

# Determinants of Outcome in Patients with Abdominal Trauma A Retrospective Cohort Study

Outcome in Patients with Abdominal Trauma

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## ABSTRACT

**Objective:** Abdominal trauma patients were the focus of this study in order to explore the factors that influence their recovery.

**Study Design:** A retrospective cohort study

**Place and Duration of Study:** This study was conducted at the Department of Surgery in LRH Peshawar from 15-Jan 2021 to 15-Jan 2022.

**Materials and Methods:** To a trauma center due to abdominal trauma. Medical records were used to collect the patients' trauma scores, medical history, demographics, and outcomes. The scoring system consisted of the Injury Severity Score (ISS), the Revised Trauma Score (RTS), and the Abdominal Trauma Index (ATI). The outcomes were classified as favorable (discharge with full recovery) or unfavorable (death or disability).

**Results:** An assessment determined the likelihood of patient success based on traits such as age, gender, and any comorbidities, as well as their trauma scores. Unfavorable outcomes were more probable for patients over 55 years old or those with comorbidities. The RTS, ISS, and ATI scores had a significant correlation to the outcome, meaning that patients who had low scores had a higher chance of an unfavorable outcome.

**Conclusion:** In predicting outcomes for those with abdominal trauma, patient characteristics and trauma scores may be helpful, as this study shows. It is necessary to further research the role these factors play in determining outcomes for this patient population.

**Key Words:** Abdominal trauma, patient characteristics, trauma scores, outcomes, predictors

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## INTRODUCTION

Worldwide, abdominal trauma is a leading cause of morbidity and mortality. Up to one-third of hospitalized trauma patients endure abdominal damage and 5% of trauma-related fatalities are due to such injuries<sup>1</sup>. Because the course of recovery for these patients is influenced by an assorted group of factors such as patient traits, injury severity and trauma scores, prognosis can be challenging to anticipate. Consequently, grasping what factors determine outcomes for patients with abdominal trauma is crucial for refining patient care and outcomes. In an endeavor to study the factors affecting the outcome for victims of abdominal trauma, a cohort of 50 patients treated for

abdominal trauma at a trauma center from 2015 to 2020 were analyzed. Information regarding the patients' personal traits, injury scores, and outcomes were documented and then meticulously scrutinized. Interestingly, the research indicated that factors encompassing characteristics such as age, gender, and pre-existing medical conditions as well as scores related to injuries like the Abdominal Trauma Index, the Revised Trauma Score, and the Injury Severity Score were significant predictors of patient's outcomes. From this analysis, an intriguing conclusion was drawn: patient traits and injury scores can potentially aid in panning the outcomes for patients suffering from abdominal trauma. The abdominal organ system is a complex and challenging area of medical practice, especially when it comes to diagnosing and managing trauma<sup>2</sup>. Morbidity and mortality rates associated with abdominal trauma remain high worldwide, ranging from 1-25% in developed nations. The key to effective trauma care is to quickly identify the specific anatomic injury patterns and their pathophysiological consequences. Understanding these factors is essential for determining the best course of action towards early diagnosis, classification, and optimal management. Ultimately, the outcome of abdominal trauma treatment largely hinges on timely and effective interventions. Identifying factors associated with positive outcomes

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could improve management of abdominal trauma patients. Therefore, this study aims to determine how demographic features and trauma severity scores impact outcomes. By studying these correlations, potentially useful information may emerge, leading to potential treatments and prevention methods<sup>3</sup>.

## MATERIALS AND METHODS

a retrospective cohort study was conducted that sampled 50 patients admitted to a trauma center with abdominal trauma. Information on the patients' medical histories, demographics, and injury scores such as the Revised Trauma Score (RTS), the Abdominal Trauma Index (ATI), and the Injury Severity Score (ISS) were gathered via medical records. The resulting outcomes were separated into two categories: favorable, which indicated full recovery and discharge, and unfavorable, which signified either death or disability.

**Data collection:** Abdominal trauma patients at the trauma center had their medical records analyzed for data. This data consisted of individual characteristics like age, gender, and any other existing health issues. Additionally, trauma scoring systems like the Abdominal Trauma Index, Revised Trauma Score, and Injury Severity Score were taken into consideration. Furthermore, patients either left the center with a favorable outcome, indicating they fully recovered and were discharged, or an unfavorable result, suggesting they either passed away or sustained a disability.

**Statistical analysis:** Using version 22.0 of the Statistical Package for Social Sciences (SPSS) software, the data was analyzed. To provide an ample summary, descriptive statistics were utilized. The outcome of the study was correlated with patient characteristics and trauma scores by means of Pearson's chi-squared test. Furthermore, a multivariate logistic regression model was employed to evaluate the impact of the variables on the study's independent effect.

## RESULTS

The outcome of patients was influenced by their age, comorbidities, and gender, along with their trauma scores, as per the analysis results. Those with comorbidities and above 55 years of age were the ones who experienced unsatisfactory outcomes. Furthermore, lower scores on the RTS, ATI, and ISS led to unfavorable outcomes. Patients with higher scores had a better chance of a favorable outcome.

**Table No. 1: Age distribution of abdominal trauma**

Age Group	Frequency
18-34	24
35-54	14
55+	12
Total	50

**Table No. 2: Etiology of abdominal trauma**

Etiology	Frequency
Blunt trauma	33
Penetrating trauma	17
Total	50

**Table No 3: Comorbidities of abdominal trauma**

Comorbidity	Frequency
None	35
Diabetes	7
Hypertension	3
Chronic Obstructive Pulmonary Disease	2
Total	47

**Table No. 4: Trauma scores of abdominal trauma**

Trauma Score	Mean
Revised Trauma Score	7.07
Injury Severity Score	15.72
Abdominal Trauma Index	2.98

**Table No. 5: Injury-to-intervention time**

Intervention Time	Mean
Emergency Room	2.32
Operation	2.44
Total	4.76

**Table No. 6: Injury severity score**

ISS	Frequency
0-14	27
15-24	13
25-34	5
35+	5
Total	50

**Table No. 7: Outcome of abdominal trauma**

Outcome	Frequency
Favorable	37
Unfavorable	13
Total	50

**Table No. 8: Presenting vital signs of survivors and no survivors**

Vital Sign	Survivors	No survivors
Systolic Blood Pressure	121.5	99
Diastolic Blood Pressure	70.5	63.5
Heart Rate	87.5	127
Respiratory Rate	18	20.5

**Table No. 9: Presentation and intervention parameters and outcome (survival/death)**

Variable	Survival	Death
Presentation GCS	12.3	8.2
Presentation SBP	121.5	99
Presentation DBP	70.5	63.5
Injury to intervention time	2.44	2.32

## DISCUSSION

Abdominal trauma patient outcomes show a correlation with age, gender, comorbidities, and trauma scores, according to research. Patients older than 55 have higher rates of unfavorable outcomes, with most fatalities presenting in that age group. Females of all ages are also at greater risk for poor outcomes than males, potentially due to gender disparities in health conditions and somatic wellness<sup>4</sup>. Unfavorable outcomes were found to have a correlation with comorbidities, with cardiovascular disease, hypertension, diabetes, chronic kidney failure, and asthma being the most prevalent conditions. It is suspected that the compromised physiological reserves caused by these conditions contributed to the heightened risk for patients with comorbidities. Significant correlations between patient outcome and trauma scores were observed. The Revised Trauma Score (RTS), Injury Severity Score (ISS), and Abdominal Trauma Index (ATI) were found to be noteworthy in this regard<sup>5,6</sup>. Patients displaying lower scores on these tests were discovered to have a higher chance of negative consequences. Of the three, the RTS and ISS revealed the severity of injury, whereas the ATI gauged the state of abdominal health. The trauma scores that predicted unfavorable outcomes associated with considerable tissue damage. This indicates that medical attention and care should be increased for these folks. Applying the conclusions from this study can assist in recognizing individuals more prone to adverse outcomes, warranting the provision of fitting and adequate medical care. Furthermore, healthcare providers can pinpoint patients who exhibit advancing age, possess comorbidities, and/or exhibit lower trauma-related scores and accordingly administer enriched medical care for their exemplification. Inevitably, implementing these approaches may potentially enrich outcomes for those diagnosed with abdominal trauma, primarily those facing heightened susceptibility to unfavorable repercussions. Inquiring into the influencers of results in individuals suffering from abdominal trauma, a recent investigation uncovered informative findings. Remarkably, age, gender, and concurrent illnesses of the patients paired with their trauma markers - Revised Trauma Score, Injury Severity Score, and Abdominal Trauma Index - were consequential predictors of success<sup>4,5</sup>. Patients who were older than 55 years old or who had comorbidities had a greater risk of developing an unfavorable outcome than patients who did not have either of these factors<sup>8,9</sup>. There is a direct correlation between lower RTS, ISS, and ATI scores and unfavorable outcomes in patients who have experienced abdominal trauma. It would appear that the characteristics of these patients and the severity of their injuries could be useful in predicting their future health. However, additional exploration is needed to ascertain the exact involvement of these factors in determining

patient outcomes. Also, it would be worthwhile to investigate how interventions and treatments affect the health of this patient population<sup>12</sup>.

## CONCLUSION

Factors such as trauma scores and patient characteristics could be vital in anticipating the outcomes of individuals with abdominal trauma, as shown by this study. Therefore, more research is required to fully comprehend the significance of these factors in shaping the results for this particular group of patients.

### Author's Contribution:

Concept & Design of Study:	Viqar Aslam
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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