Research Article *Pamukkale Medical Journal*

Received: 18.09.2025
Accepted: 15.10.2025
Area of Expertise: Emergency Medicine

Title: A survey-based assessment of emergency physicians' proficiency in mechanical ventilator management.

Short title: Emergency physicians' proficiency in mechanical ventilation.

Abstract

Purpose: Mechanical ventilation (MV) is a critical intervention frequently utilized in emergency departments, yet many emergency physicians receive limited formal training in its use. This study aimed to evaluate emergency physicians' frequency of MV application, their theoretical and practical knowledge, and the adequacy of training received during residency in Türkiye.

Materials and methods: A cross-sectional, survey-based study was conducted using a 20-item electronic questionnaire distributed via national emergency medicine associations. The survey assessed demographic characteristics, familiarity with ventilator terminology, and self-reported proficiency in MV management. A total of 215 physicians (152 specialists, 63 residents) participated. Statistical analyses were performed using chi-square tests with a significance level of $p<0.05$.

Results: Despite 86% of participants reporting independent adjustment of ventilator settings, only 14.9% considered their MV knowledge sufficient. While 75.8% were familiar with basic parameters such as PEEP, only 36.3% understood advanced concepts like compliance and elastance. Half of the participants had not attended any formal MV training. No significant differences were observed in knowledge levels based on institution type or professional status.

Conclusion: The findings reveal a critical gap between emergency physicians' confidence and their actual knowledge in MV management. To bridge this gap, structured, simulation-based training should be integrated into residency curricula and continuing education programs to enhance both competence and patient outcomes.

Keywords: Respiration artificial, emergency medicine, clinical competence, surveys and questionnaires, education.

Makale başlığı: Servis hekimlerinin mekanik ventilatör yönetimindeki yeterlilikleri: anket çalışması.

Kısa başlık: Acil hekimlerinde ventilatör yeterliliği

Öz

Amaç: Mekanik ventilasyon (MV), acil servislerde sıkça kullanılan kritik bir girişimdir. Ancak birçok acil tıp hekimi, MV kullanımı konusunda sınırlı düzeyde resmi eğitim almaktadır. Bu çalışmanın amacı, Türkiye'deki acil tıp hekimlerinin MV uygulama sıklığını, teorik ve pratik bilgi düzeylerini ve uzmanlık eğitimi sırasında aldıkları eğitimin yeterliliğini değerlendirmektir.

Gereç ve yöntem: Kesitsel tasarıma sahip bu anket çalışması, ulusal acil tıp dernekleri aracılığıyla dağıtılan 20 soruluk elektronik bir anketle yürütülmüştür. Anket; demografik özellikleri, MV terminolojisine aşinalığı ve hekimlerin MV yönetimindeki öz-yeterlilik algısını değerlendirmiştir. Çalışmaya 215 hekim (152 uzman, 63 asistan) katılmıştır. Veriler ki-kare testi ile analiz edilmiş, anlamlılık düzeyi $p<0,05$ olarak kabul edilmiştir.

Bulgular: Katılımcıların %86'sı ventilatör ayarlarını bağımsız olarak yaptığını belirtmiş olsa da, yalnızca %14,9'u MV bilgilerini yeterli bulmuştur. %75,8'i PEEP gibi temel parametrelere aşina olduğunu belirtirken, yalnızca %36,3'ü kompliyans ve elastans gibi ileri düzey kavramlara hakim olduğunu ifade etmiştir. Katılımcıların yarısı daha önce resmi bir MV eğitimi almadığını bildirmiştir. Kurum türü veya mesleki unvana göre bilgi düzeylerinde anlamlı fark saptanmamıştır.

Sonuç: Çalışma bulguları, acil tıp hekimlerinin MV yönetimindeki özgüvenleri ile gerçek bilgi düzeyleri arasında önemli bir boşluk olduğunu göstermektedir. Bu farkın kapatılması için yapılandırılmış ve simülasyon tabanlı eğitimlerin uzmanlık eğitimi müfredatına ve sürekli tıp eğitimi programlarına entegre edilmesi önerilmektedir.

Anahtar kelimeler: Mekanik ventilasyon, acil tıp, klinik yeterlilik, anketler ve soru formları, eğitim.

Introduction

The management of critically ill patients in emergency departments increasingly relies on mechanical ventilation (MV) due to the growing number of patients requiring advanced airway support [1]. Although MV is a critical intervention, it is often perceived as challenging by emergency physicians, primarily due to the complexity of its terminology and the lack of formal training [2]. Additionally, variations in ventilator brand terminologies further exacerbate confusion, highlighting the urgent need for standardization and education in this area [3].

Prolonged MV in emergency departments is linked to increased patient mortality and resource utilization [4]. Emergency physicians play a pivotal role in initiating and maintaining ventilator support during the critical pre-intensive care phase. However, studies indicate that most emergency physicians receive limited formal education—often less than three hours annually—on MV management, which may affect their confidence and competency in this area [5].

Despite the inclusion of MV in emergency medicine training curricula, significant gaps persist in both theoretical knowledge and practical application [6]. Previous research underscores the importance of structured training to address these deficiencies and enhance patient outcomes [7]. Similar findings have been reported in other domains of emergency care; for example, a recent study evaluating health workers' basic and advanced life support knowledge demonstrated that training significantly improved knowledge and awareness compared with pre-training levels [8].

This study aims to evaluate the frequency of MV use, the knowledge levels of emergency physicians, and the adequacy of their training in Türkiye, with the objective of informing improvements to residency programs and continuing medical education.

Materials and methods

This cross-sectional survey study aimed to assess the knowledge and training of emergency medicine specialists and residents regarding mechanical ventilator (MV) use in Türkiye. Data were collected through an electronic questionnaire distributed via national emergency medicine associations, including the Emergency Physicians Association of Türkiye and the Emergency Medicine Association of Türkiye. Ethical approval for the study was obtained from the Kütahya Health Sciences University Non-Interventional Clinical Research Ethics Committee (decision no: 2021/08-11, date: 28.04.2021). The study protocol conforms to the ethical guidelines of the 1975 Declaration of Helsinki.

The survey was conducted between 01 May 2021 and 31 July 2021. In total, 360 emergency physicians were reached, and 215 completed the questionnaire, yielding a response rate of 59.7%. The survey link was disseminated via national associations, and a designated emergency medicine specialist at each hospital coordinated voluntary participation. This approach represents a convenience (non-probability) sampling method, which may introduce selection bias; this limitation was acknowledged in the discussion section. All participants provided informed consent prior to completing the survey.

The questionnaire comprised 20 items covering socio-demographic data, knowledge of basic MV terminology, and practical experience with ventilator settings and modes. Items assessed familiarity with Positive End-Expiratory Pressure (PEEP), compliance and elastance concepts, as well as continuous positive airway pressure (CPAP) and bilevel positive airway pressure (BIPAP) use. To ensure clarity and feasibility, the questionnaire was pilot-tested with 15 emergency physicians, after which minor wording changes were made to three items (terminology, ventilator modes, and ICU availability). As the instrument was designed as a descriptive knowledge and practice survey rather than a psychometric scale, no reliability analysis (e.g., Cronbach's α) was performed. Surveys with incomplete or inconsistent responses were excluded from the analysis.

No a priori power analysis was conducted, as the study was exploratory in nature and primarily aimed to describe knowledge and practice patterns among emergency physicians. The achieved sample size was considered adequate for descriptive summaries and comparative analyses.

Data were analyzed using Jamovi software (version 2.5.3). Descriptive statistics were used to summarize demographic variables, with categorical data expressed as frequencies and percentages. Group comparisons (e.g., specialists vs. residents) were performed using the chi-square test, and a *p*-value of <0.05 was considered statistically significant.

Results

In our survey, 157 out of 215 participants (73%) were male, and 130 (60%) were aged between 20 and 29 years. A total of 152 participants (70.7%) were specialists or faculty members. Seventy participants (32.6%) had 6–10 years of professional experience, while 92 (42.8%) had more than 10 years of experience. The most common institution among the participants was the Training and Research Hospital, with 91

participants (42.3%). Regarding the institutions where participants received their specialty training, 118 (54.9%) graduated from university hospitals (Table 1).

Thirty-two participants (14.9%) reported that their knowledge of MV was sufficient, while 186 (86.5%) stated that they had experience monitoring patients using MV. Seventy-nine participants (36.7%) reported that an intensive care unit was available within their emergency department. Seventy-five participants (34.9%) indicated that they had received sufficient training in MV usage, while half (50.7%) reported not attending any courses on the subject. The vast majority (86%) stated that they adjusted MV settings independently. Approximately 75.8% of participants were knowledgeable about PEEP, 36% understood compliance and elastance concepts, and 68.8% were familiar with CPAP/BIPAP. However, 55.3% of participants reported that the brand of MV did not influence its use (Table 2).

No significant differences were observed between the responses provided by participants from Training and Research Hospitals and University Hospitals. For example, 46.2% of participants from Training and Research Hospitals and 53.8% from University Hospitals correctly answered the question regarding adjusting tidal volume based on height. Similarly, 45.2% of participants from Training and Research Hospitals and 54.8% from University Hospitals correctly identified the Assist/Control Ventilation (ACV) mode as supporting a patient's extra respiratory effort (Table 3).

Likewise, no significant differences were found between residents and specialists. For instance, 30.6% of residents and 69.4% of specialists correctly answered the tidal volume adjustment question. Additionally, 24.7% of residents and 75.3% of specialists correctly identified the ACV mode, while both groups showed comparable accuracy regarding the upper limits of plateau pressure and peak inspiratory pressure in lung-protective ventilation (Table 4).

Discussion

Organizing broader training programs for MV use is critically important to prevent complications and improve patient outcomes. According to the Ministry of Health's Medical Specialization Board Curriculum Development and Standards Setting System (TUKMOS), the core curriculum for Emergency Medicine Specialty Training (v.2.4, 2019) includes the skill of performing invasive and non-invasive MV under procedural competence (3.7.2) within critical care. This is designated as level 3 competence (the ability to perform procedures on non-complex, frequently encountered cases) and seniority level 1. Seniority level 1 refers to the knowledge, skills, and competencies required for clinical problems with high mortality, morbidity, prevalence, or incidence, as

well as for frequently performed, non-complex procedures. Educational methods are categorized as structured educational activities (YE), practical educational activities (UE), and independent and exploratory learning activities (BE) [9].

The Accreditation Council for Graduate Medical Education (ACGME) Program Requirements for Graduate Medical Education in Emergency Medicine acknowledge that achieving and maintaining competence in some procedures can be challenging for emergency medicine specialists; however, invasive MV is not among these procedures [10]. In the ACGME critical care program, procedural skills include the use of various positive pressure ventilator modes (IV.B.1.b).(2).(b).(ii)) and the ability to wean patients from ventilator support (IV.B.1.b).(2).(b).(ii).(c)) [11]. Studies have also demonstrated that emergency department physicians possess baseline knowledge of MV, which can be further enhanced through specialized training. Moreover, the 2019 clinical practice guidelines for emergency medicine, including those published by the American College of Emergency Physicians, identify MV as an essential component of integrated practical applications in emergency medicine [12,13].

The need for MV in emergency departments is frequent, as patients requiring such support are often critically ill [14]. Given the limited availability of intensive care beds, these patients should at least be monitored with ventilator support during their initial hours in the emergency department. One study found that delayed transfer to ICUs for patients on MV was associated with increased mortality risk and higher resource consumption. A maximum waiting time of four hours for ICU admission has been recommended [15].

This study examined the knowledge levels, educational backgrounds, and practices related to MV use among emergency medicine specialists and residents working in emergency departments across Türkiye. The findings revealed that 86% of participants independently adjusted MV settings, reflecting confidence in their ventilator use. However, the relatively low percentage (36%) of participants who reported being knowledgeable about advanced parameters such as compliance and elastance suggests that these critical concepts may not be adequately addressed during ventilator use. This raises concerns that vital physiological parameters could be overlooked in the management of critically ill patients.

In a study by Wilcox and colleagues, 77% of emergency medicine residents reported receiving up to three hours of MV training in their curricula [15]. The overall correct response rate among participants in that study was 73.3%, highlighting the limitations of MV training and its impact on knowledge levels. Similarly, in our study, 50.7% of participants reported not attending a formal course on MV, indicating that

structured training in MV use remains insufficient in emergency departments. As a result, physicians primarily gain experience through practical application. Nevertheless, the high percentage (86%) of participants in our study who reported being able to independently adjust ventilator settings, even without formal training, suggests that emergency physicians develop practical knowledge of ventilator use. However, this reliance on hands-on experience may mask gaps in theoretical understanding.

In a study by Celikel and colleagues on MV use among emergency department staff, 30.3% of participants were female, 59.2% were aged between 25 and 35 years, 36.8% were aged between 36 and 45 years, and 3.9% were aged between 46 and 55 years [16]. In comparison, 60% of participants in our study were aged between 20 and 29 years, and 32.6% had 6 to 10 years of professional experience. These findings indicate that the responsibility for MV use in emergency departments is often undertaken by younger and moderately experienced physicians. Furthermore, the largest proportion (43.3%) of participants in our study worked in training and research hospitals, suggesting that ventilator use is more frequent in hospitals with high patient turnover and a larger number of critically ill patients.

Additionally, 63.3% of participants worked in emergency departments without inpatient units, such as intensive or critical care units, indicating that these physicians may encounter prolonged ventilator use less frequently. However, 86% of these physicians reported independently adjusting ventilator settings, highlighting the need for quick and effective ventilator use in emergency situations and demonstrating their foundational knowledge in this area.

A study by Pisani et al. [17] examined the geopolitical and economic differences in MV management and patient outcomes among intensive care patients without Acute Respiratory Distress Syndrome. The study highlighted significant disparities in practices and outcomes across countries, particularly emphasizing the influence of a country's income level on ventilation management and patient results. These findings underscore the necessity of establishing global standards for ventilation management. In our study, no significant differences were observed in the correct response rates to critical questions (Tables 3 and 4) between emergency medicine specialists and residents, suggesting that basic MV knowledge should be more effectively integrated into emergency medicine training. Our findings align with previous research indicating that emergency physicians often lack adequate training in MV, with most receiving minimal formal education during their careers [5]. Addressing these gaps through enhanced educational programs and simulation-based training could substantially improve patient outcomes and bolster physician confidence in managing ventilated patients.

This study provides valuable insights into the knowledge and practices of emergency physicians regarding MV use; however, certain limitations should be noted. First, as with any survey-based study, the findings rely on self-reported data, which may reflect perceived knowledge rather than actual competency. Second, while the study included participants from a broad range of institutions across Türkiye, the sample may not fully capture the perspectives of physicians from smaller or less represented healthcare settings. Lastly, the cross-sectional design provides a snapshot of current practices and training levels but does not allow for evaluation of trends over time. Despite these limitations, the study offers a strong foundation for further research and underscores the importance of addressing educational gaps in MV management.

In conclusion, our study demonstrates that while emergency medicine physicians exhibit proficiency in basic MV concepts, significant knowledge gaps persist in more advanced concepts and parameters, regardless of the institution from which they graduated. Identifying these educational deficiencies highlights the need for reevaluating curricula and training programs in this field. Conducting similar studies at the national level could further validate these findings and support the development of improved strategies for managing critically ill patients in emergency departments.

Acknowledgment: The authors received no specific acknowledgment.

Funding: None

Authors contributions: H.Y., M.K. and E.K. have constructed/constructed the main idea and hypothesis of the study. H.Y., M.K, A.C. and Y.T. They developed the theory and arranged/edited the material and method section. H.Y., M.K., E.G. and H.A. has/have done the evaluation of the data in the Results section. Discussion section of the article. Written by H.Y. and M.K., H.Y., M.K., E.K. and A.C. reviewed, corrected and approved. In addition, all authors discussed the entire study and approved the final version.

Conflict of interest: No conflict of interest was declared by the authors.

References

1. Mullins PM, Goyal M, Pines JM. National growth in intensive care unit admissions from emergency departments in the United States from 2002 to 2009. *Acad Emerg Med*. 2013;20(5):479-486. doi:10.1111/acem.12134
2. Archambault PM, St Onge M. Invasive and noninvasive ventilation in the emergency department. *Emerg Med Clin North Am*. 2012;30(2):421-449. doi:10.1016/j.emc.2011.10.008
3. Bayram B, Şancı E. Invasive mechanical ventilation in the emergency department. *Turk J Emerg Med.* 2019;19(2):43-52. doi:10.1016/j.tjem.2019.03.001

4. Angotti LB, Richards JB, Fisher DF, et al. Duration of mechanical ventilation in the emergency department. *West J Emerg Med*. 2017;18(5):972-979. doi:10.5811/westjem.2017.5.34099
5. Wilcox SR, Strout TD, Schneider JI, et al. Academic Emergency Medicine Physicians' Knowledge of Mechanical Ventilation. *West J Emerg Med*. 2016;17(3):271-279. doi:10.5811/westjem.2016.2.29517
6. Weingart SD, Sherwin RL, Emlet LL, Tawil I, Mayglothling J, Rittenberger JC. ED intensivists and ED intensive care units. *Am J Emerg Med*. 2013;31(3):617-620. doi:10.1016/j.ajem.2012.10.015
7. Cowan RM, Trzeciak S. Clinical review: Emergency department overcrowding and the potential impact on the critically ill. *Crit Care*. 2005;9(3):291-295. doi:10.1186/cc2981
8. Kıyak R, Çağlar B, Serin S, Fındık M, Cakas M, Önler AB. Evaluation of basic and advanced life support knowledge of health workers. *BAUN Health Sci J*. 2025;14(1):132-138. doi:10.53424/balikesirsbd.1548789
9. TUKMOS. Core curriculum for emergency medicine residency training. v2.4; 2019. Available at: https://tukmos.saglik.gov.tr. Accessed December 10, 2024
10. Accreditation Council for Graduate Medical Education (ACGME). Program Requirements for Graduate Medical Education in Emergency Medicine. Interim revision; effective Available at: https://www.acgme.org. Accessed December 10, 2024
11. Accreditation Council for Graduate Medical Education (ACGME). program requirements for graduate medical education in critical care medicine. Revision; effective. Available at: https://www.acgme.org. Accessed December 10, 2024
12. Beeson MS, Ankel F, Bhat R, et al. The 2019 model of the clinical practice of emergency medicine. *J Emerg Med*. 2020;59(1):96-120. doi:10.1016/j.jemermed.2020.03.018
13. Easter BD, Fischer C, Fisher J. The use of mechanical ventilation in the ED. *Am J Emerg Med*. 2012;30(7):1183-1188. doi:10.1016/j.ajem.2011.09.008
14. Hung SC, Kung CT, Hung CW, et al. Determining delayed admission to intensive care unit for mechanically ventilated patients in the emergency department. *Crit Care*. 2014;18(4):485. doi:10.1186/s13054-014-0485-1
15. Wilcox SR, Seigel TA, Strout TD, et al. Emergency medicine residents' knowledge of mechanical ventilation. *J Emerg Med*. 2015;48(4):481-491. doi:10.1016/j.jemermed.2014.09.059
16. Çelikel E, Erdem AB, Kayıpmaz AE, Karamercan MA, Kaya B, Kavalcı C. Level of knowledge on the use of mechanical ventilation in the emergency department: questionnaire study. *GMJ*. 2022;33(3):246-248. doi:10.12996/gmj.2022.57

17. Pisani L, Algera AG, Neto AS, et al. Geoeconomic variations in epidemiology, ventilation management, and outcomes in invasively ventilated intensive care unit patients without acute respiratory distress syndrome: a pooled analysis of four observational studies. *Lancet Glob Health*. 2022;10(2):e227-e235. doi:10.1016/S2214-109X(21)00485-X

Table 1. Demographic characteristics of the participants

Gender (%)	Male 157 (73%)	Female 58 (27%)		
Age range (%)	20-29 130 (60.5%)	30-39 39 (18.1%)	40-49 43 (20.0%)	>50 3 (1.4%)
Title (%)	EMA 1-2. Years 27 (12.6%)	EMA 3-4. Years 36 (16.7%)	EMS 126 (58.6%)	FM 26 (12.1%)
Year of Profession (%)	0-5 years 53 (24.7%)	6-10 years 70 (32.5%)	>10 years 92 (42.8%)	
Institution (%)	TARH/CH 91 (42.3%)	UH(S/P/F) 49 (22.8%)	SH 68 (31.6%)	PH 7 (3.3%)
Specialization institution* (%)	TARH 97 (45.1%)	UH(S/P/F) 118 (54.9%)		

EMA: Emergency Medicine Assistant, EMS: Emergency Medicine Specialist, FM: Faculty Member, TARH/CH: Training and Research Hospital/City Hospital, UH(S/P/F): University Hospital (State/Private/Foundation), SH: State Hospital, PH: Private Hospital

* The institution where the specialization was obtained

Table 2. Knowledge and use of mechanical ventilators

Do you find your knowledge about MV sufficient?	Yes 32 (14.9%)	No 43 (20.0%)	Partially 140 (65.1%)
Do you monitor patients with MV?	Yes 186 (86.5%)	No 29 (13.5%)	
Is there a critical care unit/intensive care unit in the emergency department?	Yes 79 (36.7%)	No 136 (63.3%)	
Do you think you received sufficient training on the use of MV during your residency?	Yes 75 (34.9%)	No 64 (29.8%)	Partially 76 (35.3%)
Have you taken a course on using MV?	Yes/online course 12 (5.6%)	Yes/Face to face 94 (43.7%)	No 109 (50.7%)
Do you make the MV settings yourself?	Yes 185 (86.0%)	I consult my senior 13 (6.1%)	I consult an intensive care specialist 17 (7.9%)
Are you familiar with the concept of PEEP settings?	Yes 163 (75.8%)	No 12 (5.6%)	Partially 40 (18.6%)
Do you know what the concepts of Compliance / Elastance mean in MV?	Yes 78 (36.3%)	No 52 (24.2%)	Partially 85 (39.5%)
Does the MV brand affect our usage?	Yes 59 (27.5%)	No 119 (55.3%)	No idea 37 (17.2%)
Can you differentiate between CPAP and BiPAP?	Yes 148 (68.8%)	No 27 (12.6%)	I'm undecided 40 (18.6%)

MV: Mechanical Ventilator, PEEP: Positive end-expiratory pressure, CPAP: Continuous positive airway pressure, BiPAP: Bilevel positive airway pressure

Table 3. Comparison of mechanical ventilator knowledge by institution of graduation

Questions and Answers		TARH	UH	*p**
How to adjust patient's tidal volume **(Correct answer: According to height)**	True	80 (46.2%)	93 (53.8%)	0.616
	False	17 (40.5%)	25 (59.5%)	
The patient's extra respiratory effort is supported by the mechanical ventilator according to the parameters previously set by the clinician? **(Correct answer: ACV Mode)**	True	33 (45.2%)	40 (54.8%)	1.000
	False	64 (45.1%)	78 (54.9%)	
What should be the upper limit of plateau pressure (Pplat) and peak inspiratory pressure (PIP, Ppeak, Pmax) in lung protective ventilation? **(Correct answer:30/35 cmH_2O)**	True	39 (46.4%)	45 (53.6%)	0.757

TARH: Training and Research Hospital, UH: University Hospital, ACV: Assist/control mode ventilation *chi-square test

Table 4. Comparison of MV knowledge between em assistants and specialists

Questions and Answers		EMA	EMS	*p**
How to adjust patient's tidal volume **(Correct answer: According to height)**	True	53 (30.6%)	120 (69.4%)	0.495
	False	10 (23.8%)	32 (76.2%)	
The patient's extra respiratory effort is supported by the mechanical ventilator according to the parameters previously set by the clinician? **(Correct answer: ACV Mode)**	True	18 (24.7%)	55 (75.3%)	0.360
	False	45 (31.7%)	97 (68.3%)	
What should be the upper limit of plateau pressure (Pplat) and peak inspiratory pressure (PIP, Ppeak, Pmax) in lung protective ventilation? **(Correct answer:30/35 cmH_2O)**	True	30 (35.7%)	54 (64.3%)	0.098
	False	33 (25.2%)	98 (74.8%)	

EMA: Emergency Medicine Assistant, EMS: Emergency Medicine Specialist
*chi-square test

Yildirim H, Kaya M, Coskun A, Tunc Y, Genc E, Aydin H, Kadioglu E. A survey-based assessment of emergency physicians' proficiency in mechanical ventilator management. Pam Med J 2026;19:…-…

Yıldırım H, Kaya M, Coşkun A, Tunç Y, Genç E, Aydın H, Kadıoğlu E. Servis hekimlerinin mekanik ventilatör yönetimindeki yeterlilikleri: anket çalışması. Pam Tıp Derg 2026;19:…-…

Harun Yıldırım, Asst. Prof. Kütahya Health Sciences University, Faculty of Medicine, Kütahya City Hospital, Department of Emergency Medicine, Kütahya, Türkiye, e-mail: harun.yildirim@ksbu.edu.tr (https://orcid.org/0000-0002-9161-263X) (Corresponding Author)

Murtaza Kaya, Asst. Prof. Kütahya Health Sciences University, Faculty of Medicine, Kütahya City Hospital, Department of Emergency Medicine, Kütahya, Türkiye, e-mail: murtaza.kaya@ksbu.edu.tr (https://orcid.org/0000-0003-4012-4131)

Abdil Coşkun, Asst. Prof. Kütahya Health Sciences University, Faculty of Medicine, Kütahya City Hospital, Department of Emergency Medicine, Kütahya, Türkiye, e-mail: abdil.coskun@ksbu.edu.tr (https://orcid.org/0000-0003-3291-3448)

Yeşim Tunç, Asst. Prof. Kütahya Health Sciences University, Faculty of Medicine, Department of Biostatistics, Kütahya, Türkiye, e-mail: yesim.tunc@ksbu.edu.tr (https://orcid.org/0000-0002-1078-8730)

Eşref Genç, M.D. Kütahya City Hospital, Emergency Medicine Clinic, Kütahya, Türkiye, e-mail: dresref61@gmail.com (https://orcid.org/0000-0002-5340-0601)

Hasan Aydın, M.D. İzmir Menderes State Hospital, Emergency Medicine Clinic, İzmir, Türkiye, e-mail: aydinhasan1453@gmail.com (https://orcid.org/0000-0002-8528-262X)

Emine Kadıoğlu, Assoc. Prof. Taksim Training and Research Hospital, Department of Emergency Medicine, İstanbul, Türkiye, e-mail: dreminekadioglu@gmail.com (https://orcid.org/0000-0003-0950-0477)