

EVALUATION OF VARIOUS FACTORS INFLUENCING OUTCOME IN PATIENTS OF HEAD INJURY: AN INSTITUTIONAL BASED STUDY

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Abstract

Background: Traumatic brain injury (TBI) remains a significant global health issue. Common methodologies for assessing severity shortly after the incident include neuroimaging techniques, evaluating the presence of altered or lost consciousness, examining the occurrence of posttraumatic amnesia, and utilizing the Glasgow Coma Scale (GCS) score. Hence, the present study was conducted to evaluate various factors influencing outcome in patients of head injury. **Materials and Methods:** A total of 100 patients were evaluated. Complete demographic and clinical details of all the patients was obtained. Only those patients who were admitted with traumatic brain injury (TBI) were enrolled. The selection of participants was conducted using a simple random sampling technique. The study included patients of all ages and both genders who were admitted. Each patient was monitored from the time of admission until discharge, with the aim of identifying and describing the risk factors associated with TBI. A structured questionnaire was designed to gather data on various parameters, including age in years, sex, rural or urban residence etc. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis by using SPSS software. **Results:** A total of 100 patients were evaluated. Mean age of the patients was 43.8 years. 62 percent of the patients were males. Majority proportion of patients were of rural residence. Among them, mortality occurred in 52 percent of the patients. 46 percent of the patients were admitted within one hour of injury while 38 percent of the patients were admitted within one to two hours of injury. 42 percent of the patients had GCS of 15 while 43 percent of the patients had GCS of less than 8. GCS core of less than 8 and higher duration of time taken to reach hospital were found to be significant risk factor affecting outcome of Head Injury Patients. **Conclusion:** This research indicates that head injuries constitute a significant health concern. Delays in transportation and a lack of public awareness of supportive care are significant risk factors affecting outcome.

INTRODUCTION

Traumatic brain injury (TBI) remains a significant global health issue, affecting millions of individuals each year. Data from the Centers for Disease Control indicates that the aggregate rates of emergency department visits, hospitalizations, and fatalities associated with TBI have risen during last few decades. However, when examining the statistics for fatalities specifically linked to TBIs, a decline has been observed over the same timeframe. This reduction can be attributed, in part, to heightened awareness, the establishment of structured management protocols and guidelines, as well as notable advancements in treatment technologies. It is important to recognize that a portion of TBIs does not

receive medical attention, suggesting that the true incidence of these injuries is likely underestimated.^[1-3]

In the diagnostic evaluation of traumatic brain injury (TBI), clinicians generally evaluate the severity of the condition. Nonetheless, the initial determination of TBI severity does not inherently forecast the degree of disability that may result from the injury. Common methodologies for assessing severity shortly after the incident include neuroimaging techniques, evaluating the presence of altered or lost consciousness, examining the occurrence of posttraumatic amnesia, and utilizing the Glasgow Coma Scale (GCS) score. The GCS has been recognized as the benchmark for neurological assessment in trauma patients since its introduction

by Teasdale and Jennett in 1974. This scale serves as a clinical instrument aimed at evaluating levels of coma and impaired consciousness, making it one of the most widely employed systems for scoring TBI severity.^[4-6] Hence; the present study was conducted to evaluate various factors influencing outcome in patients of head injury.

MATERIALS AND METHODS

A total of 100 patients were evaluated. Complete demographic and clinical details of all the patients were obtained. Only those patients who were admitted with traumatic brain injury (TBI) were enrolled. The selection of participants was conducted using a simple random sampling technique. The study included patients of all ages and both genders who were admitted. Each patient was monitored from the time of admission until discharge, with the aim of identifying and describing the risk factors associated with TBI. A structured questionnaire was designed to

gather data on various parameters, including age in years, sex, rural or urban residence etc. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis by using SPSS software.

RESULTS

A total of 100 patients were evaluated. Mean age of the patients was 43.8 years. 62 percent of the patients were males. Majority proportion of patients were of rural residence. Among them, mortality occurred in 52 percent of patients. 46 percent of the patients were admitted within one hour of injury while 38 percent of the patients were admitted within one to two hours of injury. 42 percent of the patients had GCS of 15 while 43 percent of the patients had GCS of less than 8. GCS core of less than 8 and higher duration of time taken to reach hospital were found to be significant risk factor affecting outcome of Head Injury Patients.

Table 1: GCS score.

GCS score	Improved	Expired	Total
15	42	0	42
13, 14	9	4	13
8 to 12	4	8	12
Less than 8	3	40	43
Total	58	52	100
p-value	0.001 (Significant)		

Table 2: Time taken to reach the hospital

Time taken	Improved	Expired	Total
Less than 1 hours	32	14	46
1 to 2 hours	20	18	38
2 to 8 hours	5	7	12
More than 8 hours	1	3	4
Total	58	52	100
p-value	0.000 (Significant)		

DISCUSSION

The increasing human population is a significant contributor to traumatic brain injury (TBI), which stands as a leading cause of death and disability globally. Among young adults, TBI is the predominant factor in both mortality and morbidity rates. The etiology and pathogenesis of TBI are complex, encompassing both primary and secondary injury mechanisms. Additionally, neuroinflammation has emerged as a critical area of focus in the treatment of TBI. Considerable emphasis has been placed on neuroprotective strategies aimed at safeguarding the injured brain during therapeutic interventions. Several screening tools have been created to identify potential instances of TBI. Dependence on medical documentation frequently proves inadequate, as numerous injuries go untreated, including some that are quite severe.^[7-9] Hence; the present study was conducted to evaluate various factors influencing outcome in patients of head injury.

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were males. Majority proportion of patients were of rural residence. Among them, mortality occurred in 52 percent of the patients. 46 percent of the patients were admitted within one hour of injury while 38 percent of the patients were admitted within one to two hours of injury. 42 percent of the patients had GCS of 15 while 43 percent of the patients had GCS of less than 8. GCS core of less than 8 and higher duration of time taken to reach hospital were found to be significant risk factor affecting outcome of Head Injury Patients. In a study conducted by Yattoo GH, authors assessed factors influencing outcome of head injury patients at a tertiary care teaching hospital in India. The basic predictors in their study included age, sex, rural/urban, time taken from site of trauma to arrival at hospital, mode of transportation, referral from other hospitals, referral to other hospitals, and Glasgow Coma Scale. TBI patients (n 547) were taken prospectively by simple random sampling method for a period of one year for the study. Majority of patients belonged to age group 0 to 10 years (25.5%) and a maximum death (8) were seen in age group 51 to 60 years. Maximum number

of patients were males (75.9%) and (71.1%) TBI patients were from rural areas. (26.7%) reached this hospital within a period of one hour. (66%) were shifted through ambulance service. 6.4% expired after treatment. Factors responsible for improved outcome in severe head injury patients are improvement in early recognition, resuscitation and triage, coupled with prompt computed tomography (CT) scanning and aggressive surgical management.^[10]

Bahloul M et al determined factors associated with poor outcome in children suffering traumatic head injury (HI). There were 313 male (68.9%) and 141 female patients. Mean age was 7.2 years, the main cause of trauma was traffic accidents (69.4%). Mean Glasgow coma scale (GCS) score was 8, mean injury severity score (ISS) was 26.4, mean pediatric trauma score (PTS) was 4 and mean pediatric risk of mortality (PRISM) was 11.1. The GOS performed within a mean delay of 7 months after hospital discharge was as follow: 82 deaths (18.3%), 5 vegetative states (1.1%), 15 severe disabilities (3.3%), 71 moderate disabilities (15.6%) and 281 good recoveries (61.9%). Multivariate analysis showed that factors associated with poor outcome (death, vegetative state or severe disability) were: PRISM \geq 24; GCS \leq 8; Cerebral edema; lesion type VI according to Traumatic Coma Data Bank Classification; Hypoxemia and sodium level $>$ 145 mmol/l. A significant proportion of children admitted with HI were found to have moderate disability at follow-up.^[11]

CONCLUSION

This research indicates that head injuries constitute a significant health concern. Delays in transportation

and a lack of public awareness of supportive care are significant risk factor affecting outcome.

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