan veri toplama formu ve basınç yaralanması evresinin farklı süngerler üzerinde üç boyutlu hale getirildiği 6 materyal ile toplandı. Analizlerde tanımlayıcı istatistikler (sayı, yüzde) ve “ χ^2 -çapraz tabloları” kullanılmıştır.

Bulgular: Deney grubundaki öğrencilerin kontrol gurubuna göre “Basınç yaralanması için hangi risk faktörleri doğru şekilde verilmiştir?” sorusuna verdikleri doğru cevap oranı daha yüksek saptanmıştır. Öğrencilerin basınç yaralanması sınıflandırılmasında evre 3 ($p=0,000$), evre 4 ($p=0,024$), evrelendirilemeyen basınç hasarı ($p=0,001$) ve derin doku hasarını ($p=0.000$) resimden doğru tespit etme durumları arasında gruplar arasında fark saptanmıştır.

Sonuç: Sünger ile verilen eğitimin öğrencilerin basınç yaralanmasını sınıflandırmasını olumlu yönde etkilediği bulundu. Basınç yaralanması bilgi düzeyleri açısından gruplar arasında fark yoktu.

Anahtar Kelimeler: Basınç yaralanması, Eğitim, Hemşirelik Öğrencisi

INTRODUCTION

Pressure sores are defined by the European Pressure Ulcer Advisory Panel (EPU-AP) and the National Pressure Ulcer Advisory Panel (NPUAP) as localized skin or subcutaneous tissue damage that usually occurs in areas of bone protrusions that can occur with pressure or tear (Doğu, 2015). Although pressure injury can be prevented by developing technology, medical devices, and in-service training, it continues to be a problem for healthcare professionals and patients (Waugh, 2014).

It has been estimated that in the United States, about 2.5 million patients develop pressure injuries per year. It is noted that the annual cost varies from \$ 9.1 to \$ 11 billion for the treatment of pressure injuries. For each accident, patient care expenses vary from \$ 20.900 to \$ 151.700. Around 60.000 patients die each year from the effects of pressure injuries (Agency for Healthcare Research and Quality, 2021). In the study of Chen, Chen and Wu (2016), in which 17 studies were analyzed, the incidence of pressure injury was stated as 0.3-57% and the

average incidence was 15%(Chen et al., 2012). In a study of pressure injury prevalence in our country with 404 patients, the incidence of pressure injury was found to be 10.4%(Inan and Oztunc, 2012).

The assessment of pressure injury is one of the assessments included in patient safety and nurses have primary responsibilities in preventing these injuries. To increase the quality of care of the patient and to establish a health standard among health care providers, nurses and nursing students should know about pressure injuries and classifications (Ersoy et al., 2013). It is especially important for determining the factors that play a role in the formation of pressure injuries, classification of injuries after pressure injuries, planning, and implementation of nursing interventions (Sönmez & Yapucu, 2018).

Rao et al. (2016), established that the most common risk factors associated with the development of pressure injuries were: Vascular disease, diabetes, inactivity, advanced age, severe disease, presence of moisture and the most important risk factors were determined as the position given on the operating table and the duration of the operation (Roa et al. 2016). Factors related to the patient (chronic diseases, age, obesity, malnutrition, anemia, etc.), staying in the same position as a long time, blood loss, hypothermia, friction, and slipping played also an important role in the development of pressure sores (Spruce 2017; Q'Brien et al., 2014; Lupe et al., 2013). The effect of pressure on body parts varies according to the position of the body. In the study of Defloor, it was emphasized that it is risky in terms of pressure sores in the sacrum, heels, shoulder, pelvis, and ankle (Defloor, 2000). The complications of pressure injuries are bacterial infections, sepsis, septic shock, embolism, and hematoma (Levi and Rees, 2007).

The National Pressure Ulcer Advisory Panel (NPUAP) changed the classification of pressure injuries in 2017. With this change in terminology, pressure injuries on both intact and injured skin have begun to be defined more accurately. In the previous staging system, "Stage I" and "Suspected Deep Tissue Injuries" were defining the impaired skin and the other stages were defined as an open wounds. This terminology has led to confusion as injuries are referred to as "pressure sores" for each of these stages. For this reason, pressure wound classifications are made as stage 1, 2, 3, 4, non-staged pressure injury, and deep tissue damage (Grada & Phillips, 2017). It is recommended to use new methods for education of students (Morin, 2011).

During their undergraduate studies, nursing students must receive adequate training and develop skills to help to prevent and manage pressure injuries (Gill, 2013). According to the educational standards published by the World Health Organization, the use of materials in nursing education has started to increase (Lee et al., 2010).

During the education period of nursing students, it is important to determine the level of knowledge about pressure injury and identify the risk classifications in terms of patient safety and quality care. When the literature was explored no study was found that measured the pressure wound classification level of nursing students. In this sense it is thought that there is a gap in the literature. This study was carried out to measure the effect of practical and classical lecture methods for measuring the diagnosis of on the sponge pressure injury classification in nursing students on the correct classification of pressure injury by students.

1. MATERIAL AND METHODS

Research type: The post-test control group design was used in the study.

Purpose of the study: This study was carried out in order to determine the effect of pressure injury classification on sponge on the pressure injury recognition levels of nursing students.

Research questions: 1. What is the knowledge level of nursing students about pressure injury?

2. Does the narration of pressure injury classification on sponges affect the level of pressure injury recognition in nursing students?

Place and time of the study: The research was conducted with nursing students in the second and third grade at a health college. The data were collected between May.7-30.2018.

The population and sample of the study: The research was conducted with 90 nursing students in second and third grade at a health college. Five students were excluded from the study because they worked as nurses. Fifteen students did not agree to participate in the study. The research was completed with 70 students who agreed to participate.

The sampling selection method was not used in the study. The whole universe is included.

The inclusion criteria were as following:

- Taking or not taking a course in surgical nursing
- Willing to participate in the research

Exclusion criteria

- Working as a healthcare professional in any health institution
- Don't want to participate in the study
- Being a first year nursing student

Data collection tools: Data were collected using a 10-question data collection form prepared by the researchers. Four questions were created for the descriptive characteristics of the students (age, gender, grade, high school they graduated from). Five questions were prepared by the researchers to measure the level of knowledge about pressure injury. (Pressure injuries occur in

which patient groups? Which risk factors for pressure injury are given correctly? Which option is correct for pressure injury areas that may occur in the body?, Which are the complications of pressure injury?, Which option has been given correctly in the care of patients with pressure injuries?). The last question measured the recognition of the pressure injury. In this question, the stages of the pressure injury were shown on the Picture and the students were asked to classify pressure injury.

Implementation of the research: Written permission was obtained from the students. Later, students were divided into control (n = 33) and experimental groups (n = 37) according to whether the last digit of their school number is even or odd. In the control group, pressure injuries was explained to the students with the slides. Pressure injury; Patient groups with pressure injuries, risk factors that cause pressure injury, pressure injury areas that may occur in the body, pressure injury complications, and application issues that should be done in patient care with a pressure injury. The same issues were explained to the students of experimental group with the material prepared by the researchers, where each pressure injury stage was done three-dimensional shape on a different sponge. The layers of the leather were painted on the sponge with oil paint and the 3-dimensional representation of the parts with tissue loss was prepared by carving the sponge. The data collection form was deployed to the students at the end of the lecture. The lecture and data collection process lasted 60 minutes in total.

The training period was driven in two lessons of 30 minutes each. The application scheme is shown in scheme 1.

Ethical aspects of the study

Written permission was obtained from the institution (number: 85336622-108.99 / 47505), the Non-Interventional Ethics Committee (number:-050.01.04), and the students who agreed to participate in the study in order to attend the study and collect the data.

Preparation phase	Determination of data collection tools	Creating pressure injury stages on 6 different sponges	Pre-application on the student whose sponge is not included in the research
	Creation of data collection tool		
Application phase	Determining the sample suitable for research Grouping according to whether school numbers are odd (control) or even (experiment) Getting written permission from students		
	Experimental group (n = 37)	Control group (n = 33)	
	Lecture on the sponge developed by the researchers	Classical lecture	
	Application of the data collection form		
Reporting phase	Conducting stastical analysis and writing the study report		

Scheme 1. Application scheme

Limitations of the Study

The implementation phase of the study was carried out in the same day with the participation of all of the students so that there was no question exchange between them. The 4th graders were excluded from the sample because the curriculum of the fourth graders was not suitable for other students. The research sample consisted of 2nd and 3rd year nursing students in the college. Therefore, the results of this research cannot be generalized.

Data analysis

The present data was evaluated in the SPSS 24 program. In the analyzes, descriptive statistics (number, percentage) and “2-cross tables test analysis” were used according to the expected value levels in examining the relationship between two qualitative variables. The knowledge levels of the students were evaluated with five questions prepared by the researchers.

2. RESULTS

The comparison between groups regarding some characteristics of the students participating in the study are given here. There was no statistical difference between the descriptive characteristics of the students included in the study according to the groups ($p>0.05$) and the groups were similar (Table 1).

Table 1: Descriptive Characteristics of The Students

Variable	Group			p*
	Experiment group (n=37)	Control group (n=33)	Total (N=70)	
Gender				
Female	30 (81.1%)	20 (60.6%)	50(71.4%)	$\chi^2=2.65$ 0 p=0.104
Male	7 (18.9%)	13 (39.4%)	20(28.6%)	
Grade				
2.Grade	16 (43.2%)	15 (45.5%)	31(44.3%)	$\chi^2=0.00$ 0 p=1.000
3.Grade	21 (56.8%)	18 (54.5%)	39(55.7%)	
Willingly choosing nursing				
Yes	31 (83.8%)	24 (72.7%)	55 (78.6%)	$\chi^2=0.69$ 5 p=0.404
No	6 (16.2%)	9 (27.3%)	15 (21.4%)	
High school Graduated				
Health vocational school	6 (16.2%)	5 (15.2%)	11 (15.7%)	$\chi^2=0.00$ 0 p=1.000
Anatolian high school	31 (83.8%)	28 (84.8%)	59 (84.3%)	

* When comparing the 2 groups' results of two qualitative variables, "χ²-cross tables" were used according to the expected value levels.

The questions asked to measure the knowledge level of the students about pressure injury were compared according to the groups. "Which risk factors for pressure injury are given correctly?" There was a difference between the groups in the answers given to the question ($p=0.036$). The number of correct answers given to this question by the students in the experiment group was higher. There was no difference between the groups on behalf of the correct answers given to the other questions (Table 2).

The comparison of the questions which were asked to measure the level of knowledge about pressure injury classification can be seen in Table 3. There was statistical difference between two groups about the students' ability to correctly identify stage 3 ($p =0.000$), stage 4 ($p =0.024$), non-staging pressure injury ($p =0.001$) and deep tissue damage ($p =0.000$) by looking at the picture. At these stages, the success of the students in the experimental group was found to be higher (Table 3).

Table 2: Comparison of The Level of Knowledge of the Students About Pressure Injury

Variable	Students' responses	Group		Test analysis
		Experiment group (n=37)	Control group (n=33)	
		n (%)	n (%)	
Pressure injuries occur in which group of patients?	Yes	11(29.7)	11 (33.3)	$\chi^2=0.105$ $p^*=0.746$
	No	26 (70.3)	22 (66.7)	
Which risk factors about pressure injury are given correctly?	Yes	27 (73.0)	16 (48.5)	$\chi^2=4.415$ $p^*=0.036$
	No	10 (27.0)	17 (51.5)	
Which option is correct for pressure injury areas that may occur in the body?	Yes	20 (54.1)	12 (36.4)	$\chi^2=3.458$ $p^*=0.177$
	No	16 (43.2)	21 (63.6)	
What are the complications of pressure injury?	Yes	14 (37.8)	9 (27.3)	$\chi^2=0.883$ $p^*=0.348$
	No	23 (62.2)	24 (72.3)	
Which option has been given correctly for the care of patients with pressure injuries?	Yes	19 (51.4)	10 (30.3)	$\chi^2=3.185$ $p^*=0.074$
	No	18 (48.6)	23 (69.7)	

* " χ^2 -cross tables" were used according to the expected value levels in the examination of the relationship between two qualitative variables.

Table 3: Comparison of The Questions Asked to the Students In Order to Measure the Classification Scale of Pressure Injury

Variable	Students' responses	Group		Results
		Experiment Group (n=37)	Control Group (n=33)	
		n (%)	n (%)	
Stage 1	Yes	36 (97.3)	32 (97.0)	$\chi^2=0.007$ $p^*=0.935$
	No	1 (2.7)	1 (3.0)	
Stage 2	Yes	36 (97.3)	31 (93.9)	$\chi^2=0.479$ $p^*=0.489$
	No	1 (2.7)	2 (6.1)	
Stage 3	Yes	18 (48.6)	1 (3.0)	$\chi^2=18.356$ $p^*=0.000$
	No	19 (51.4)	32 (97.0)	
Stage 4	Yes	16 (43.2)	6 (18.2)	$\chi^2=5.083$ $p^*=0.024$
	No	21 (56.8)	27 (81.8)	
Unstaged Pressure Damage	Yes	30 (81.1)	14 (42.4)	$\chi^2=11.165$ $p^*=0.001$
	No	7 (18.9)	19 (57.6)	
Deep Tissue Injury	Yes	31 (83.8)	14 (42.4)	$\chi^2=12.996$ $p^*=0.000$
	No	6 (16.2)	19 (57.6)	

3. DISCUSSION

Although pressure sore is a preventable problem, they continue to affect negatively people's quality of life (Balzer et al., 2014; Keller et al., 2002). During undergraduate studies, nursing students need to receive adequate training and improve their skills to assist in pressure sore prevention and management (Gill, 2013). In this study, the experimental and control group students gave similar answers to the questions in which the knowledge level of the students about pressure injury was measured. Students of both groups gave similar answers about the

patients with a pressure injury, the body parts where pressure injury may occur, the complications of pressure injury, and the care of the patient with pressure injury. It has been determined that the education method for these subjects does not differ in student education. It was determined that the students of experimental group were more aware of the risk factors that cause pressure injury, unlike the control group. This difference suggests that the material prepared attracts the attention of the students and causes an increase in students' motivation. This information could not be discussed more since no literature support was available.

In a study investigating the knowledge and attitudes of Australian nursing students to prevent pressure injuries, it was found that students' knowledge scores about pressure injury were low (Usher et al., 2018). Rafiei et al. (2019), found that the knowledge level of the students about pressure injury was moderate (Rafiei et al. 2019). In the study of Ursavaş and İşeri (2020), it was concluded that the training given about pressure injury was effective to increase the knowledge level of students (Ursavas & Iseri, 2020). In a study conducted by Yilmazer et al. (2020) with the standard patient to increase the knowledge level of university students about pressure injury, it was found that the knowledge level of the students in the experimental group was high (Yilmazer et al., 2020). According to the answers given by the control group to the information questions, the students; It was determined that in which patients the pressure injury was seen and their level of knowledge about pressure injury complications was low, their knowledge about risk factors and practices for a patient with pressure injury was high, and their level of knowledge about the places of pressure that could occur was moderate. It can be said that the knowledge level of the students about pressure injury is moderate. The results of the research like those with medium knowledge in the literature.

The attendings who are responsible of nursing education can use a variety of teaching methods during educating period of students about pressure sores. In an experimental study with a repetitive measurement design, Beeckman et al. (2008) gave information to nurses and nursing students about the classification of pressure sores with two educational methods (e-learning program and one hour lesson). In the study, they reported that both group of nurses and nursing students had low skills of classifying pressure ulcers before both trainings. As a result of their studies, it was determined that both education methods significantly improved students' skills (Beeckman et al., 2008). In our study, the success rate in Stage 1 and Stage 2 was found to be high in the experimental and control groups. These results support the study of Beeckman et al. (2008).

In a study evaluating pressure injury knowledge levels with nurses, assistant nurses, and student nurses working in Sweden, it was found that the lowest scores in the sample were in

pressure classification themes (55.5%). Knowledge scores of nurses and student nurses were found higher than assistant nurses (Gunningberg, 2015).

In the study conducted by Larcher Caliri et al. In Brazil in 2003, they measured the knowledge level of 83 nursing students about pressure sores and found that nursing students had a low level of knowledge about pressure sores (Larcher, 2003). In a study conducted by nursing students to determine their knowledge about pressure sore prevention, classification, and management, it was found that nursing students did not have sufficient knowledge about pressure ulcers (Larcher, 2003). In a study conducted by Usher et al. (2018) to evaluate the evidence-based knowledge and attitudes of nursing students regarding pressure sores, it was found that nursing students' knowledge and attitudes about pressure sores were lacking (Usher, 2018). In our study; when looking at the correct and incorrect numbers of the students in the control group in stage 3, stage 4, ungraded pressure injury and deep tissue injury stages, it is seen that their knowledge scores are low. Correct staging status with lectures on material was higher in the experimental group. It is thought that the lecture with the material can be used in staging the pressure injury correctly.

This suggests that the use of materials in the training given to nursing students to prevent pressure injury may be effective.

CONCLUSION

Education provides information for nursing students to perform proper and effective care. We found that lecturing with a sponge prepared by the educators in the pressure injury classification of nursing students positively affected the students' success. Since there is no significant difference between the level of knowledge in the control and experimental groups, further studies recommended increasing the knowledge level of students besides the pressure injury classification. It is recommended to use visual materials in nursing education, to conduct studies with more student groups and to increase the number of studies in this field.

Author Contributions

Concept PTT, AYK, BM, HIT; Design PTT, AYK, BM, HIT; Materials PTT, AYK, BM, HIT; Data Collection&/or Processing PTT, AYK, BM, HIT; Analysis/ Interpretation PTT, AYK, BM, HIT; Literature Search PTT, AYK, BM, HIT; Writing PTT, AYK, BM, HIT

Conflict of Interest

There is not conflict of interest.

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