

Psychological Disturbances at ICU Discharge: Evaluation Using the Intensive Care Psychological Assessment Tool (IPAT) and Association with Clinical Features: An observational cross-sectional study

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Research Article

Keywords: Intensive care, Depression, Delirium, ICU discharge, IPAT, Post-intensive care syndrome

Posted Date: July 7th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-9934264/v1>

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Additional Declarations: No competing interests reported.

Abstract

Background

Anxiety disorders, depression and delirium are quite common in intensive care unit (ICU) patients. The Intensive Care Psychological Assessment Tool (IPAT) is a rapid screening instrument for detecting acute psychological disorders in conscious and oriented ICU patients. This study aimed to determine the frequency of acute psychological disorders at ICU discharge using the IPAT score, to identify psychological disorders arising during ICU stay, and to explore the relationship between these issues and patients' clinical characteristics.

Methods

A total of 392 patients discharged from four second- and third-level ICUs between December 15, 2023, and July 30, 2024, were included in this study. Clinical data and treatments administered during ICU stay and IPAT scores recorded at the time of discharge were collected. Patients were divided into two groups: those with an IPAT score below 6 and those with a score of 6 or higher. The groups were compared statistically. The number of patients was calculated according to the power analysis, based on 0.95 power and 0.05 significance level. Univariate and multivariate logistic regression analyses were performed to assess the association between and the risk factors findings.

Results

181 patients had an IPAT score of 6 or higher. Advanced age ($p = 0.015$) (OR(95% CI):1.019 (1.004–1.034)), high Acute Physiology and Chronic Health Evaluation-II (APACHE-II) score ($p = 0.003$) (OR(95% CI):1.052 (1.017–1.087)), history of psychiatric disorders ($p < 0.001$) (OR(95% CI):4.452 (2.017–9.828)), use of psychotropic/sedative medications during ICU stay ($p = 0.017$) (OR(95% CI):2.608 (1.189–5.719)), and use of non-invasive mechanical ventilation (NIMV) ($p = 0.002$) (OR(95% CI):2.165 (1.336–3.511)) were significantly associated with higher IPAT scores. ROC curve analysis showed that all patients diagnosed with delirium had high IPAT scores, and a cut-off value of 9.5, AUC:0.925, sensitivity 92.6%, specificity 84.9% was determined for predicting delirium.

Conclusions

This study demonstrates that psychological disorder in ICU patients is a multidimensional condition associated with both individual characteristics and therapeutic interventions. Early identification and multidisciplinary management of at-risk groups are essential to improve psychological outcomes after ICU discharge. The IPAT score may serve as a supportive tool in preventing post-intensive care syndrome.

INTRODUCTION

Anxiety disorders, depression, and delirium are frequently observed in patients admitted to intensive care units (ICUs) [1]. Traumatic experiences during ICU stay may lead to post-discharge manifestations such as anxiety, depression, or post-traumatic stress disorder (PTSD), which can persist for extended periods. These issues not only impact the patients but also affect their families, significantly diminishing quality of life [2]. Additionally, studies have shown that depression following critical illness is associated with increased mortality within the first two years after ICU discharge [3]. Studies have shown that more than 50% of intensive care unit survivors experience physical, cognitive, and mental problems that were not previously present and persist for more than 1 year [4].

Proper management of anxiety and depression in ICU patients is critically important. Several screening tools and questionnaires have been developed to identify psychological disorders such as depression, anxiety, and PTSD in patients who are currently or have recently been hospitalized in the ICU. Post-Traumatic Stress Symptoms Checklist-10 (PTSS-10) and Hospital Anxiety and Depression Scale (HADS) questionnaires are widely used to assess PTSD, anxiety, and depression symptoms in intensive care patients [5]. One of these tools, the Intensive Care Psychological Assessment Tool (IPAT), has been validated as a screening instrument to detect acute psychological distress in alert and oriented ICU patients [6]. Studies have shown that the IPAT scale correlates well with the HADS [7]. Another study supporting the validity of the IPAT reported that recognizing stress, anxiety, and depression using this tool can lead to interventions that improve patients' quality of life [8].

The IPAT score, checked at the time of discharge from the intensive care unit, can facilitate early diagnosis of psychiatric disorders and contribute to timely intervention. The aim of this study was to evaluate the frequency of acute psychological disorders based on IPAT scores at ICU discharge and the relationship between psychological problems developing during ICU stay and the clinical characteristics of the patients.

MATERIAL AND METHODS

A total of 392 patients discharged between December 15, 2023, and July 30, 2024, from four ICUs (three tertiary and one secondary) at the University of Health Sciences Ankara Atatürk Sanatorium Training and Research Hospital were included in this study.

After obtaining ethical approval from the institutional ethics committee (approval number: 2012-KAEK-15/2834, dated 22.11.2023), data on patients' ICU admissions, treatments, and IPAT scores recorded at the time of discharge were collected. This study was observational and therefore not registered as a clinical trial.

Participants meeting the inclusion criteria were admitted to the study on a voluntary basis. Sample size was determined using power analysis. Patients included in the study were Turkish-speaking, literate adults (aged ≥ 18 years) who had been monitored in the ICU for at least 48 hours, were conscious and

communicative, and were discharged to inpatient wards. Exclusion criteria included a Glasgow Coma Scale (GCS) score < 15, neurological or sensory-motor impairments that could interfere with evaluation, and diagnoses such as dementia, autism spectrum disorders, intellectual disability, bipolar disorder, schizophrenia, or substance/alcohol addiction.

The following data were recorded: patients' age, gender, comorbidities, disease duration and type, reason for ICU admission, Acute Physiology and Chronic Health Evaluation-II (APACHE-II) score, level of ICU (secondary or tertiary), duration and treatment of psychiatric history, current use of psychotropic medications, presence of psychiatric consultations during ICU follow-up, diagnoses and treatment recommendations provided during consultations, diagnosis of delirium during ICU stay, need for mechanical ventilatory support, use of psychotropic/sedative medications during ICU stay (including drug type, dosage, and duration), whether patients were followed in isolated rooms or general wards (open units), and length of ICU stay. The diagnosis of delirium was made based on Diagnostic and Statistical Manual of Mental Disorders (DSM)-5 criteria [9].

This observational cross-sectional questionnaire-based study used the IPAT, a 10-item tool developed in 2014 by Wade et al. [6], to rapidly and easily assess psychological symptoms in ICU patients. Clinical data were extracted retrospectively from patient records, and IPAT scores were collected at the time of ICU discharge. The IPAT was administered as patients were discharged from the ICU, and after informed consent was obtained from the participants, trained assessors read the IPAT questions aloud to the patients and assisted them in answering them. IPAT responses were scored as 0 ("No"), 1 ("A little"), or 2 ("A lot"). Higher scores indicated more negative ICU experiences, while lower scores suggested fewer psychological disturbances (Table 1). Patients were categorized into two groups for statistical analysis: those with IPAT scores < 6 and those with scores ≥ 6 [10].

Table-1. Intensive care psychological assessment tool (IPAT) ⁶

I would like to ask you some questions about how you felt during your stay in the intensive care unit. The emotions you experienced there may be important for your recovery process. Please select the answer that best reflects your feelings, or respond in any way you are able (for example, by speaking or pointing).

	During your stay in the intensive care unit:	A	B	C
1	Did you have difficulty communicating?	NO	A LITTLE	A LOT
2	Did you have trouble sleeping?	NO	A LITTLE	A LOT
3	Did you feel tense?	NO	A LITTLE	A LOT
4	Did you feel sad?	NO	A LITTLE	A LOT
5	Did you feel panicked?	NO	A LITTLE	A LOT
6	Did you feel pessimistic?	NO	A LITTLE	A LOT
7	Did you feel confused (e.g., not knowing where you were)?	NO	A LITTLE	A LOT
8	Did you experience hallucinations (e.g., seeing or hearing things that may not have been real)?	NO	A LITTLE	A LOT
9	Did you feel that people were deliberately trying to harm or hurt you?	NO	A LITTLE	A LOT
10	Do you have disturbing memories related to your ICU stay?	NO	A LITTLE	A LOT

Data of patients discharged from intensive care and who received IPAT approval were retrospectively scanned from the computer system and patient files and completed by the intensive care physician. The questionnaire for the IPAT score was completed on paper by the intensive care physician and transferred to an Excel spreadsheet (Microsoft Office Excel 2016 (Microsoft Corporation, Redmond, WA, USA)). S. The Excel spreadsheets were then imported into a statistical program for further data processing.

For patients with an IPAT score ≥ 6 , the ward physicians were informed upon transfer, and psychiatric consultation was recommended for diagnostic clarification and treatment planning.

Statistical Analysis

Data analyses were performed by using SPSS for Windows, version 22.0 (SPSS Inc., Chicago, IL, United States). Whether the distribution of continuous variables were normal or not was determined by Kolmogorov Smirnov test. Levene test was used for the evaluation of homogeneity of variances. Mann Whitney U test was applied for continuous variables or Pearson Chi-square test or Fisher Exact Test for categorical data. Unless specified otherwise, non-normally distributed continuous data were described as quartiles [median (P25, P75)] categorical data were described as number of cases (%). Statistical analysis differences in not normally distributed variables between two independent groups were compared by Mann-Whitney U test and categorical variables were compared using Pearson's chi-square test or Fisher's exact test. The degree of correlation was evaluated using Spearman's correlation

analysis. A p value of less than 0.05 was considered statistically significant. Univariate and multivariate logistic regression analyses were performed to evaluate the relationship between risk factor findings and IPAT score. Receiver operating characteristic (ROC) curve analysis was used to determine the cutoff value of the IPAT score associated with the risk of delirium.

According to the power analysis, previous studies have shown that using the IPAT scale with a cut-off value of ≥ 7 yields 69% specificity and 57% sensitivity for predicting future psychological outcomes in ICU patients (AUC = 0.7) (Ref-1). Based on a power of 0.95 and a significance level of 0.05, the required sample size was calculated as 392 patients for 57% sensitivity and 118 patients for 69% specificity (AUC = 0.7) (Refs 6, 11, 12).

RESULTS

Data from 392 patients discharged between December 15, 2023, and July 30, 2024, from four ICUs in our hospital were recorded. Among the participants, 259 (66.1%) were male, with a median age of 67 years (IQR: 57–77). The median APACHE-II score was 19.5 (IQR: 15–26). A total of 56 patients (14.3%) had a history of psychiatric disorders, and 53 patients (13.5%) were on psychotropic medication. The median duration of psychiatric illness among affected patients was 5 years (IQR: 3–8). Ninety patients (23%) were treated in isolated rooms, while 302 (77%) were managed in shared areas. The median ICU length of stay was 5 days (IQR: 3–7). Delirium developed in 27 patients (6.9%) during ICU stay, and 70 patients (17.9%) required psychotropic/sedative medications. Comorbidities were present in 92.1% of patients, with the most common being chronic obstructive pulmonary disease (COPD) (44.9%), hypertension (42.9%), diabetes mellitus (30.6%), and coronary artery disease (19.1%). The primary reasons for ICU admission were COPD exacerbation (28.1%), pneumonia (26.0%), acute renal failure (8.7%), gastrointestinal bleeding (7.7%), and suicide attempts (5.6%). A total of 294 patients (75%) were treated in tertiary ICUs, and 98 (25%) in secondary-level ICUs. Mechanical ventilation (MV) was required in 26 patients (6.6%) via invasive methods, and in 138 patients (35.2%) via non-invasive methods.

When comparing patients based on IPAT scores, in the group with IPAT score ≥ 6 , the presence of psychiatric disorder, history of current psychotropic drug use, need for psychiatric consultation during ICU hospitalization, need for MV, use of psychotropic/sedative drugs in ICU, age and APACHE-II score were found to be statistically significantly higher than in the group with IPAT score < 6 ($p < 0.05$). The duration of current psychiatric disorder in those with IPAT score ≥ 6 was found to be statistically significantly lower than in the group with IPAT score < 6 ($p < 0.05$) (Table 2).

When the relationship between patients' comorbidities and IPAT scores was examined, statistically significantly lower rates of comorbidities, Coronary Artery Disease (CAD), extrapulmonary malignancies, and arrhythmia were observed in patients with IPAT scores ≥ 6 compared to patients with IPAT scores < 6 , while higher rates were observed for renal failure, Cerebrovascular Accident (CVA), depression, arrhythmia, and Parkinson's disease (p values 0.046, 0.049, 0.004, 0.003, 0.001, 0.045, 0.003, and 0.045, respectively).

When ICU admission diagnoses were compared according to IPAT scores, statistically significant differences were observed in patients admitted for pulmonary congestion, heart failure, and other causes ($p < 0.05$). The proportion of patients admitted due to heart failure was significantly higher in the $\text{IPAT} \geq 6$ group compared to the < 6 group, while admissions due to pulmonary congestion and other causes were significantly lower in the $\text{IPAT} \geq 6$ group ($p = 0.004$, $p = 0.009$, and $p = 0.011$, respectively).

When evaluating the relationship between sedative medications used for sedation in the ICU and IPAT scores, a statistically significant difference was observed in terms of overall sedative/anxiolytic drug use, and specifically for Haloperidol and Dexmedetomidine ($p < 0.05$). The rates of sedative/anxiolytic drug use, as well as the use of Haloperidol and Dexmedetomidine, were significantly higher in the $\text{IPAT} \geq 6$ group compared to the < 6 group (Table 3).

Table-3. Comparison of Sedative/Anxiolytic Drug Use in the ICU According to IPAT Score

		IPAT SCORE				p
		< 6		≥ 6		
n:211	%	n:181	%			
Medication Use Status	Using	21	10.0%	49	27.1%	< 0.001
	Not Using	190	90.0%	132	72.9%	
Haloperidol	None	206	97.6%	161	89.0%	< 0.001
	Present	5	2.4%	20	11.0%	
Quetiapine	None	204	96.7%	168	92.8%	0.083
	Present	7	3.3%	13	7.2%	
Midazolam	None	207	98.1%	176	97.2%	0.738
	Present	4	1.9%	5	2.8%	
Dexmedetomidine	None	205	97.2%	162	89.5%	0.002
	Present	6	2.8%	19	10.5%	
Diazepam	None	211	100.0%	179	98.9%	0.213
	Present	0	0.0%	2	1.1%	
Escitalopram	None	211	100.0%	178	98.3%	0.098
	Present	0	0.0%	3	1.7%	
Fentanyl	None	206	97.6%	181	100.0%	0.065
	Present	5	2.4%	0	0.0%	
Categorical variables are presented as frequency (percentage). Variables were compared using Pearson's chi-square test or Fisher's exact test. Statistically significant p-values are in bold.						

Univariate and multivariate logistic regression analyses were performed to identify the factors associated with having an IPAT score of 6 or higher. Since all patients diagnosed with delirium during ICU follow-up had IPAT scores ≥ 6 , the presence of delirium was excluded from the regression analysis. Variables that were found to be significant in univariate analysis—including age, APACHE-II score, history of psychiatric disorders, use of psychotropic/sedative drugs in the ICU, and need for Non-Invasive Mechanical Ventilation (NIMV) were included in the multivariate model (cut-off $p < 0.25$). The multivariate logistic regression was performed using the enter method. According to logistic regression analysis, no significant relationship was found between the ipat score and the duration of stay in intensive care, follow-up in Arena, Invasive Mechanical Ventilation (IMV), admission to intensive care due to suicide attempt.

According to the analysis; each one-year increase in age was associated with a 1.019-fold increased likelihood of having an IPAT score ≥ 6 ($p = 0.015$), each one-point increase in the APACHE-II score was associated with a 1.052-fold increased risk ($p = 0.003$), patients with a history of psychiatric disorders had a 4.452-fold higher risk compared to those without ($p < 0.001$), patients who used psychotropic/sedative medications during ICU stay had a 2.608-fold higher risk than those who did not ($p = 0.017$), patients requiring NIMV support had a 2.165-fold higher risk compared to those who did not require NIMV ($p = 0.002$) (Table 4).

All patients diagnosed with delirium had an IPAT score of ≥ 6 , while 42.2% of patients without delirium also had IPAT scores ≥ 6 . To determine the IPAT score cut-off value associated with the risk of delirium, a ROC curve analysis was performed. The area under the curve (AUC) for the IPAT score in predicting delirium was calculated as 0.925 (95% CI: 0.891–0.958). A cut-off value of 9.5 was identified, corresponding to a maximum sensitivity of 92.6% and specificity of 84.9%. Therefore, patients with IPAT scores above 9.5 are considered to have a significantly higher likelihood of developing delirium (Table 5) (Fig. 1).

Table-5. ROC Curve Results for Predicting Delirium Based on IPAT Score

<i>S-shaped ROC Curve for the Prediction of Delirium Risk</i>					
Variable	AUC	Cut-off value	P	Sensitivity	Specificity
Score	0,925(0,891-0,958)	9.5	< 0,001	%92.6	%84.9

DISCUSSION

This study examined the psychological status of 392 patients discharged from ICUs using the IPAT score, assessing the frequency of acute psychological issues and their associations with clinical characteristics. Psychological distress in intensive care patients was found to be multifactorial. It has been observed that personal characteristics such as advanced age, high APACHE-II scores, and the presence of a psychiatric history, as well as treatment methods such as the use of psychotropic/sedative drugs and NIMV in intensive care, negatively affect intensive care patients psychologically.

In our study, IPAT scores were found to be higher in the elderly and in those with high APACHE-II scores. Post-discharge psychological and neurocognitive sequelae are commonly observed in ICU survivors and have been studied under the title of "post-intensive care syndrome (PICS)" in recent years [13]. In elderly patients in particular, concerns about mortality and fear of dying alone are frequently observed [14]. Life-threatening illnesses, invasive interventions during ICU stay, and environmental stressors can contribute to severe psychological disturbances, including hallucinations, delusions, and traumatic memories [15]. Studies have shown that APACHE-II scores are higher in patients with delirium [16]. A meta-analysis of 33 studies also identified age, dementia, and APACHE-II scores as strong risk factors for delirium [17].

We think that high IPAT values in APACHE-II and elderly patients may be due to the increase in age-related comorbidities, fear of death, or previous intensive care experience.

In our study, we found significantly higher IPAT scores in patients with prior psychiatric diagnoses, newly diagnosed patients, or those using psychotropic medications and those receiving this treatment for shorter periods. Previous research has suggested that pessimistic personality traits are a significant predictor of PTSD, anxiety, and depression symptoms in ICU survivors [18]. Patients with a history of depression prior to ICU admission tend to exhibit more severe depressive symptoms during the first year post-discharge [19], and strong correlations have been found between ICU-related psychological symptoms and pre-existing psychiatric history [20]. The higher IPAT scores observed in patients with shorter durations of psychotropic medication use may be related to patients with a long-term psychiatric history having more advanced coping strategies and/or better control of their psychiatric symptoms under a stable treatment regimen. Our findings highlight the clinical importance of considering an individual's psychiatric history in psychological evaluations after discharge.

Rates of sedative/anxiolytic medication use, as well as haloperidol and dexmedetomidine use, were significantly higher in the IPAT ≥ 6 group than in the < 6 group. Furthermore, in our study, the IPAT score emerged as a useful tool in assessing delirium risk and showed higher values in patients diagnosed with delirium who presented to psychiatry. However, we would like to emphasize that statistical power was limited in our study due to the small number of patients who developed delirium. According to the PADIS (Pain, Agitation/Sedation, Delirium, Immobility, Sleep Disruption) guidelines for adult ICU patients, routine use of haloperidol, atypical antipsychotics, dexmedetomidine, statins, or ketamine is not recommended for delirium prevention [21]. However, recent studies suggest that dexmedetomidine may be preferred over propofol for mild sedation or in delirium cases, depending on clinical judgment [22]. While routine use of antipsychotics in delirium is not supported. However, antipsychotics may be considered based on clinical judgment for short-term control of prominent stressor symptoms such as severe agitation, anxiety, hallucinations, delusions, and fear [23]. Although the exact etiology of hallucinations and delusions in ICU remains unclear, contributing factors may include physiological disturbances, systemic inflammation, infection, sensory deprivation, and the use or withdrawal of psychoactive agents (particularly benzodiazepines) [6]. These findings, consistent with our study, support the potential effects of sedative agents on the development of delirium in intensive care patients. However, it is unclear whether this relationship stems from the medications used or from the underlying agitation and delirium. Given the low number of patients with delirium, larger studies are needed on this topic.

In our study, IPAT scores were found to be higher in patients receiving NIMV support. The association of NIMV use with psychological disorders may be due to poor device selection, communication difficulties between healthcare personnel and patients, initial anxiety reactions and inadequate coping mechanisms, and the development of anxiety-based disorders such as claustrophobia, panic attacks, acute stress reactions, and PTSD. [24]. A study using the Beck Depression Inventory (BDI) found significantly higher depression scores in patients who could not adapt to NIMV compared to those who did [25]. The psychological impact of prolonged NIMV use, including pain, discomfort, and pressure-related skin injury,

has been documented in the literature [26]. These factors may explain our finding that patients requiring NIMV support had significantly higher IPAT scores.

Numerous studies have explored the link between comorbidities and psychological complications in ICU patients. Previous studies have shown that neurological, renal, and cardiopulmonary comorbidities are associated with post-intensive care psychological complications [27–31]. In our study, higher IPAT scores were significantly associated with comorbid depression, Parkinson's disease, renal failure, stroke history, and heart failure, possibly due to the burden of these conditions and their impact on overall disease severity and APACHE-II scores.

There were some limitations to our study. First; although the ward doctors were informed about the IPAT score results of the patients transferred from the ICU to the ward, the follow-up of the subsequent process could not be done adequately. Limited follow-up after intensive care limits our ability to comment on the potential development of PICS in our patients. We believe further studies are needed to evaluate patients with high IPAT scores for PICS after ICU. Secondly, we were unable to question whether the patients had a negative ICU experience before being admitted to our ICU, as their consciousness may have been impaired. A previous negative experience may have also biased our approach. Thirdly, we introduced a selection bias by including only conscious (GCS: 15), literate, and Turkish-speaking patients in our study. Our aim in selecting these patients was to improve communication with the patients, enable them to express themselves more effectively, and minimize misunderstandings. Fourthly, the small number of patients with delirium and the small number of patients receiving escitalopram and diazepam limited the statistical power in these areas. The small number of patients with delirium ($n = 27$) limits the stability of the ROC analysis and the multivariate regression model. Our findings regarding delirium should be considered exploratory and require external validation in larger cohorts, because this was an observational study, no causal inference could be made. Finally, it is important to remember that there may be potential errors in data collection or IPAT responses.

CONCLUSIONS

Early identification of high-risk patients and implementation of a multidisciplinary management approach can significantly contribute to post-intensive care recovery and quality of life. The IPAT can be used to screen high-risk patients for early psychiatric intervention before ICU discharge. By assessing the IPAT score at discharge, the frequency and predominance of acute psychological problems can be identified, allowing for targeted measures to be taken and thus reducing the incidence of psychiatric distress after intensive care. However, we believe that further studies are needed to evaluate patients with high IPAT scores for the development of PICS over a longer period.

Abbreviations

APACHE-II

Acute Physiology and Chronic Health Evaluation-II score

BDI
Beck Depression Inventory
CAD
Coronary artery disease
COPD
Chronic obstructive pulmonary disease
CVA
Cerebrovascular accident
DSM
Diagnostic and Statistical Manual of Mental Disorders
GCS
Glasgow Coma Scale
HADS
Hospital Anxiety and Depression Scale
ICU
Intensive care unit
IMV
Invasive Mechanical Ventilation
IPAT
Intensive Care Psychological Assessment Tool
MV
Mechanical Ventilation
NIMV
Non-invasive mechanical ventilation
PADIS
Pain, Agitation/Sedation, Delirium, Immobility, Sleep Disruption
PICS
Post-intensive care syndrome
PTSD
Post-traumatic stress disorder
ROC
Receiver operating characteristic

Declarations

Ethics approval and consent to participate: Ethics committee approval was received for this study from Research Ethics Committee of University of Health Sciences, Ataturk Sanatorium Training and Research Hospital (Approval number: 2012-KAEK-15/2834, dated 22.11.2023).

Clinical trial number: Not applicable. Because it is an observational survey study.

Consent for publication: The IPAT questionnaire was applied to conscious patients, and written and verbal informed consent was obtained from each participant after the study was explained.

Availability of data and materials: The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

Funding: This study received no grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' contributions:

Drafted the study: MD, GED, DH, EBC, MA, MY, MOC, VOK, AO, AK, İA, BA, HS

Planning the study: MD, GED, EBC, MA, MOC, VOK, AK, İA, BA, HS

Preparing the patient follow-up form: MD, DH, VOK, İA, HS

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Statistically evaluated: MD, VOK, AO, AK, BA, HS

Interpreted the findings: MD, GED, DH, EBC, MA, MY, VOK, AO, BA, HS

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All authors are personally responsible for their contributions and for the accuracy and integrity of any part of the work. All authors have agreed to ensure that issues, even those in which the authors were not personally involved, are appropriately investigated, resolved, and documented in the literature.

All authors read and approved the final manuscript.

Acknowledgements: Not applicable

Footnotes: Not applicable

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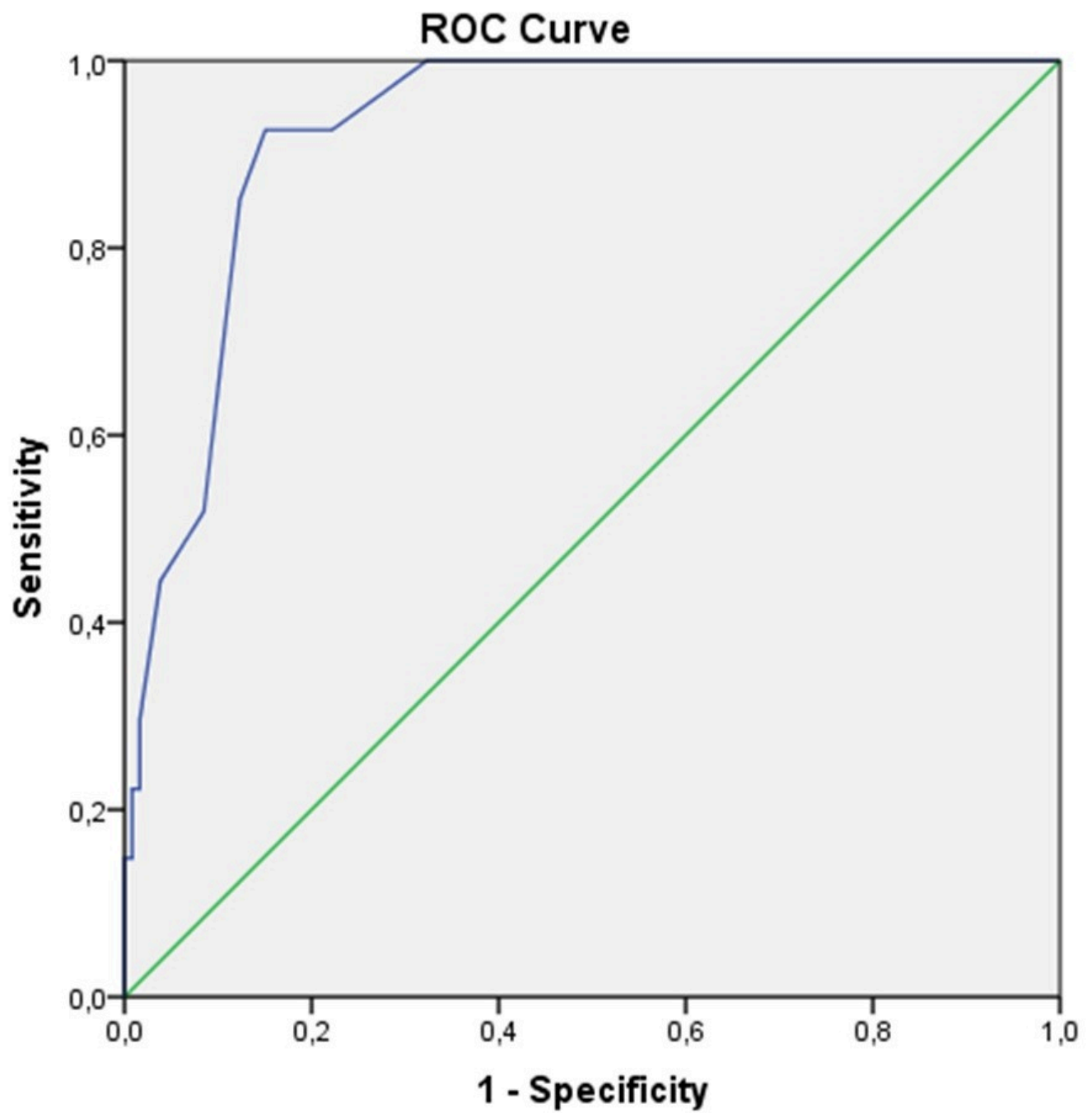
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Table 2,4

Table 2 and 4 are available in the Supplementary Files section.

Figures



Diagonal segments are produced by ties.

Figure 1

ROC Curve Analysis

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Table24.docx](#)