



## Validity and reliability of the Turkish version of the pressure ulcer prevention knowledge assessment instrument



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### ABSTRACT

**Study aim:** Sound knowledge of pressure ulcers is important to enable good prevention. There are limited instruments assessing pressure ulcer knowledge. The Pressure Ulcer Prevention Knowledge Assessment Instrument is among the scales of which psychometric properties have been studied rigorously and reflects the latest evidence. This study aimed to evaluate the validity and reliability of the Turkish version of the Pressure Ulcer Prevention Knowledge Assessment Instrument (PUPKAI-T), an instrument that assesses knowledge of pressure ulcer prevention by using multiple-choice questions.

**Materials and methods:** Linguistic validity was verified through front-to-back translation. Psychometric properties of the instrument were studied on a sample of 150 nurses working in a tertiary hospital in Istanbul, Turkey.

**Results:** The content validity index of the translated instrument was 0.94, intra-class correlation coefficients were between 0.37 and 0.80, item difficulty indices were between 0.21 and 0.88, discrimination indices were 0.20–0.78, and the Kuder Richardson for the internal consistency was 0.803.

**Conclusions:** The PUPKAI-T was found to be a valid and reliable tool to evaluate nurses' knowledge on pressure ulcer prevention. The PUPKAI-T may be a useful tool for determining educational needs of nurses on pressure ulcer prevention.

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### 1. Introduction

A pressure ulcer is a localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shearing [1]. Pressure ulcers are regarded as a major challenge in contemporary healthcare globally, resulting in complications and in turn causing prolonged hospital stays and increased healthcare costs [2,3].

In spite of being preventable, pressure ulcers are a common clinical problem in many hospitals and nursing homes around the world. The incidence and prevalence of pressure ulcers vary according to the data collection method, classification system used and patient populations. The incidence rate ranges from 7% to 71.6% while prevalence rates range from 8.8% to 53.2% [4]. Several studies

have shown that the incidence of pressure ulcers is 0.4%–38% in acute care, 2.2%–23.9% in long-term care and 0.0%–17% in home care; while the prevalence is 10%–18% in acute care units, 2.3%–28% in long-term care units and 0.0%–29% in home care [1,5].

Currently in Turkey, some epidemiological studies on pressure ulcers are currently being conducted. According to results on a Turkish university hospital, prevalence ranged from 2.5% to 10.4% [6] while incidence rate was reported to be 1.9%. In a single study conducted in an intensive care unit the prevalence rate was found to be 5.9% [7]. Yet, in a survey of all adult intensive care units in the city of Istanbul, prevalence was found to be 39.5% and 26.3% when stage 1 ulcers were excluded [8].

Pressure ulcers are known to have substantial impact on patient outcomes and costs and can lead to further complications, often resulting in prolonged hospital stay. Thus, patients who develop pressure ulcers have a significantly longer hospital stay [9,10]. In terms of the financial burden, the cost of pressure ulcer treatments per patient in the UK is reported to be £1214 for stage 1 and £14,108

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for stage 4 [11].

While having such a detrimental impact on patient outcomes and healthcare costs, pressure ulcers are essentially avoidable when adequate preventive measures are taken. Nurses being close to the patient 24/7, have a key role to play in the prevention of pressure ulcers. However, numerous studies in Turkey and abroad have pointed out that nurses often lack sufficient knowledge in the prevention of pressure ulcers [12–19]. Furthermore, studies also show that educating nurses regarding preventive care can be effective in reducing the incidence of pressure ulcers, therefore it is essential to establish baseline nurses' knowledge regarding the prevention of this clinical problem [20]. Periodical assessments can also be used as part of continuous professional development. For this to succeed valid and reliable instruments, with proven valid psychometric properties, are needed in order to assess the adequacy of nurses' knowledge on pressure ulcers [14,21]. Still, the number of instruments in the literature assessing knowledge on pressure ulcer prevention is limited.

The Pressure Ulcer Prevention Knowledge Assessment Instrument (PUPKAI) is a questionnaire, developed to meet this need. PUPKAI has been developed by Beeckman et al. [18] to evaluate nursing staff knowledge on pressure ulcers prevention. It consists of multiple choice questions, based on the latest evidence on this topic and it is among one of the few instruments of which psychometric properties were fully studied. As yet, there is no similar instrument currently available in the Turkish language.

The aim of this study was to translate, validate and explore the psychometric properties of PUPKAI into Turkish (PUPKAI-T).

## 2. Material and methods

### 2.1. Design

A methodological study design was adopted. The study consisted of linguistic validity of the instrument and psychometric properties of the translated version of the instrument.

### 2.2. Instrument

PUPKAI is composed of multiple choice questions based on sound evidence addressing the various aspects of preventing and recognizing pressure ulcers. It has been designed for use either as self-report or interview format. The instrument contains 26 items and 6 themes. These are: Aetiology and Development (6 Items), Classification and Monitoring (5 Items), Risk Assessment (2 items), Nutrition (1 item), Preventive interventions to reduce the amount of pressure/shear (7 items) and Preventive measures to reduce the duration of pressure/shear (5 items). Three response choices are given for each item where only one of the choices is the correct answer. The total number of correct answers from each theme and the entire instrument indicates the individual levels of knowledge. Maximum score that can be achieved is 26 and acceptable score for proficiency is  $\geq 16$  (i.e.60%) [18]. The Psychometric properties of PUPKAI have been studied.

Beeckman et al. [18] reported that PUPKAI has a good overall internal consistency (Cronbach's alpha value = 0.77) and test-retest intra-class correlation coefficient = 0.88. It's content validity index was 0.78–1.0. Yet, significant differences were found when the test was applied to different groups i.e. known-groups validity. The item difficulty indices of the questions ranged from 0.27 to 0.87, and the item discrimination values ranged from 0.29 to 0.65. This original version was used extensively in many studies [12–15].

There is also a Chinese version of PUPKAI [22]. This version has a good overall internal consistency (Cronbach's alpha value was 0.792), test-retest intra-class correlation coefficient (0.826) and

good validity (content validity index was 0.91). The item difficulty indices were between 0.46 and 0.93, and the item discrimination values ranged from 0.28 to 0.55.

### 2.3. Linguistic validity

The linguistic validity of the instrument was performed using the guidelines as set by Beaton et al. [23]. Standard procedures were followed to verify the accuracy of translation and scope of the Turkish version of the instrument by ten clinical experts, i.e. doctors and nurses. They were asked to assess each item of the instrument by relevance and clarity on a 4-point Content Validity Index (CVI) scale as follows (4: highly relevant, 3: quite relevant but needs minor changes, 2: somewhat relevant, the wording should be revised, 1: not relevant). The CVI of the instrument was found to be 0.94 [23]. Final revision of the instrument was carried out in the light of the advice from experts and preliminary application was conducted with a group of 20 people participating in the study. Pilot application proved that all items on the instrument were clear, thus no further revisions were required [24]. Linguistic and content validity were verified, followed by further psychometric assessments of the instrument. For linguistic validity the original PUPKAI was translated from English into Turkish via the forward-back translation method. Content analysis showed that all items appeared to be adequate for measuring pressure ulcer prevention knowledge (Appendix A and B).

### 2.4. Data collection

This study was conducted in a tertiary hospital in Istanbul (Turkey) between April–July 2014. The sample consisted of 150 nurses who worked in medical or surgical wards and volunteered to participate. With a sample size of 150 individuals over a twenty-six-item instrument the recommended ratio of between 5:1 and 10:1 for methodological rigor was met [25]. Data were collected in a single session. Re-testing of the instrument was applied on 46 nurses from the same sample after an interval of two weeks.

### 2.5. Ethical considerations

Before the commencement of the study, written permission from Beeckman was obtained for adapting the PUPKAI and use of the adapted version in Turkey. Ethical approval was obtained from the Ethical Board of the hospital (approval number: 1491-48-14/1539). The study's purpose was explained to the nurses as they were invited to participate. Written consent was obtained and anonymity and confidentiality was assured.

### 2.6. Data analysis

Statistical analysis was performed by use of IBM SPSS for Windows (v.21.0) Software Package. Descriptive statistics and non-parametric statistical tests including Mann Whitney *U* test and Spearman correlation, intra-class correlation were employed. The item difficulties and discriminating indices were used to evaluate the validity of the multiple-choice test items of the instrument and Kuder-Richardson 20 was used to determine the internal consistency of the instrument.

## 3. Results

The socio-demographic characteristics of the study sample's 150 nurses are presented in Table 1.

Following linguistic validity of PUPKAI-T, the instrument was employed to nurses and its psychometric properties were explored

**Table 1**  
Socio-demographic characteristics of nurses (n = 150).

	n	%
<b>Age (X, SD, range)</b>	29.02 ± 5.69	22–43
<b>Education</b>		
Associate degree	6	4.0
Bachelor's degree	102	68.0
Master degree or master student	38	25.3
PhD degree or PhD student	4	2.6
<b>Working experience (X, SD, range) (years)</b>	7.77	6.34
<b>Wards</b>		
Medical	90	60.0
Surgical	60	40.0
<b>Previous training on pressure ulcers</b>		
Yes	113	75.3
No	37	24.7
<b>Use of pressure ulcer risk assessment instrument</b>		
Yes	90	60.0
No	60	40.0

further via test-retest reliability and intra-class correlations. Test-retest evaluation was carried out with a two-week-interval on 46 nurses and intra-class correlation coefficients, which show scale stability over time, ranging from 0.37 to 0.80. The internal consistency reliability for the overall instrument was determined by Kuder-Richardson test. KR-20 value was 0.803.

The percentage of correct answers to the overall items of the instrument and the test-retest correlation coefficients (intra-class correlation values) are shown in Table 2. Lowest scores were obtained for Theme 5 (Preventive measures to reduce the amount of pressure/shear) while the highest scores were obtained for Theme 4 (Nutrition).

The item difficulty indices of the instrument varied between 0.21 and 0.88. The overall discrimination values (D-values) were between 0.20 and 0.78. None of the items had a negative discriminating value (Table 3).

For further validity evaluation, correct answers given to the items in PUPKAI-T were assessed with regard to several other variables, by use of Mann Whitney U test or Spearman correlation. Staff nurses working in medical wards scored higher in Theme 2 (classification and observation) ( $z = -2424$ ,  $p = 0.015$ ), whereas the surgical staff had higher scores in Theme 4 (nutrition) ( $z = -3447$ ,  $p = 0.001$ ), and Theme 6 (preventive measures to reduce the duration of pressure/shear) ( $z = -1867$ ,  $p = 0.062$ ).

There was no statistically significant difference between the scores of individuals by education level (associate and graduate degree, etc.). Also, no statistically significant differences in knowledge scores were found between those who were given in-service training on pressure ulcers and those who were not. However, a moderately significant relationship was found between knowledge scores and years of clinical experience ( $r = 0.179$ ,  $p = 0.029$ , for theme 1;  $r = 0.145$ ,  $p = 0.077$  for theme 2;  $r = 0.254$ ,  $p = 0.002$  for theme 2, and  $r = 0.259$ ,  $p = 0.001$  for overall instrument). No significant difference was found between the knowledge scores of those who use a pressure ulcer risk assessment instrument and those who do not.

**Table 2**  
Test-retest reliability of the Scale (n = 46), percentage of correct answers (n = 150) and Internal consistency reliability (Kuder-Richardson) for the Instrument.

Themes	No. of items	Percentage of correct answer (%)	Intraclass correlation coefficient (ICC)	95% CI
1: Etiology & development	6	56.9	0.48	0.23–0.68
2: Classification & observation	5	64.9	0.44	0.16–0.65
3: Risk assessment	2	57.0	0.37	0.10–0.62
4: Nutrition	1	87.3	0.80	0.65–0.89
5: Preventive measures to reduce the amount of pressure/shear	7	52.6	0.44	0.18–0.65
6: Preventive measures to reduce the duration of pressure/shear	5	59.9	0.60	0.40–0.75
Overall		KR-20 = 0.803.		

#### 4. Discussion

Although pressure ulcers are a multi-factorial problem which might be exacerbated by specific patient characteristics (therefore, sometimes it may be unavoidable), optimal nursing care is an essential component of their prevention. Therefore nursing knowledge with regards to evidence-based practices in pressure ulcer prevention is vital and urgent. Examinations of the accuracy of the translation and the cultural relevance are critical steps in the trans-cultural adaptation of an instrument. The forward-backward translation procedure was smooth and likewise, the use of an expert panel for content validity proved trouble-free. The evidence regarding the content validity of the PUPKAI was based on the judgments of ten experts that all items appeared to be adequate for measuring pressure ulcer prevention knowledge. The content validity indices of the overall instrument were between 0.78 and 1.00 in original study that developed the instrument; 0.91 (for overall instrument) in Liu et al.'s study [22] and our study indicated 0.94. This value generally meets the acceptable CVI of 0.80 or greater that is considered to indicate good content validity [26].

The stability of the PUPKAI-T over time was examined using test-retest reliability with a two-week-interval on 46 nurses. Intra-class correlation coefficients, which show scale stability over time, ranged from 0.37 to 0.80 in the present study. These values were 0.74–0.94 in the original study [18] and 0.67–0.89 in the Chinese version [22]. Our lower scores might be due to a longer test-retest period (1 vs 2 week) and characteristics of our sample which does not include pressure ulcer nurses.

The internal consistency reliability for an instrument is determined by Kuder-Richardson or Cronbach's alpha test. Cronbach's alpha value was reported to be 0.77 in the original study [18] and 0.792 in the Chinese study [22]. In our study, KR-20 value was 0.803, which showed that PUPKAI-T has a good overall internal consistency.

The PUPKAI is comprised of multiple-choice questions with one correct and two incorrect choices. Participants get scores based on their correct answers. In this study, the average score of the sample was found to be 58% (mean 15.36, median 15, range 0–26) while it was 64.2% in Beeckman et al.'s study [18]. This difference might be originated from the sample characteristics per se. Beeckman et al.'s original study included not only general nurses but also pressure ulcer and tissue viability nurses. Since this area has been recognized as a separate specialty very recently in Turkey, our sample did not include any pressure ulcer and tissue viability expert nurses.

Another difference between our study, the original and the Chinese studies was the average age of the sample which shows nurses in our sample were less experienced. In other studies with nurses using the same instrument, the knowledge score was reported comparable to ours (49–59%) [12,27,28]. A score of 60% has been reported as the cut-off value for an adequate indication of sufficient knowledge [18]. Considering the results of various studies, it can be said that nurses have insufficient knowledge to prevent the development of pressure ulcers. Lowest scores were obtained for Theme 5 (Preventive measures to reduce the amount of pressure/shear while the highest scores were obtained for

**Table 3**  
Validity of the multiple-choice test items (item difficulty and discrimination indices) of the Scale (n = 150).

Themes	Question number	Item difficulty (p)	D-value
1: Etiology & development	1	0.81	0.30
	2	0.65	0.61
	3	0.66	0.32
	4	0.60	0.32
	5	0.55	0.51
	6	0.70	0.30
2: Classification & observation	1	0.66	0.59
	2	0.88	0.20
	3	0.67	0.42
	4	0.72	0.46
	5	0.31	0.32
3: Risk assessment	1	0.54	0.25
	2	0.58	0.78
4: Nutrition	1	0.80	0.22
5: Preventive measures to reduce the amount of pressure/shear	1	0.34	0.30
	2	0.57	0.66
	3	0.68	0.29
	4	0.54	0.68
	5	0.38	0.25
	6	0.70	0.51
	7	0.49	0.44
6: Preventive measures to reduce the duration of pressure/shear	1	0.21	0.27
	2	0.74	0.37
	3	0.38	0.46
	4	0.76	0.22
	5	0.88	0.24

Theme 4 (Nutrition). When the percentage of correct answers and item difficulty were reviewed, knowledge of our sample was better in etiology and classification but worse in preventive measures.

The results of the present study indicate that our sample was not competent in fully comprehending the underlying reasons behind pressure-reducing measures, position changes and duration, use of air mattresses and of support surface in prevention of pressure ulcers. Therefore, it can be argued that nurses in this study have difficulty translating theoretical knowledge into practice.

The validities of the multiple-choice test items were determined with item difficulty and instrument discrimination indices. The item difficulty indices of the instrument varied between 0.21 and 0.88 and discrimination values (D-values) were between 0.20 and 0.78, which were comparable to the original study. We therefore could argue that the discrimination and item difficulty values were satisfactory.

For further evaluation of validity, correct answers given to the items in PUPKAI-T were assessed with regard to certain personal characteristics such as educational background, work area and working experience. Nurses employed in medical wards scored higher in the 'Classification and Observation' theme, while surgical nurses scored better in 'Nutrition' and 'Preventive measures to reduce the duration of pressure/shear'. Better classification skills of nurses working in medical wards could be attributed to their experience with chronic patients.

The results of several studies also highlight the importance of training and clinical experience in the prevention and management of pressure ulcers. In a study carried out with the same instrument at 7 nursing schools in Italy (n = 742), knowledge about pressure ulcers has been reported to increase in parallel with increasing years of education and clinical experience [27]. However, the results on this issue are not consistent. Gunningberg et al. [12] showed that student nurses scored higher compared to registered nurses. Our study did not point to a difference between the knowledge scores of nurses in terms of education. However, a significant relationship between knowledge and clinical experience was found.

Other studies conducted to date suggest that training programs

for pressure ulcers increase awareness, improve knowledge and quality of care [20,29–32]. In our study, it was noted that 75.3% of nurses (n = 113) had previous training on pressure ulcers. Yet, in none of the themes was a significant difference found between the scores of those who received training and those who did not. This finding indicates the need to improve the in-service training and to establish training sessions on a regular basis, which our subjects had not received.

Our study was subject to certain methodological limitations; therefore the results may need to be interpreted cautiously. The study was conducted in a single center and nurses with expertise training on wound care could not be included as this specialty is new in our country. Therefore a comparison of correct answers between competent and non-competent groups could not be performed. Another point which should be considered is that information on the prevention of pressure ulcers may change over time. Therefore, this instrument should be revised when evidence suggests that new practices would be beneficial.

The instrument can be applied in nursing education, research and practice to evaluate knowledge about pressure ulcer prevention. Since this is a fundamental subject in the basic nursing curriculum, the instrument can be used to assess knowledge in nurses from different levels of education. The instrument can also be used in various in-service programs as a pre-post-test to evaluate efficacy of training. Low-score themes can also be used to identify the educational needs of nurses. Test results can also be used for developing new methods in order to improve the quality of care in prevention of pressure ulcers. Since the knowledge instrument on prevention of pressure ulcers may change over time, the instrument should be updated according to recent research evidence.

## 5. Conclusions

Based on its psychometric properties, the Turkish version of the Pressure Ulcer Prevention Knowledge Assessment Instrument is a suitable instrument for measuring nurses' knowledge regarding pressure ulcer prevention. The need for a valid and reliable instrument is evident, not only for assessing the educational needs of nurses and establishing training sessions accordingly but also for assessing efficacy of educational activities on pressure ulcer prevention. Nevertheless, further research in this area needs to be conducted on a larger scale.

## Conflict of interest statement

The authors declare there is no conflict of interest.

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## Contributions

The authors have confirmed that all authors meet the ICMJE criteria for authorship credit as follows: (1) substantial contributions to conception and design of, or acquisition of data or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content; and (3) final approval of the version to be published.

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## Appendices

### Appendix A

#### Final instrument

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#### Theme 1: Aetiology and development

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##### 1. Which statement is correct?

- a Malnutrition causes pressure ulcers.
- b A lack of oxygen causes pressure ulcers<sup>a</sup>
- c Moisture causes pressure ulcers.

##### 2. Extremely thin patients are more at risk of developing a pressure ulcer than obese patients

- a Correct: The contact area involved is small and thus the amount of pressure is higher.<sup>a</sup>
- b Incorrect. The pressure is less extensive because the body weight of those patients is lower than the body weight of obese pt
- c Incorrect. The risk of a vascular disorder is higher for obese patients. This increases the risk of developing a pressure ulcer.

##### 3. What happens when a patient, sitting in bed in a semi-upright (60°) position, slides down?

- a Pressure increases when the skin sticks to the surface.
- b Friction increases when the skin sticks to the surface.
- c Shearing increases when the skin sticks to the surface.<sup>a</sup>

##### 4. Which statement is correct?

- a Soap can dehydrate skin and thus the risk of pressure ulcers is increased.
- b Moisture from urine, faeces, or wound drainage causes pressure ulcers.
- c Shear is the force which occurs when the body slides and the skin sticks to the surface.<sup>a</sup>

##### 5. Which statement is correct?

- a Recent weight loss which has brought a patient below his/her ideal weight, increases the risk of pressure ulcers<sup>a</sup>
- b Very obese patients using medication decreases the peripheral blood circulation are not at risk of developing pressure ulcers
- c Poor nutrition and age have no impact on tissue tolerance when the patient has a normal weight.

##### 6. There is NO relationship between pressure ulcer risk and:

- a Age
- b Dehydration
- c Hypertension<sup>a</sup>

#### Theme 2: Classification and observation

##### 1. Which statement is correct?

- a A pressure ulcer extending down to the fascia is a grade 3 pressure ulcer.<sup>a</sup>
- b A pressure ulcer extending through the underlying fascia is a grade 3 pressure ulcer.
- c A grade 3 pressure ulcer is always preceded by a grade 2 pressure ulcer.

##### 2. Which statement is correct?

- a A blister on a patient's heel is always a pressure ulcer of grade 2.
- b All grades (1,2,3, and 4) of pressure ulcers involve loss of skin layers.
- c When necrosis occurs, it is a grade 3 or a grade 4 pressure ulcer.<sup>a</sup>

##### 3. Which statement is correct?

- a Friction or shear may occur when moving a patient in bed.<sup>a</sup>
- b A superficial lesion, preceded by non-blanchable erythema is probably a friction lesion.
- c A kissing ulcer (copy lesion) is caused by pressure and shear.

##### 4. In a sitting position, pressure ulcers are most likely to develop on:

- a Pelvic area, elbow and heel.<sup>a</sup>
- b Knee, ankle and hip.
- c Hip, shoulder and heel.

##### 5. Which statement is correct?

- a All patients at risk of pressure ulcers should have a systematic skin inspection once a week.
- b The skin of patients seated in a chair who can't move themselves should be inspected every two to three hours.
- c The heels of patients who lie on a pressure redistributing surface should be observed minimum a day.<sup>a</sup>

#### Theme 3: Risk assessment

##### 1. Which statement is correct?

- a Risk assessment tools identify all high risk patients in need of prevention.
- b The use of risk assessment scales reduces the cost of prevention.
- c A risk assessment scale may not accurately predict risk of developing pressure ulcer and should be combined w clinical judgement.<sup>a</sup>

##### 2. Which statement is correct?

- a The risk of pressure ulcer development should be assessed daily in all nursing home patients.
- b Absorbing pads should be placed under the patient to minimize the risk of pressure ulcer development.
- c A patient with a history of pressure ulcers runs a higher risk of developing new pressure ulcers.<sup>a</sup>

#### Theme 4: Nutrition

##### 1. Which statement is correct?

- a Malnutrition causes pressure ulcers.
- b The use of nutritional supplements can replace expensive preventive measures.
- c Optimizing nutrition can improve the patients' general physical condition which may contribute to a reduction of the risk of pressure ulcers.<sup>a</sup>

#### Theme 5: Preventive measures to reduce the amount of pressure/shear

##### 1. The sitting position with the lowest contact pressure between the body and the seat is:

- a An upright sitting position, with both feet resting on a footrest.
- b An upright sitting position, with both feet resting on the floor.
- c A backwards sitting position, with both legs resting on a footrest.<sup>a</sup>

##### 2. Which repositioning scheme reduces pressure ulcer risk the most?

- a Supine position- side 90° lateral position- supine position- 90° lateral position- supine position- ...
- b Supine position- side 30° lateral position- side 30° lateral position- supine position- ...<sup>a</sup>

(continued on next page)

**Appendix A (continued)****Theme 1: Aetiology and development**

c Supine position- side 30° lateral position- sitting position- 30° lateral position- supine position- ...

**3. Which statement is correct?**

- a Patients who are able to change position should be taught to shift their weight minimum every 60 min while sitting in a chair.<sup>a</sup>
- b In a side lying position, the patient should be at a 90° angle with the bed.
- c Shearing forces affect a patients sacrum maximally when the head of the bed is positioned at 30°.

**4. If a patient is sliding down in a chair, the magnitude of pressure at the seat can be reduced the most by:**

- a A thick air cushion.<sup>a</sup>
- b A donut shaped foam cushion.
- c A gel cushion

**5. For a patient at risk of developing a pressure ulcer, a visco- elastic foam mattress ...**

- a Reduces the pressure sufficiently and does not need to be combined with repositioning.
- b Has to be combined with repositioning every 2 h.
- c Has to be combined with repositioning every 4 h.<sup>a</sup>

**6. A disadvantage of a water mattress is:**

- a Shear at the buttocks increases.
- b Pressure at the heels increases.
- c Spontaneous small body movements are reduced.<sup>a</sup>

**7. When a patient is lying on a pressure reducing foam mattress ...**

- a Elevation of the heels is not necessary.
- b Elevation of the heels is important.<sup>a</sup>
- c He or she should be checked for "bottoming out" at least twice a day.

**Theme 6: Preventive measures to reduce the duration of pressure/shear****1. Repositioning is an accurate preventive method because ...**

- a The magnitude of pressure and shear will be reduced.
- b The amount and the duration of pressure and shear will be reduced.
- c The duration of pressure and shear will be reduced.<sup>a</sup>

**2. Fewer patients will develop a pressure ulcer if ...**

- a Food supplements are provided.
- b The areas at risk are massaged.
- c Patients are mobilized.<sup>a</sup>

**3. Which statement is correct?**

- a Patient's at risk lying on a non pressure reducing foam mattress should be repositioned every two hours.<sup>a</sup>
- b Patient's at risk lying on an alternating air mattress should be repositioned every 4 h.
- c Patient's at risk lying on a visco-elastic foam mattress should be repositioned every 2 h.

**4. When a patient is lying on an alternating pressure air mattress, the prevention of heel pressure ulcers includes:**

- a No specific preventive measures.
- b A pressure reducing cushion under the heels.
- c A cushion under the lower legs elevating the heels.<sup>a</sup>

**5. If a bedridden patient cannot be repositioned, the most appropriate pressure ulcer prevention is:**

- a A pressure redistributing foam mattress.
- b An alternating pressure air mattress.<sup>a</sup>
- c Local treatment of the risk areas with zinc oxide paste.

<sup>a</sup> Correct Answers.

**Appendix B**

Turkish Version of the Instrument (Basınç Ülseri Önlemede Bilgi Değerlendirme Ölçeği)

**Tema 1: Etiyoloji ve Gelişme****1. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Malnütrisyon basınç ülserlerine neden olur.
- b Oksijen yetersizliği basınç ülserlerine neden olur.<sup>a</sup>
- c Nem basınç ülserlerine neden olur.

**2. Çok zayıf hastalar obez hastalara göre basınç ülseri gelişimi açısından daha fazla risk altındadır.**

- a Doğru: Temas alanı küçüldükçe basınç miktarı artar.<sup>a</sup>
- b Yanlış: Bu kişilerin ağırlığı obez hastalara göre daha az olduğu için basınç daha azdır.
- c Yanlış: Obez hastalarda vasküler hastalık gelişme riski daha fazladır, bu da basınç ülseri gelişme riskini artırır.

**3. Yatakta yarı oturur pozisyonda (60°) oturan hasta kaydığı zaman neler olur?**

- a Deri yüzeye tutunduğu zaman basınç artar.
- b Deri yüzeye tutunduğu zaman sürtünme artar.
- c Deri yüzeye tutunduğu zaman yırtılma artar.<sup>a</sup>

**4. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Sabun cildi dehidrate edebilir ve böylece basınç ülseri riskini artırır.
- b İdrar, feçes ve yara drenajından kaynaklanan nem, basınç ülserlerine neden olur.
- c Yırtılma, hasta yataktan kaydığında derinin yatak yüzeyine yapışmasıyla oluşan kuvvettir.<sup>a</sup>

**5. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Yakın zamanda hastayı ideal kilosunun altına düşüren kilo kaybı basınç ülseri riskini artırır.<sup>a</sup>
- b . Periferik kan dolaşımını azaltan ilaç kullanan aşırı obez hastalar, basınç ülseri açısından risk altında değildir.
- c Yetersiz beslenme ve yaş, hastanın kilosunun normal olduğu durumlarda doku toleransı üzerinde etkili değildir.

**6. Basınç ülseri riski ve ... .. arasında ilişki yoktur.**

- a Yaş
- b Dehidratasyon

**Appendix B (continued)****Tema 1: Etiyoloji ve Gelişme**c Hipertansiyon<sup>a</sup>**Tema 2: Sınıflama ve Gözlem****1. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Fasyaya kadar inen bir basınç ülseri, 3. derece basınç ülseridir.<sup>a</sup>
- b Fasyayı da aşan basınç ülseri, 3. derece basınç ülseridir.
- c Üçüncü derece basınç ülserinden önce her zaman 2. derece basınç ülseri olur.

**2. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Hastanın topuğundaki bül her zaman 2. derece basınç ülseridir.
- b Hangi evre olursa olsun (1,2,3,4) basınç ülserlerinde cilt tabakasında kayıp görülür.
- c Nekroz oluştuğunda basınç ülseri 3. veya 4. derecedir.<sup>a</sup>

**3. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Hasta yatak içinde hareket ettirildiği zaman yırtılma ve sürtünme oluşabilir.<sup>a</sup>
- b Yüzeysel bir lezyon, öncesinde basmakla solmayan bir eritem varsa muhtemelen sürtünme lezyonudur.
- c Kissing ülser (birbirleriyle temas eden ülser odakları) basınç ve yırtılma ile oluşur.

**4. Oturma pozisyonunda basınç ülserlerinin gelişebileceği alanlar ...**

- a Pelvik alan, dirsek ve topuk<sup>a</sup>
- b Diz, ayak bileği ve kalça
- c Kalça, omuz ve topuk

**5. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Basınç ülseri riski olan tüm hastalarda haftada bir sistematik cilt değerlendirmesi yapılmalıdır.
- b Kendi başına hareket edemeyen, sandalyede oturan hastanın cildi her 2–3 saatte bir gözlenmelidir.
- c Basıncı eşit dağıtmayan bir yüzeyde yatan hastaların topukları günde en az 1 defa gözlenmelidir.<sup>a</sup>

**Tema 3: Risk Değerlendirmesi****1. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Risk değerlendirme araçları önlem alınması gereken yüksek riskli hastaların belirlenmesini sağlar.
- b Risk değerlendirme ölçeklerinin kullanımını önleyici girişimlerin maliyetini artırır.
- c Basınç ülseri riskini doğru olarak tahmin etmek için risk değerlendirme ölçeği yeterli olmayabilir, mutlaka klinik durum da göz önüne alınmalıdır.<sup>a</sup>

**2. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Bakım evi hastalarının tümünde basınç ülseri gelişme riski günlük olarak değerlendirilmelidir.
- b Basınç ülseri gelişimini en aza indirmek için hastanın altına emici pedler yerleştirilmelidir.
- c Basınç ülseri öyküsü olan bir hastada yeni basınç ülseri gelişme riski yüksektir.<sup>a</sup>

**Tema 4: Beslenme/Nutrisyon****1. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Malnütrisyon basınç ülserlerine neden olur.
- b Pahalı önleyici girişimler yerine nutrisyonel destek gıdalardan yararlanılabilir.
- c Dengeli beslenme, hastanın genel fiziksel durumunu olumlu yönde etkileyerek basınç ülseri riskinin azalmasına katkıda bulunabilir.<sup>a</sup>

**Tema 5: Basınç/makaslama miktarını azaltan önleyici girişimler****1. Vücut ile oturuşun yer arasında en az temas basıncı oluşturan oturma pozisyonu;**

- a Dik oturma pozisyonu, her iki ayak elevasyonda
- b Dik oturma pozisyonu, her iki ayak yere basıyor
- c Arkaya doğru oturma pozisyonu, her iki bacak elevasyonda<sup>a</sup>

**2. Hangi pozisyon değiştirme şeması basınç ülseri riskini en çok azaltır?**

- a Sirt üstü pozisyon - 90° lateral pozisyon - Sirt üstü pozisyon-90° lateral pozisyon ...
- b Sirt üstü pozisyon - 30° lateral pozisyon - 30° lateral pozisyon - Sirt üstü pozisyon ...<sup>a</sup>
- c Sirt üstü pozisyon - 30° lateral pozisyon - Oturur pozisyon - 30° lateral pozisyon - Sirt üstü pozisyon

**3. Aşağıdaki ifadelerden hangisi doğrudur?**

- a Pozisyonunu değiştirebilen hastalara, sandalyede otururken minimum her 60 dakikada bir ağırlıklarını değiştirmeleri öğretilmelidir.<sup>a</sup>
- b Yan yatış pozisyonunda hasta yatak ile 90° açıda olmalıdır.
- c Yatak başı pozisyonu 30° olduğunda, yırtılma kuvveti hastanın sakrumunu maksimum derecede etkiler.

**4. Eğer hasta sandalyeden kayıyorsa, oturuş alanındaki basıncın büyüklüğü ... .. ile azaltılır.**

- a İnce bir havaalı minder<sup>a</sup>
- b Simit şekilli köpüklü minder
- c Jelli minder

**5. Basınç ülseri gelişme riski olan hastada, bir viskoelastik köpük şilte ...**

- a Basınç ülserini azaltmada etkilidir ve beraberinde pozisyon vermeye gerek yoktur.
- b Her iki saatte bir pozisyon değiştirme ile birlikte kullanılmalıdır.
- c Her dört saatte bir pozisyon değiştirme ile birlikte kullanılmalıdır.<sup>a</sup>

**6. Sulu şiltenin bir dezavantajı ...**

- a Kalçadaki yırtılmanın artmasıdır.
- b Topuktaki basıncın artmasıdır.
- c Spontan küçük vücut hareketlerinin azalmasıdır.<sup>a</sup>

**7. Hasta basınç azaltıcı köpük şilte üzerine yattığında;**

- a Topuk elevasyonu gerekli değildir.
- b Topuk elevasyonu önemlidir.<sup>a</sup>
- c Şilte üzerindeki çöküklük günde en az iki defa kontrol edilmelidir.

**Tema 6: Basınç/yırtılmanın süresini azaltmak için önleyici girişimler****1. Pozisyon değişikliği kesin önleyici bir yöntemdir. Çünkü ...**

- a Basınç ve yırtılmanın büyüklüğü azalacaktır.
- b Basınç ve yırtılmanın miktarı ve süresi azalacaktır.
- c Basınç ve yırtılmanın süresi azalacaktır.<sup>a</sup>

**2. Eğer .... daha az hastada basınç ülseri gelişecektir**

- a Ek gıda sağlanırsa
- b Riskli alanlara masaj yapılırsa
- c Hastalar mobilize edilirse<sup>a</sup>

(continued on next page)

## Appendix B (continued)

Tema 1: Etiyoloji ve Gelişme

## 3. Aşağıdaki ifadelerden hangisi doğrudur?

- a Basınç azaltılmayan köpük şilte yatan riskli hastalara her iki saatte bir pozisyon verilmelidir.<sup>a</sup>  
 b Hava akımlı şilte yatan riskli hastalarda her 4 saatte bir pozisyon değişikliği yapılmalıdır.  
 c Viskoelastik köpük şilte yatan riskli hastalarda her 2 saatte bir pozisyon değişikliği yapılmalıdır.

## 4. Değişen hava akımlı şilte yatan hastada topukta basınç ülserinin önlenmesi için;

- a Özel bir önleyici önlem yoktur.  
 b Topukların altına basınç azaltıcı minder yerleştirilir.  
 c Bacakların alt kısmına topuklar yükselecek şekilde minder yerleştirilir.<sup>a</sup>

## 5. Pozisyon verilemeyen yatağa bağımlı hastalarda basınç ülseri önlemede en uygun yöntem

- a Basınç dağıtan köpük şilte  
 b Değişen hava akımlı şilte<sup>a</sup>  
 c Riskli alanların çinko-oksit kremle lokal tedavisi

<sup>a</sup> Doğru cevap.

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