




Knowledge and Attitudes Towards Prevention of Pressure Ulcer: Intensive Care Units Sample in Turkey

Basınç Yarasının Önlenmesine İlişkin Hemşirelerin Bilgi ve Tutumları: Yoğun Bakım Üniteleri Örneği

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ABSTRACT Objective: This study focused on assessing the knowledge and attitudes of nurses towards pressure ulcer (PU) prevention in intensive care units. **Material and Methods:** A cross sectional study was performed in eight intensive care units. 81 out of 95 nurses completed the questionnaire. The response rate of those who completed the questionnaire was 85.3%. As the data collection form of the study, “nurse information tool”, “tool for PU information” and “attitude toward PU tool (APuP)” were used. The participating nurses were fully informed by the researcher about the purpose and method of the study and were asked to complete the tools. **Results:** Approximately half of the nurses (48.1%) in intensive care units about knowledge of prevention of pressure ulcer is inadequate. Moreover, only in less than a quarter (21%) of the nurses have an attitude scores of equal to or greater than 75%. A significant negative correlation existed between knowledge levels and attitudes of nurses to prevent pressure ulcer ($p<0.05$). In other words, the positive attitudes of nurses decrease, as the level of knowledge to prevent pressure ulcer increases. **Conclusion:** In conclusion, nurses' knowledge on prevention of pressure ulcer in intensive care units is inadequate. This study also explored that only in less than a quarter of the nurses' attitudes towards pressure ulcer prevention is positive. As the knowledge level of the nurses increases, the decrease in their positive attitudes is also thought provoking. In this study, it is thought that the individual differences of nurses are more effective on positive attitude than knowledge. Strategic plans (regular individual training, prevention policies and management, etc.) are necessary to improve both knowledge and positive attitude towards prevention of pressure ulcer.

Keywords: Pressure ulcer; prevention; knowledge; attitude; nursing

ÖZET Amaç: Araştırma, basınç yarasının önlenmesine ilişkin yoğun bakımda çalışan hemşirelerin bilgi ve tutumlarını incelemek amacıyla yapılmıştır. **Gereç ve Yöntemler:** Araştırma, bir üniversite hastanesinin sekiz yoğun bakım ünitesinde kesitsel olarak gerçekleştirilmiştir. Yoğun bakım ünitelerinde toplam 95 hemşire görev yapmaktadır ve bu hemşirelerin 81'i (%85,3) araştırmaya katılmayı kabul ederek anketleri tamamlamıştır. Araştırmada veri toplama formu olarak, “hemşire bilgi formu”, “basınç yarasına yönelik bilgi formu” ve “basınç yarasını önlemeye yönelik tutum ölçeği” kullanılmıştır. Araştırmaya katılan bütün hemşirelere araştırmanın amacı ve yöntemi açıklanmıştır. **Bulgular:** Yoğun bakım ünitelerinde görev yapan hemşirelerin yaklaşık yarısının (%48,1) basınç yarasının önlenmesi konusunda bilgi düzeyinin yetersiz olduğu belirlenmiştir. Ayrıca, hemşirelerin sadece dörtte birinden azı (%21), %75'e eşit veya daha yüksek olumlu tutum oranına sahiptir. Basınç yarasını önlemek için hemşirelerin bilgi düzeyleri ile tutumları arasında anlamlı bir negatif korelasyon bulunmuştur ($p<0,05$). Başka bir deyişle, hemşirelerin basınç yarasını önleme bilgi düzeyi arttıkça olumlu tutumları azalmaktadır. **Sonuç:** Sonuç olarak, yoğun bakım ünitelerinde görev yapan hemşirelerin basınç yarasının önlenmesi konusundaki bilgisi yetersizdir. Bu araştırma, hemşirelerin yalnızca dörtte birinden azının basınç yarası önleme konusundaki tutumlarının olumlu olduğunu da göstermiştir. Ayrıca hemşirelerin bilgi düzeyi arttıkça olumlu tutumlarının azalması da düşündürücüdür. Bu çalışmada hemşirelerin pozitif tutumları üzerine bilginin yanı sıra bireysel farklılıklarının daha etkili olduğu düşünülmektedir. Basınç yarasının önlenmesine yönelik hem bilgiyi hem de olumlu tutumu geliştirmek için stratejik planlar (düzenli bireysel eğitim, önleme politikaları ve yönetimi vb.) gereklidir.

Anahtar Kelimeler: Basınç yarası; önleme; bilgi; tutum; hemşirelik

A pressure ulcer (PU) is significant problem in the healthcare services.^{1,2} The development of PU can cause both prolonged hospital stay and more important costs for the healthcare system.^{3,4} PU leads to complications for patients, with an increase in morbidity and mortality rates.³⁻⁵

PU incidence is commonly thought as a marker measuring the quality of care.^{6,7} The prevalence of PU in the intensive care units ranges between 1 and 56%.^{2,8,9} Critically ill patients are under high risk of having a PU. Some factors elevate the risk: longer stay; weak tissue perfusion due to hemodynamic instability, skin maceration due to moisture; immobility; and poor nutritional status.¹⁰

The nursing staff is an essential entity in pressure ulcer prevention (PUP).¹¹ A nurse's basic role as part of this team is to assess the individuals at risk, take measures to eliminate causative factors and to ensure PU healing process. Practices to PUP entail the evaluation of a PU risk assessment, skin assessment, and care, activity management, nutrition management, moisture/incontinence management, support surface management, training and registration.¹²⁻¹⁴ From this point, it seems that nursing care plays a vital role in PUP and nurses' knowledge and attitude towards PUP is crucial in reducing the incidence of PU.

In the literature, there are studies conducted to assess the knowledge and attitudes about PUP.¹⁵⁻¹⁸ Some studies demonstrated nurses' knowledge and positive attitudes toward PUP, while other studies reported a poor level of knowledge and high attitude scores.¹⁵⁻¹⁸ Especially, another study demonstrated a positive correlation between total knowledge and total attitude scores.¹⁷ There are limited studies on nurses' knowledge and attitudes towards PUP in Turkey.^{19,20} This study focuses explicitly on assessing both knowledge and attitudes among nurses.

AIM

This study focused on assessing the knowledge and attitudes of nurses about PUP in intensive care units.

MATERIAL AND METHODS

STUDY DESIGN, SETTING AND PARTICIPANTS

A cross sectional study was performed in eight adult intensive care units of a university hospital between 16.02.2018 and 16.04.2018. Intensive care

units have a total of 67 beds and all nurses provide care to the patient with at least one pressure ulcer per week. 81 out of 95 nurses completed the tools. The response rate of those who completed the tools was 85.3%. The participating nurses were fully informed by the researcher about the purpose and method of the study. The nurses were asked to complete the tools and the tools were collected back after completion.

DATA COLLECTION TECHNIQUE AND TOOLS

The researchers provided a quiet, well-lit and comfortable room where nurses would fill their data collection tools. The data collection tools were completed in approximately 15-20 min by the nurses.

The data in the study were collected using the following forms;

NURSE INFORMATION TOOL

Nurse information tool in which seven questions about the demographic characteristics of the nurse were prepared by the researchers, in light of the literature.^{12,13,21-23}

TOOL FOR PU INFORMATION

This tool was prepared by the researchers to assess nurses' knowledge. The final form was scrutinized by 7 specialists who had experience or training in PU.^{12-14,21-23} Nurses who answered 50% or more of the information questions correctly were accepted as having sufficient knowledge.

ATTITUDE TOWARD PU TOOL (APUP)

The validated tool was developed by Beeckman et al. (2010) to examine the attitudes of the nurses toward PUP.²⁴ The validity and reliability study of the instrument was conducted by Ustun and Yucel in 2013 for use in Turkish society (Cronbach alpha, 0.714). The tool includes 13 items and five subscale: (1) personal competency to PUP, (2) priority of PUP, (3) impact of PU, (4) responsibility in PUP, and (5) confidence in the effectiveness of prevention. A 4-point Likert-type scale was designed to collect the data (1=strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). The points of the items which are expressed as negative are reversed and

total scores are obtained. A high total score indicates a positive attitudes. The Content Validity Index for this tool was between 0.87 and 1.00 and Cronbach's α ranged from 0.76 to 0.81.²⁵ In this study, the Cronbach alpha of the tool was 0,66 and the mean attitude score of $\geq 75\%$ was considered to be satisfactory.

ETHICAL CONSIDERATION

The study was approved by the ethics review committee of the university (Turkey) (2018/19). Informed consent was obtained from all nurses participating in the study.

DATA ANALYSIS

Nurses who answered 50% or more of the information questions correctly were accepted as having sufficient knowledge. The attitude of the nurses with a total attitude score of over 75% was evaluated positively. The distribution of information and attitude scores is median (min-max), sex, age group, gender, etc. categorical variables were shown by number (%).

Knowledge and attitude scores were compared with Kruskal-Wallis test or Mann Whitney U test according to demographic characteristics. After the Kruskal-Wallis test, homogeneous subgroups were determined by the "stepwise step-down" procedure and the differences between the groups were examined. The Cronbach alpha value of Attitude toward PU tool (APuP) was calculated (Cronbach alpha, 0.66). Statistical significance level was accepted as $p < 0.05$.

RESULTS

Data obtained from the study have been grouped according to PUP knowledge and attitude.

CHARACTERISTICS OF THE SAMPLE

An outline of the basic characteristics of the participant nurses is shown in (Table 1). The average age of the nurses is 29.7 ± 5.6 , 91.4% (n=74) were women, 56.8% (n=46) were diploma nurses (collage of nursing graduates) and 51.9% (n=42) the experience is between 5-10 years. It was identified that 34.6% (n=28) of the nurses participated in an

TABLE 1: Demographic characteristics of the nurses (n=81).

Characteristics	n	%
Age (years)		
mean \pm SD	29.7 \pm 5.6	
Gender		
Female	74	91.4
Male	7	8.6
Education		
Diploma nurses (collage of nursing graduates)	46	56.8
Bachelor degree nurses	35	43.2
Experience (years)		
<5 years	20	24.7
5-10 years	42	51.9
11-20 years	14	17.3
<20 years	5	6.1
Intensive Care Departments		
Neurology	11	13.6
Reanimation	26	32.1
Neurosurgery	12	14.8
Coronary	13	16.0
General Surgical	8	9.9
Cardiovascular	6	7.4
Thoracic Surgery	5	6.2
Previous training on pressure ulcer prevention		
Yes	28	34.6
No	53	65.4
PU care (weekly)		
1-2	43	53
3-4	22	27.2
>5	16	19.8

educatory program on PUP and 43 nurses (53%) provided care to patients who had 1-2 PU per week.

NURSES' KNOWLEDGE TOWARDS PUP

Nurses' mean knowledge score was 50 (min-max: 15-80) (Table 2). 51.9% of the nurses had sufficient knowledge. There was no significant difference in knowledge scores concerning age group, gender, experience, and participation in training on PUP ($p > 0.05$). The knowledge levels of the diploma nurses were found to be lower than the scores of nurses with a bachelor's degree. The knowledge score of the nurses working in the Coronary Intensive Care Unit was lower than the scores of those in the other units ($p < 0.05$). The knowledge

score of nurses working in the Intensive Care Unit of Thoracic Surgery was higher than the score of those working in the Reanimation Intensive Care Unit. The information scores of the other units were similar ($p>0.05$) (Table 2).

THE ATTITUDE OF NURSES TOWARD PUP

For this study, "Attitude toward PU tool (APuP)" was calculated as Cronbach alpha 0.66. The total attitude scale score of the nurses was calculated as median 37 (min-max: 29-48) (Table 3). 21% of the nurses got an average attitude score greater than or equal to 75%. All attitude scale scores were similar according to age group, sex, and experience ($p>0.05$). There was a difference between the edu-

cation status of the groups and "impact of PUs" and "responsibility in PUP" in terms of scores ($p<0.05$). It was observed that diploma nurses (collage of nursing s

A significant negative correlation existed between knowledge levels and attitudes of nurses to prevent PU ($p<0.05$). In other words, the attitudes of nurses decrease, as the level of knowledge to prevent PU increases (Table 4).

DISCUSSION

This study focused on investigating the knowledge and attitudes of nurses about PUP in intensive care units and exploring the negative correlation be-

TABLE 2: Knowledge scores according to demographic characteristics of nurses.

	Knowledge Score	Knowledge Score ≥ 50	Statistical analysis	
	Median (min-max)	n (%)	Test	P
	50 (15-80)	42 (51.9)		
Age (years)			$\chi^2=0.644$	0.725
<25 years	42.5 (20-80)	4 (40.0)		
25-34 years	50 (20-75)	29 (52.7)		
35-50 years	55 (15-80)	9 (56.2)		
Gender			Z=0.608	0.543
Female	50 (15-80)	39 (52.7)		
Male	45 (6-55)	3 (42.9)		
Education			$\chi^2=7.282$	0.026
Diploma nurses (collage of nursing graduates)	40 (20-80) ^a	4 (30.8)		
Bachelor degree nurses	50 (15-80) ^b	29 (63.0)		
Experience (years)			$\chi^2=1.617$	0.656
<5 years	50 (20-75)	11 (55.0)		
5-10 years	50 (15-80)	22 (52.4)		
11-20 years	45 (15-70)	6 (42.9)		
>20 years	60 (25-80)	3 (60.0)		
Intensive Care Departments			$\chi^2=35.587$	<0.001
Neurology	55 (15-70) ^{a,b}	8 (72.7)		
Reanimation	42.5 (20-75) ^a	11 (42.3)		
Neurosurgery	55 (35-80) ^{a,b}	9 (75.0)		
Coronary	25 (15-35) ^c	0 (0.0)		
General Surgical	57.5 (35-80) ^{a,b}	4 (50.0)		
Cardiovascular	52.5 (45-60) ^{a,b}	5 (83.3)		
Thoracic Surgery	60 (60-70) ^b	5 (100.0)		
Previous training on PU prevention			Z=1.512	0.131
Yes	55 (15-80)	17 (60.7)		
No	45 (15-75)	25 (47.2)		

Similar groups are indicated by the same alphabetical character.

TABLE 3: Attitudes scores according to demographic characteristics of nurses.

	Personal competency to prevent pressure ulcers		Priority of pressure ulcer prevention		Impact of pressure ulcers		Responsibility in pressure ulcer prevention		Confidence in the effectiveness of prevention		Total Median (min-max)	Total>75 n (%)
	Median (min-max)	χ ² =	Median (min-max)	χ ² =	Median (min-max)	χ ² =	Median (min-max)	χ ² =	Median (min-max)	χ ² =		
Total	7 (4-11)	8 (4-12)	8 (4-12)	12 (8-12)	5 (2-7)	5 (3-8)	37 (29-48)	17 (21.0)				
Age (years)												
<25	8 (6-16)	8 (7-12)	11.5 (9-12)	5 (4-7)	5 (4-8)	37 (34-46)	1 (10.0)					
25-34	7 (4-11)	8 (4-12)	12 (8-12)	5 (2-7)	6 (3-8)	37 (29-48)	14 (25.5)					
35-50	7 (7-9)	7.5 (4-10)	12 (9-12)	5 (3-7)	5 (3-8)	36.5 (33-45)	2 (12.5)					
Test; p	χ ² =0.162; 0.922	χ ² =2.185; 0.335	χ ² =2.375; 0.305	χ ² =0.190; 0.909	χ ² =3.374; 0.185	χ ² =0.068; 0.967						
Gender												
Female	7.5 (4-11)	8 (4-12)	12 (8-12)	5 (2-7)	5 (3-8)	37 (29-48)	16 (21.6)					
Male	7 (6-9)	8 (6-8)	12 (9-12)	5 (3-6)	6 (5-6)	36 (34-39)	1 (14.3)					
Test; p	Z=0.499; 0.618	Z=0.018; 0.986	Z=0.458; 0.647	Z=1.448; 0.148	Z=0.278; 0.781	Z=0.365; 0.715						
Education												
Diploma nurses (collage of nursing graduates)	8 (6-11) ^a	8 (6-12) ^a	12 (10-12)	6 (3-7)	6 (4-8) ^a	38 (34-48) ^a	6 (46.2)					
Bachelor degree nurses	7 (4-9) ^b	7 (4-12) ^b	12 (8-12)	5 (2-7)	5 (3-8) ^b	36 (29-46) ^b	6 (13.0)					
Test; p	χ ² =8.096; 0.017	χ ² =7.010; 0.030	χ ² =1.897 0.387	χ ² =1.774; 0.412	χ ² =9.840; 0.007	χ ² =7.374; 0.025						
Experience (years)												
<5 yil	8 (5-9)	8 (5-10)	12 (9-12)	5 (2-7)	6 (5-8)	37 (29-45)	4 (20.0)					
5-10 yil	7 (4-11)	8 (4-12)	12 (8-12)	5 (2-7)	5 (3-8)	36.5 (29-48)	9 (21.4)					
11-20 yil	7 (4-10)	8 (6-12)	12 (9-12)	5 (2-7)	5 (3-8)	36.5 (29-47)	3 (21.4)					
>20 yil	8 (7-9)	6 (4-10)	12 (11-12)	5 (3-6)	5 (5-8)	36 (33-44)	1 (20.0)					
Test; p	χ ² =0.910; 0.823	χ ² =1.644; 0.650	χ ² =1.442; 0.696	χ ² =0.302; 0.960	χ ² =0.599; 0.897	χ ² =1.551; 0.671						
Intensive Care Departments												
Neurology	9 (7-9) ^a	7 (5-8) ^a	12 (9-12)	4 (3-6) ^{ab}	6 (5-7) ^a	37 (35-40) ^a	1 (9.1)					
Reanimation	7 (4-9) ^b	8 (6-8) ^a	12 (8-12)	5 (2-7) ^{ab}	5 (3-6) ^b	36 (29-39) ^a	3 (11.5)					
Neurosurgery	8 (5-9) ^{ab}	7 (4-8) ^b	12 (9-12)	5 (2-6) ^b	5 (4-6) ^b	37 (29-39) ^a	2 (16.7)					
Coronary	8 (5-11) ^a	11 (6-12) ^b	12 (10-12)	7 (2-7) ^c	8 (5-8) ^c	46 (29-48) ^b	11 (84.6)					
General Surgical	7 (7-7) ^b	7.5 (4-8) ^a	12 (9-12)	5 (5-6) ^{ab}	5 (5-6) ^b	36.5 (33-37) ^a	0 (0.0)					
Cardiovascular	7 (7-8) ^b	8 (7-8) ^a	12 (10-12)	4 (4-5) ^a	5 (5-6) ^b	36 (34-38) ^a	0 (0.0)					
Thoracic Surgery	7 (4-8) ^b	6 (6-8) ^a	12 (12-12)	5 (5-5) ^{ab}	5 (5-5) ^b	35 (32-38) ^a	0 (0.0)					
Test; p	χ ² =23.860; 0.001	χ ² =25.130; p<0.001	χ ² =4.501; 0.609	χ ² =26.407; p<0.001	χ ² =34.679; p<0.001	χ ² =20.446; 0.002						
Previous training on PU prevention												
Yes	7 (4-9)	7.5 (4-8)	12 (9-12)	5 (2-6)	5 (3-6)	36 (29-39)	2 (7.1)					
No	8 (4-11)	8 (4-12)	12 (8-12)	5 (2-7)	6 (4-8)	37 (29-48)	15 (28.3)					
Test; p	Z=2.401; 0.016	Z=1.661; 0.097	Z=0.518; 0.604	Z=1.059; 0.290	Z=2.259; 0.024	Z=2.582; 0.010						

Similar groups are indicated by the same alphabetical character.

TABLE 4: The relationship between knowledge and attitude scores of nurses to prevent pressure ulcer.

	Attitude toward prevent pressure tool	Personal competency to prevent prevent pressures	Priority of prevent pressure prevention	Impact of pressure ulcers	Responsibility in prevent pressure prevention	Confidence in the effectiveness of prevention
Knowledge Score	r = ,366*	-,102	-,481*	,175	-,170	-,276*
	p ,001	,366	,000	,117	,129	,013

*p<0.05

tween knowledge and attitudes. The results indicate that the knowledge of nurses about PUP is poor. Moreover, less than one-fourth of the nurses determined attitude scores equal to or greater than 75%.

KNOWLEDGE OF NURSES TOWARD PUP

Adequate knowledge about PUP strategies is crucial because it highlights decision-making interventions which patients need and the type of PU preventive intervention required. This research also explored concerns pertaining nurses’ knowledge on PUP. Knowledge towards all the items was dissatisfactory. Knowledge about risk assessment, skin assessment and care, activity management, nutrition management, moisture/incontinence management, support surface management, training and registration was unsatisfactory. From the findings, it is identified that only half of the nurses (51.9%) had an acceptable level of knowledge.

Several studies suggest insufficient knowledge about PUP in nurses.^{11,15,26-28} Other research indicate an acceptable level of knowledge from the nurses on the PUP.^{21,22,29}

In the investigations done, the PUP knowledge levels of the nurses were determined to be 79.1%, 73.6%, 50%, 49.6% and 29%, respectively.^{17,18,27,29,30} Meesterberends et al. (2013) study establish that nurses should improve their knowledge on PUP.³⁰ Abou El Enein and Zaghoul (2011) and Panagiotopoulou and Kerr (2002) suggest that nurses need to increase their awareness of PUP.^{23,29} This research iterates suggestions provided by Abou El Enein and Zaghoul (2011) and Panagiotopoulou and Kerr (2002) that nurses in Turkey need to make improvements on their level of knowledge regarding PUP because their current level of awareness stands at 51.9%.^{23,29}

ATTITUDE OF NURSES TOWARD PUP

When the literature is examined, it is seen that nurses have a positive attitude towards PUP.^{15-18,30} This study also reveals that only in less than one-fourth of the nurses’ attitudes towards PUP were positive.

There was no statistically significant correlation between the attitude scores of the nurses and their demographic data such as age, sex, clinical experience (p>0.05). Likewise, in another study, there was no statistically significant correlation between the attitude scores of the nurses and their age, sex, clinical experience (p>0.05).³¹

However; a statistically significant correlation exists between the attitude scores of the nurses and their educational level, previous training on PUP. It was comprehended that the total attitude scores for PUP of bachelor degree nurses were lower than those of diploma nurses (p<0.05). In the studies, there was no statistically significant difference (p>0.05) when the attitude scores of their educational level were compared.^{15,32} When the studies are examined, it cannot be said that a positive attitude will increase with the increase in the level of education. Attitude is considered an essential individual characteristic because it determines individual expectations. It is known that the likeli-

hood of positive behavior of the individual is affected by a positive attitude.³²

The total attitude scores of the nurses who participated PUP training were found to be lower than nurses who did not ($p < 0.05$). In previous studies, there was no significant difference between the attitude scores of nurses who received training on PUP and those who did not.^{15,17,23,31,33}

Especially, Beeckman et al. (2011) reported a positive correlation and Simonetti et al. (2015) found a weak correlation between total knowledge and total attitude scores.^{17,34} We explored a weak negative correlation between total knowledge and total attitude scores. It is necessary to understand that individual factors are known to influence a nurses' knowledge and attitudes. In this study, it is thought that the individual differences of nurses are more effective on positive attitude than knowledge.

CONCLUSION

In conclusion, nurses' knowledge on PUP in intensive care units is inadequate. This study also explored that only in less than a quarter of the nurses' attitudes towards PUP is positive. As the knowledge level of the nurses increases, the decrease in their positive attitudes is also thought provoking. In addition to having knowledge of pressure ulcer prevention, having a positive attitude has a positive effect on preventive care. In this study, it is thought that the individual differences of nurses are more effective on positive attitude than knowl-

edge. Strategic plans (regular individual training, prevention policies and management, etc.) are necessary to improve both knowledge and positive attitude towards prevention of pressure ulcer.

Limitations

This study was conducted in the intensive care units of a single university hospital. The study results cannot be generalized to all nurses.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Tuba Yılmazzer; **Design:** Tuba Yılmazzer, Hilal Tüzer; **Control/Supervision:** Tuba Yılmazzer, Hilal Tüzer; **Data Collection and/or Processing:** Tuba Yılmazzer, Hilal Tüzer, Ayşegül Erciyas; **Analysis and/or Interpretation:** Tuba Yılmazzer, Hilal Tüzer; **Literature Review:** Tuba Yılmazzer, Hilal Tüzer; **Writing the Article:** Tuba Yılmazzer, Hilal Tüzer; **Critical Review:** Tuba Yılmazzer, Hilal Tüzer; **References and Fundings:** Tuba Yılmazzer, Hilal Tüzer, Ayşegül Erciyas.

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