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ORIGINAL ARTICLE

Evaluation of factors affecting prognosis and mortality in geriatric patients presented to the emergency service with head trauma

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Abstract

Objective: Head trauma, a cause of serious morbidity and mortality in general, is among the most common causes of emergency department visits in geriatric patients. In this context, this study investigated the factors affecting prognosis and mortality in geriatric patients presenting with head trauma at the emergency department.

Methods: This retrospective cohort study included 842 patients aged 65 years and above who presented with head trauma to the emergency department between January 1, 2019, and December 31, 2019. Demographic and clinical data of the 622 patients included in the study were analyzed.

Results: A total of 622 geriatric patients with head trauma were included in this study. Of these, 54.2% (337/622) were men, and 45.8% (285/622) were women. The mean age of the patients was 75.3 ± 7.5 years. Antihypertensives were the most common medications taken by the patients. Subdural hematoma is the most frequently observed cranial pathology. A simple fall is the most observed mechanism for trauma. A total of 17.5% (109/622) of the patients were admitted to the hospital. Of these patients, 8.4% (52/622) were transferred to the intensive care unit and 2.6% (16/622) of the patients died.

Conclusion: Mortality would be expected to be higher in elderly patients with head trauma, hypotension, or high lactate levels. The need for intensive care unit transfer was higher in patients with coronary artery disease. The mortality rate of the patients increased with an increasing length of hospital stay.

KEYWORDS
emergency department, geriatric population, head trauma, mortality, prognosis,

1 | INTRODUCTION

Due to increasing life expectancy and decreasing fertility worldwide, the number of older adults in the total population continues to grow. Accordingly, the global population aged 65 years and above is expected to increase from 9.3% in 2020 to 16% in 2050.[1] The increasing number of geriatric trauma patients presenting to emergency departments (EDs) has increased the need for better protocols for triage and treatment of this population.[2] Falls are a leading cause of trauma-related deaths in the geriatric population.[3] Patients in the geriatric age group with head trauma are usually referred to the ED first. This study was conducted to investigate the factors affecting mortality in elderly patients with head trauma presenting to the ED. The study also aimed to investigate the demographic characteristics, reasons for admission, comorbidities, diagnosis distributions, length of hospital stay (LoS), and clinical outcomes of traumatized elderly patients. As a result of these data, we thought it would contribute to the precautions to be taken in the geriatric trauma group.

2 | METHODS

2.1 | Study design and sample size

The study was designed as a retrospective cohort. The study population consisted of male and female patients with head trauma aged 65 years and older admitted to the ED, or an intensive tertiary trauma center. Before the study, a power analysis was performed using the G*power 3.1 analysis program to determine the sample size. The minimum number of participants in the study was determined as 254 (effect size f2(V) = 0.0625, α-value = 0.05, ß-value = 0.80). The population of this study consisted of 842 patients aged 65 years and older who presented to the Kayseri City Hospital Emergency Medicine Department with head trauma between January 1, 2019, and December 31, 2019. Therefore, more patients were included in the study to increase its power of the study. Of these patients, 12 patients refused treatment or left the hospital without permission, two patients were referred to an external medical center, 74 patients did not have a head injury but for whom the head injury code was mistakenly entered into the system, 84 patients had missing documents, and three patients who did not comply with the study form were excluded from the study. Additionally, 45 duplicate entries were also excluded. As a result, a total of 622 patients were enrolled in this study. Patients were identified after query of the hospital system (HIMS) and patient records using the appropriate International Classification of Diseases, 10th Revision diagnostic codes. Demographic, etiological, and clinical data of the patients were obtained from archives and computer records and recorded in the patient's follow-up form. The patient's demographic characteristics, reasons for admission to the hospital, comorbidities, diagnosis distributions, LoS, clinical outcomes (discharge or death), and factors affecting patient mortality were analyzed.

2.2 | Statistical analysis

In descriptive statistics, continuous variables were expressed as mean ± standard deviation (SD) or median and categorical variables as numbers and percentages, depending on their agreement with the normal distribution. The Kolmogorov–Smirnov, Shapiro–Wilk, and Anderson–Darling tests were used to determine whether the numeric variables conformed to a normal distribution. The independent samples *t* test was used to compare two independent groups, in cases where the numeric variables conformed to a normal distribution, The Mann–Whitney *U* test was used to analyze numerical variables that did not fit the normal distribution. For comparison of differences between categorical variables by group, Pearson's chi-square test was used in 2 × 2 tables with expected cells of ≥ 5, Fisher's exact test was used in 2 × 2 tables with expected cells of < 5, and the Fisher–Freeman–Halton test was used in RxC tables with expected cells of < 5. The Jamovi project (Jamovi, version 1.6.13.0, 2020, retrieved from https://www.jamovi.org), JASP (Jeffreys' Amazing Statistics Program, version 0.14.1.0, 2020, retrieved from https://jasp-stats.org), and Excel (Microsoft Excel, Microsoft Corporation, Redmond, WA, USA, 2016, retrieved from https://office.microsoft.com/excel) were used for the statistical analyses and the charts were generated. Probability (*p*) values of ≤ 0.05 were considered to indicate statistical significance.

3 | RESULTS

Of the 622 patients enrolled in the study, 285 (45.8%) were women and 337 (54.2%) were men. When the systolic blood pressure (SBP) of the discharged and exitus groups was examined, there was a significant difference (SBP = 130 [77–220] in the discharged group, and 111 [79–173] in the exitus group; $P = 0.055$). When the diastolic blood pressure (DBP) of the discharged and exitus groups were examined, there was a significant difference (DBP = 79 [40–147] in the discharged group, and 71 [40–96] in the exitus group; $P = 0.092$). There were 506 (81.4%) patients with at least one comorbidity in the study group. The most common comorbidity was hypertension (HT), which was detected in 389 (76.9%) patients. The proportion of female patients with at least one comorbidity was significantly higher than that of male patients ($P = 0.042$). The number of patients who regularly took at least one medication was 478 (78.1%). Antihypertensives were the most frequently used medications, which were taken by 306 (63%) patients in Table 1.

The proportion of patients with coronary artery disease (CAD), who were transferred to the intensive care units (ICU), was significantly higher than that of patients without CAD (51.2% vs. 32.7%, $P = 0.016$). A total of 435 (79.5%) patients had a headache, and 264 (48.3%) had head swelling. Computed tomography (CT) was the most commonly used method (in 597 patients). Simple falls, which caused trauma in 433 (69.6%) of the patients, were the most common trauma mechanism, followed by motor vehicle accidents (MVAs). A comparative analysis of the trauma mechanisms and the need for hospitalization revealed a significant difference between the two variables ($P < 0.001$). Thoracic, abdominal, and lower extremity injuries occurred significantly more often in hospitalized patients ($P < 0.001$), whereas upper extremity injuries occurred significantly more often in non-hospitalized patients ($P = 0.014$). The number of patients admitted to the hospital due to falls from height, MVAs, and pedestrian traffic accidents (PTAs), including

TABLE 1 Demographic data and factors affecting mortality.

	Discharged (n = 606)	Exitus (n = 16)	Totally (n = 622)	*P* value
Age (mean, years)	74 [65–95]	78 [65–92]	75.3 ± 7.5	0.313[b]
Age groups				
65–74 y	313 (51.7)	7 (43.8)	320 (51.4%)	0.449[a]
75–84 y	209 (34.5)	5 (31.3)	214 (34.4%)	
85 y and above	84 (13.9)	4 (25)	88 (14.1%)	
Type of emergency service admission				
By ambulance	354 (58.4)	16 (100)	370 (59.5%)	**< 0.001**[a]
Outpatient	252 (41.6)	0 (0)	252 (40.5%)	
Blood pressure groups				
Hypotensive	3 (0.5)	3 (18.8)	6 (1)	**< 0.001**[b]
Normotensive	377 (62.2)	7 (43.8)	384 (61.7)	
Hypertensive	226 (37.3)	6 (37.5)	232 (37.3)	
Heart rate (beats/minute)	80 [51–120]	80 [62–120]	80.7 ± 11.9	**0.261**[a]
Heart rhythm groups				
Bradycardia	9 (1.5)	0 (0)	9 (1.4)	0.387[b]
Normocardia	566 (93.4)	14 (87.5)	580 (93.2)	
Tachycardia	31 (5.1)	2 (12.5)	33 (5.3)	
Respiratory rate (breaths/minute)	18 [14–24]	18 [10–26]	18 [10–26]	0.208[a]
Cranial pathology, if detected	29 (4.8)	9 (56.3)	38 (6.1)	**< 0.001**[a]
Subdural hematoma, *yes*	12 (41.4)	7 (77.8)	19 (50)	0.124[a]
Brain contusion, *yes*	8 (27.6)	1 (11.1)	9 (23.7)	0.411[a]
Pneumocephalus, *yes*	5 (17.2)	0 (0)	5 (13.2)	0.312[a]
Subarachnoid hemorrhage, *yes*	4 (13.8)	4 (44.4)	8 (21.1)	0.071[a]
Epidural hematoma, *yes*	4 (13.8)	0 (0)	4 (10.5)	0.554[a]
Brain midline shift, *yes*	0 (0)	1 (11.1)	1 (2.6)	0.237[a]
Additional organ injury, if detected	226 (37.3)	9 (56.3)	235 (37.8)	0.123[a]
Thorax injury, *yes*	57 (25.2)	9 (100)	66 (28.1)	**< 0.001**[a]
Abdominal injury, *yes*	15 (6.6)	5 (55.6)	20 (8.5)	**< 0.001**[a]
Upper extremity injury, *yes*	100 (44.2)	2 (22.2)	102 (43.4)	0.306[a]
Lower extremity injury, *yes*	65 (28.8)	2 (22.2)	67 (28.5)	0.999[a]
Pelvis injury, *var*	2 (0.9)	1 (11.1)	3 (1.3)	0.111[a]
Vertebral injury, *var*	38 (16.8)	1 (11.1)	39 (16.6)	0.999[a]
Maxillofacial injury, *var*	15 (6.6)	0 (0)	15 (6.4)	0.999[a]
GCS score (mean)	15 [5–15]	12 [6–15]	15 [5–15]	**< 0.001**[b]
Revised Trauma Score (mean)	12.0 [12.0–12.0]	11.0 [10.8–12.0]	12.0 [9.0–12.0]	**< 0.001**[b]

Note: Descriptive statistics were expressed as median [min–max] values in the case of numerical variables based on the respective distribution characteristics, and as numbers (%) in the case of categorical variables.

Bold values indicates significance.

Abbreviation: GCS, Glasgow Coma Scale.

[a]The Mann–Whitney *U* test was used.

[b]The Pearson's chi-squared, Fisher's exact, or Fisher–Freeman–Halton test was used.

motorcyclists involved in a traffic accident, was higher in hospitalized patients than in non-hospitalized patients. In contrast, the rate of patients admitted for simple falls, the most common type of trauma mechanism in non-hospitalized patients, was higher in non-hospitalized patients than in hospitalized patients, as outlined in Table 2.

At least one consultation was required in 40.5% of the patients. The median hemoglobin level of deceased patients was significantly lower than that of surviving patients (11.3 g/dL vs. 13 g/dL, $P = 0.004$). Additionally, the median serum lactate level of the patients who died was significantly higher than that of the surviving patients (7.1 mmol/L vs. 1.4 mmol/L, $P = 0.029$) outlined in Table 3.

TABLE 2 The effect of trauma mechanism and age groups on the need for hospitalization.

Mechanism of trauma	Age groups				Need for hospitalization		
	65–74 (n, %)	75–84 (n, %)	85 and above (n, %)	Total (n, %)	Yes (n = 109, %)	No (n = 513, %)	*P* value
FAI	1 (0.3)	0 (0)	0 (0)	1 (0.2)	0 (0)	1 (0.2)	< 0.001
Fall from height	16 (5)	8 (3.7)	2 (2.3)	26 (4.2)	12 (11)	14 (2.7)	
SOI	6 (1.9)	3 (1.4)	1 (1.1)	10 (1.6)	0 (0)	10 (1.9)	
Simple falls	194 (60.6)	161 (75.2)	78 (88.6)	433 (69.6)	50 (45.9)	383 (74.7)	
MVA	59 (18.4)	13 (6.1)	2 (2.3)	74 (11.9)	29 (26.6)	45 (8.8)	
Assault	19 (5.9)	10 (4.7)	1 (1.1)	30 (4.8)	3 (2.8)	27 (5.3)	
PTA	12 (3.8)	9 (4.2)	0 (0)	21 (3.4)	13 (11.9)	8 (1.6)	
Other	13 (4.1)	10 (4.7)	4 (4.5)	27 (4.3)	2 (1.8)	25 (4.9)	

Note: Descriptive statistics were given as numbers (%).

Abbreviations: FAI, firearm injuries; MVA, Motor vehicle accident; PTA, Pedestrian traffic accidents; SOI, sharp object injury.

TABLE 3 Effect of laboratory markers on clinical outcome.

Laboratory markers	Clinical outcome[a]			
	Discharged (n = 606)	Exitus (n = 16)	Total	*P* value
Hemoglobin (g/dL)	13 [2.8–18]	11.3 [9.6–13]	13 [2.8–18]	0.004[a]
Leukocyte count (/103/mL)	8.8 [1.1–28]	12.8 [3–29]	9 [1.1–29]	0.011[a]
Glucose (mg/dL)	137 [84–690]	198 [135–275]	141 [84–690]	0.003
ALT (IU/L)	14 [3–127]	31.5 [5–882]	14 [3–882]	0.008[a]
AST (IU/L)	20 [8–151]	53.5 [17–2300]	20 [8–2300]	***<0.001***[a]
Lactate (mmol/L)	1.4 [0.9–10]	7.1 [1.3–29]	1.8 [0.9–29]	**0.029**[a]

Note: Descriptive statistics were expressed as median [min-max] values in the case of numerical variables based on the respective distribution characteristics.

Bold values indicates significance.

Abbreviations: ALT, alanine aminotransferase; AST, aspartate aminotransferase.

[a]The Mann–Whitney *U* test was used.

TABLE 4 The relationship between the hospitalization status of the patients, the length of hospital stays, and the clinical outcome.

Hospitalization status	Clinical outcome			
	Discharged (n = 606, %)	Exitus (n = 16, %)	Total	*P* value
Hospitalizations (n, %)	94 (15.5)	15 (93.8)	109 (17.5)	< 0.001
Transfers to ICU (n, %)				
No hospitalization	512 (84.5)	1 (6.3)	513 (82.5)	< 0.001
Hospitalization with transfer to the ICU	37 (6.1)	15 (93.8)	52 (8.4)	
Hospitalization without transfer to ICU	57 (9.4)	0 (0)	57 (9.2)	
LoS				
1–3 d	13 (13.8)	2 (13.3)	15 (13.8)	0.019

Note: Descriptive statistics were given as numbers (%).

Abbreviations: ICU, intensive care unit; LoS, length of stay.

Of the patients who died, 93.8% were first hospitalized. The rate of patients hospitalized and transferred to the ICU was significantly higher in patients who died than in those who survived ($P < 0.001$ for both cases). Mortality occurred in only one (6.2%) non-hospitalized patient. Furthermore, LoS was between 3 and 7 days in 42.6% of surviving patients and 7 days or more in 80% of deceased patients.

There was a significant difference in LoS between patients who died and those who survived ($P = 0.019$), as outlined in Table 4.

4 | DISCUSSION

In parallel with the worldwide increase in the geriatric population, there has also been an increase in head trauma due to diseases specific to this patient group. In this study, we examined the features of head trauma and other parts of body trauma in geriatric patients. In this context, syncope and loss of balance disorders are coming to the fore as the most common causes of head trauma.[1–3] Additionally, the male gender has been reported to be a prominent risk factor for geriatric head trauma.[4,5] Of the 622 patients who presented with head trauma to the ED, 337 (54.2%) patients were men, and 285 (45.8%) were women. The proportion of female patients with at least one comorbidity in this study was significantly higher than that of male patients, which is different from the results reported in the literature.[2,3] This can be explained by the fact that the female patients in this study had a higher mean age and a higher number of comorbidities.

The risk of falls, the major cause of head injury in the elderly population, increases with age. Approximately half of the deaths associated with simple falls are due to traumatic brain injury.[6] Da Costa et al[7] reported that the most common causes of blunt trauma in patients aged 65 years and older were fall accidents (n = 76), MVAs (n = 46), PTAs (n = 32), and falls from height (n = 23). In their study of patients presenting to the ED with head trauma, Isık et al[8] found that the mortality rate was higher in older patients than in younger patients. They also noted that the etiology of trauma was traffic accidents in 77% of cases, followed by firearm injuries (FAIs) in 13.5% of cases. In the present study, simple falls were found to be the most common trauma mechanism (69.6%) in all age groups. The incidence of simple falls increased with age, whereas the incidence of falls from height, assault, FAI, sharp object injury, MVAs, and PTAs decreased with age. This could be because people withdraw from social life as they age. Therefore, elderly patients and their relatives should be informed about the precautions against simple falls at home. Interestingly, MVA was found to be the cause of trauma in 18.4% of patients in the 65–75 age group. This could be because this age group still actively participates in road traffic but lacks the necessary skills to avoid MVAs. Therefore, driving and health requirements, such as remedial courses for drivers and mental status examinations, can be implemented to decrease trauma rates in this age group.

In a study conducted by Wofford et al,[9] the rates of ED admissions by the age group in the geriatric patient population were reported to be 45.3% in the 65–74 age group, 37.4% in the 75–84 age group, and 17.2% in the 85+ age group. Also in the present study, most patients belonged to the young elderly group (65–74 years). This can be explained by the fact that the young elderly patient group in Turkey is larger than the other geriatric age groups.

As for the relationship between age groups and mortality in patients with head trauma, the mortality rate in pediatric patients was 3.8% compared to 31.3% in patients aged 65 years and above.[8] In the present study, the mean age of discharged patients was 74 years, whereas the mean age of patients who died was 78 years. Patients who died accounted for 2.6% of the total number of patients. There were no significant differences between age groups in terms of mortality. The lower mortality rate obtained in this study compared with the literature may be due to an excessive number of admissions with minor trauma.

It has been reported that the aged 65 years and above group accounts for 21.9% of all ambulance admissions in Turkey; the rate of hospital admissions is higher in this age group, and the mortality rate is also significantly higher in the elderly patients transported by ambulance.[10] In addition, in the present study, the majority of geriatric patients with head trauma were hospitalized by ambulance, and all patients who died were hospitalized by ambulance.

A study conducted in Turkey reported that 94.1% of trauma patients had one or more chronic diseases and that the most common comorbidities were, in descending order of frequency, HT, CAD, and diabetes mellitus (DM).[11] In comparison, 81.4% of patients in the present study had at least one comorbidity. In parallel with the relevant findings reported in the literature, HT, which was found in 76.9% of cases, was the most common comorbidity, followed by DM and CAD. This finding leaves no doubt that comorbidities are a risk for falls and head trauma in geriatric patients.

In another study conducted in Turkey, Kara et al[12] reported that the most common comorbidity in trauma patients treated in the ICU was cardiac disease (12%) and that the mortality rate was higher in these patients. In addition, they reported that 52.7% of patients hospitalized for trauma suffered head trauma. In the present study, the need for ICU transfer was also significantly higher in patients with CAD.

Another study in Turkey reported that headache was the most common symptom in elderly patients presenting to the ED with head trauma.[13] Additionally, Blitzer et al[14] reported that acute ischemic stroke could occur in operated or non-operated patients after penetrating or blunt carotid trauma associated with head trauma. In the present study, the headache was also the most common symptom (79.5%). Interestingly, 14 patients with speech disturbances, vomiting, weakness in the arm and/or leg, and visual impairment were diagnosed with ischemic stroke and requested neurological consultation. It should be remembered that one of the causes of falls may be an ischemic stroke.

In the study by Mirzai et al,[5] cranial imaging revealed skull fractures in 25.9% of the cases. Additionally, the most common pathology in the 46 cases with cranial pathology was reported to be an epidural hematoma, which was detected in 25% of these patients. In comparison, in the present study, skull fractures and cranial pathology were detected in 4.5%, and 6.1% of the patients, respectively. The most common cranial pathology was found to be subdural hematoma (3%). There was a significant relationship between mortality and the development of any cranial pathology.

Mortality has been reported to increase in massive hemorrhage after trauma in elderly patients, which may be due to increased vital organ ischemia in patients with hypotension, an indicator of systemic hypoperfusion, and underlying comorbidities.[6] In comparison, in the present study, patients' median SBP and DBP at the time of admission to the ED were 130 and 79 mm Hg, respectively. Consistent with the relevant findings in the literature, the rate of hypotension was 0.5% in discharged patients and 18.8% in patients who died. Accordingly, the rate of hypotension was higher in patients who died than in those who were discharged.

In a study of patients with isolated head trauma, low Glasgow Coma Scale (GCS) scores were associated with high mortality.[15] Akköse et al[16] reported that the GCS and Revised Trauma Scores (RTS) of patients who died were lower than those of surviving patients. There is a strong correlation between low GCS and RTS scores and mortality. The present study also found a significant correlation between GCS and RTS values and mortality. The median GCS and RTS values of patients who died were 12 and 11, respectively.

According to the Canadian CT head rule, CT is recommended in patients aged ≥ 65 years, even if they have mild head trauma.[17] Magnetic resonance imaging is recommended in patients with poor or worsening consciousness, because the pathology may not be detected at CT.[18] In comparison, in the present study, the proportion of patients who underwent at least one imaging modality was 98.4%. CT was the preferred imaging method, which was used in 597 patients. The high number of CT scans may be attributed to the fact that it is recommended by the Canadian CT head rule and that a defensive approach was adopted.

Gioffrè-Florio et al[19] reported that head traumas in geriatric patients were mostly accompanied by upper extremity injuries, followed by lower extremity injuries. Similarly, upper extremity injuries were the most common (43.4%) additional organ injuries in patients included in the present study, followed by lower extremity and chest injuries. The concomitant chest and abdominal injuries rates were significantly higher in patients who died. This finding was attributed to the fact that patients with multiple traumas, such as traffic accidents and falls from height, were exposed to high-energy trauma. Additionally, the rates of thoracic, abdominal, and lower extremity injuries were significantly higher in hospitalized patients than in non-hospitalized patients.

A low hemoglobin value in a patient presenting with head trauma to the ED initially suggests massive bleeding or pre-existing anemia. However, massive bleeding cannot be ruled out based on a normal hemoglobin value. Lactate levels may indicate systemic hypoperfusion. At the same time, high lactate levels are associated with an increased risk of death.[6] In this study, the median hemoglobin level of patients who died was significantly lower than that of patients who were discharged (11.3 g/dL vs 13 g/dL). Additionally, the median serum lactate level of patients who died was significantly higher than that of patients who survived (7.1 mmol/L vs 1.4 mmol/L). The high mortality rate in patients with low hemoglobin levels might be because they presented to the ED with massive bleeding. Furthermore, the mortality rate of patients with high lactate levels was higher than that of patients with low lactate levels, which is consistent with relevant findings in the literature.

In a study of trauma patients hospitalized in the ICU, Kara et al[12] reported that LoS was longer and complications such as infections were more common in patients who died. Hospitalization was not required in 82.5% of patients in the present study. The proportion of hospitalized patients was 17.5%. The LoS was ≥ 7 days in approximately half (48.6%) of the hospitalized patients. It was found that the rate of patients requiring hospitalization and transfer to the ICU was higher in those who died than in those who survived. Of the patients who died, 93.8% were first hospitalized. Mortality occurred in only one (6.2%) non-hospitalized patient. Consistent with relevant findings reported in the literature, prolonged LoS was associated with increased mortality.

4.1 | Limitations

Due to the retrospective nature of our study, a detailed history analysis could not be performed on the patients. In addition, the single-center nature of our study may have affected the statistical power of the study.

5 | CONCLUSIONS

Head trauma in geriatric patients occurs most frequently from falls and during the summer season. The need for ICU transfer was significantly higher in patients with CAD. The most common cranial pathology detected in patients was a subdural hematoma. The mortality rate of patients with cranial pathologies is higher. Furthermore, it should be considered that ischemic stroke may be one of the causes of falls in some patients, as found in this study. Among laboratory parameters, low hemoglobin and lactate levels can be used to predict mortality in patients with head trauma. Although, in this study, head trauma was observed mainly in the young, elderly group, it can be predicted that the number of ED admissions will increase with the increase in the elderly population. Moreover, it was found that MVA was the cause of trauma in 18.4% of 65–75year-old patients. Therefore, we believe that some driving and health regulations, such as remedial courses for drivers and mental status examinations, can be implemented to reduce the trauma rate in this age group.

AUTHOR CONTRIBUTIONS

Data collection, literature search, and writing the manuscript: Eryurt. *Research design, methodology, data analysis, editing, and manuscript drafting:* Sahin. *Investigation and data collection:* Oral.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

ETHICAL APPROVAL

The current study was conducted in compliance with the Declaration of Helsinki. Institutional ethics committee approval was obtained before the study (Clinical Research Ethics Committee of Kayseri City Hospital with decision number 114 dated July 9, 2020).

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