# Measuring the Knowledge, Attitude, and Practice of People in Head Injury and How Neurosurgeons Manage Them

Hassan Mohammed Barnawi[1], Hammam Naji Albeshr[1], Akram Adel Alandijani[1], Abdulqader Ibrahim Susi[1], Ahmad Salem Alharbi[1]
[1]*Senior Medical Student, Taibah University, Saudi Arabia*

**Abstract:** Any injury that results in trauma to the skull or brain can be classified as a head injury. The terms traumatic brain injury and head injury are often used interchangeably in the medical literature. This broad classification includes neuronal injuries, hemorrhages, vascular injuries, cranial nerve injuries, and subdural hygromas, among many others. These classifications can be further categorized as open (penetrating) or closed head injuries. This depends on if the skull was broken or not.

**Keywords:** Head Injury, Neurosurgery, Saudi Arabia, Traumatic Brain Injury

## Introduction:

Any injury that results in trauma to the skull or brain can be classified as a head injury. The terms traumatic brain injury and head injury are often used interchangeably in the medical literature.[1] This broad classification includes neuronal injuries, hemorrhages, vascular injuries, cranial nerve injuries, and subdural hygromas, among many others[2]. These classifications can be further categorized as open (penetrating) or closed head injuries. This depends on if the skull was broken or not.[3]

The incidence (number of new cases) of head injury is 1.7 million people in the United States alone each year. About 3% of these incidents lead to death. Adults suffer head injuries more frequently than any age group. Their injuries tend to be due to falls, motor vehicle crashes, colliding or being struck by an object, and assaults. Children, however, tend to experience head injuries due to accidental falls and intentional causes (such as being struck or shaken).

Head injury often occurs in toddlers as they learn to walk. Head trauma is a common cause of childhood hospitalization. [4]

The most recent estimates indicate that each year 235 000 Americans are hospitalized for nonfatal TBI, 1.1 million are treated in emergency departments, and 50 000 die. The northern Finland birth cohort found that 3.8% of the population had experienced at least 1 hospitalization due to TBI by 35 years of age. The Christchurch New Zealand birth cohort found that by 25 years of age 31.6% of the population had experienced at least 1 TBI, requiring medical attention (hospitalization, emergency department, or physician office). An estimated 43.3% of Americans have residual disability 1 year after hospitalization with TBI. [corrected] The most recent estimate of the prevalence of US civilian residents living with disability following hospitalization with TBI is 3.2 million.[5] The knowledge of the pathophysiology after traumatic head injury is necessary for adequate and patient-oriented treatment. As the primary insult, which represents the direct mechanical damage, cannot be therapeutically influenced, target of the treatment is the limitation of the secondary damage (delayed non-mechanical damage). It is influenced by changes in cerebral blood flow (hypo- and hyperperfusion), impairment of cerebrovascular autoregulation, cerebral metabolic dysfunction and inadequate cerebral oxygenation. Furthermore, excitotoxic cell damage and inflammation may lead to apoptotic and necrotic cell death. Understanding the multidimensional cascade of secondary brain injury offers differentiated therapeutic options.[6] Traumatic brain injury (TBI) remains a major public health problem globally. In the United States the incidence of closed head injuries admitted to hospitals is conservatively estimated to be 200 per 100,000 population, and the incidence of penetrating head injury is estimated to be 12 per 100,000, the highest of any developed country in the world. This yields an approximate number of 500,000 new cases each year, a sizeable proportion of which demonstrate significant long-term disabilities. Unfortunately, there is a paucity of proven therapies for this disease. For a variety of reasons, clinical trials for this condition have been difficult to design and perform. Despite promising pre-clinical data, most of the trials that have been performed in recent years have failed to demonstrate any significant improvement in outcomes. The reasons for these failures have not always been apparent and any insights gained were not always shared. It was therefore feared that we were running the risk of repeating our mistakes. Recognizing the importance of TBI, the National Institute of Neurological Disorders and Stroke (NINDS) sponsored a workshop that brought together experts from clinical, research, and pharmaceutical backgrounds. This workshop proved to be very informative and yielded many insights into previous and future TBI trials. This paper is an attempt to summarize the key points made at the workshop. It is hoped that these lessons will enhance the planning and design of future efforts in this important field of research.[7]

## Methodology Data Collection, Management and Analysis:

A total of 270 participants will contribute to a cross-sectional study in Madinah, Saudi Arbia. They will be sampled through a non-probability haphazard method that will be conducted in Taibah University and various malls, namely Al-Rashed Mall and Al-Noor Mall. We will target two age groups, (18-30 and 31-60)

Self-administered questionnaires of 23 questions are to be answered by the participants. Each questionnaire will take about 10 minute per participant to complete. The questionnaire is divided into two parts. The first part will include a brief explanation of the study and approval of participating, then a few questions about demographics information. The second part will include specific questions that test the research hypothesis.

Data will be analyzed using quantitative methodologies through the Statistical Package for the Social Sciences (SPSS). Data analysis will take place (t-tests or Chi Square) to determine differences based on age, social and health status and general knowledge variations.

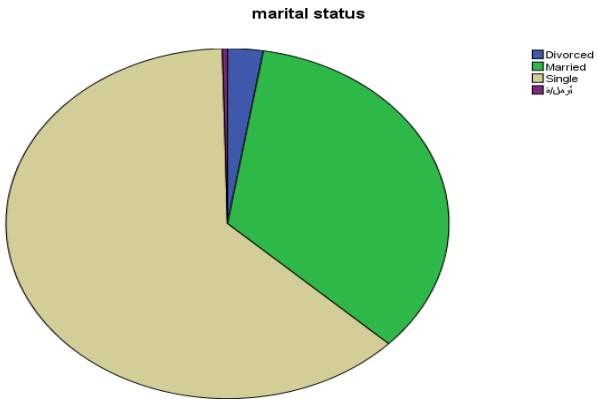


Figure. 2

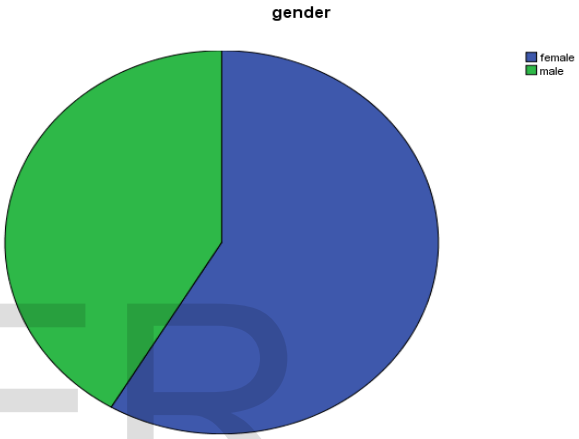


Figure 3.

## Results:

Age

| | | |
|---|---|---|
| N | Valid | 270 |
| | Missing | 0 |
| Mean | | 28.83 |
| Median | | 24.00 |
| Mode | | 23 |
| Std. Deviation | | 11.230 |
| Range | | 72 |
| Minimum | | 15 |
| Maximum | | 87 |

Table. 1

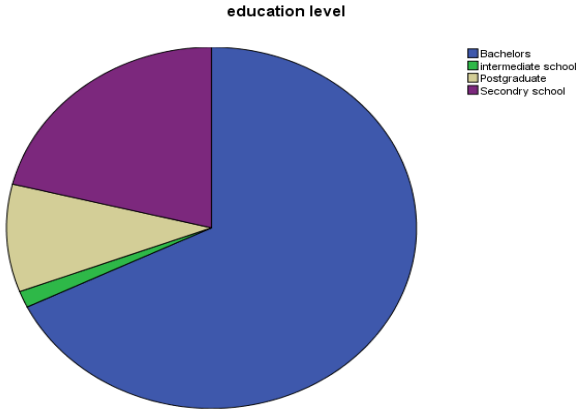


Figure. 1

**Q1. If you are in accident scene you have to help first**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Children | 204 | 75.6 | 75.6 | 75.6 |
| | I don't know | 53 | 19.6 | 19.6 | 95.2 |
| | Men | 5 | 1.9 | 1.9 | 97.0 |
| | Women | 8 | 3.0 | 3.0 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table. 2

**Q2. Should we transfer all patient with faint due to head injury to hospital**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | by ambulance | 231 | 85.6 | 85.6 | 85.6 |
| | by car | 21 | 7.8 | 7.8 | 93.3 |
| | I don't know | 17 | 6.3 | 6.3 | 99.6 |
| | Walking | 1 | .4 | .4 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table. 3

**Q3. Should we treat all patient with head injury in hospital**

| | | Frequency | Percent | Valid Percent | Cumula Percen |
|---|---|---|---|---|---|
| Valid | I don't know | 25 | 9.3 | 9.3 | 9.3 |
| | No | 61 | 22.6 | 22.6 | 31.9 |
| | Yes | 184 | 68.1 | 68.1 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table. 4

In an accident scene 75.6% of participants said that they are going to help children first. And about 85.6% mentioned that all patients with faint due to head injury should be transferred to hospital by ambulance. Majority of participants 68.1% said that we should treat all patient with head injury in hospital, whereas 22.6% of participants disagree with them and replied with no or not necessary.

**Q4. Do you think that helping the patient in acciden need to be transfer to hospital**

| | | Frequency | Percent |
|---|---|---|---|
| Valid | Agree | 69 | 25.6 |
| | Disagree | 167 | 61.9 |
| | I don't know | 34 | 12.6 |
| | Total | 270 | 100.0 |

Table 5.

**Q5. Do you think that stoppage of bleeding will be enough regardless to its severity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Agree | 12 | 4.4 | 4.4 | 4.4 |
| | Disagree | 248 | 91.9 | 91.9 | 96.3 |
| | I don't know | 10 | 3.7 | 3.7 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 6.

Only about 25.6% agree on that helping the patient on accident scene is enough, while 61.9% disagree with them and they recommend that the patient in accident scene must be transferred to hospital. Impressively 91.9% mentioned that stopping the bleeding is not enough even in not severe bleeding.

**Q6. How will you act if child have head injury**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | I don't know | 16 | 5.9 | 5.9 | 5.9 |
| | immediately take him to hospital regardless to severity of his injury | 45 | 16.7 | 16.7 | 22.6 |
| | leave him so nobody will suspect I did it | 1 | .4 | .4 | 23.0 |
| | make sure he is awake , breath, ask him not to move and then call ambulance | 204 | 75.6 | 75.6 | 98.5 |
| | whatch him from distance until anyone came to help him | 4 | 1.5 | 1.5 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 7.

If a child have head injury 75.6% of participants will make sure that he is awake, breathing and tell him not to move then call the ambulance however, 16.7% will take him to hospital immediately regardless to severity of his injury.

**Q7. What do you think of doing CT scan for person w**

| | | Frequency | Percent |
|---|---|---|---|
| Valid | agree so he can reach right diagnosis | 177 | 65.6 |
| | disagree because CT are dangrous to head | 4 | 1.5 |
| | I don't know | 16 | 5.9 |
| | I don't know but I am sure that doctor will do right thing | 73 | 27.0 |
| | Total | 270 | 100.0 |

Table 8.

65.6% agree of doing CT-scan for person with head trauma because it will help to reach to right diagnosis and 27% don't know but they sure that the doctor will do the right thing.

**Q8. Do you think head injury can cause transient lo**

| | | Frequency | Percent | Vali Perc |
|---|---|---|---|---|
| Valid | I don't know | 38 | 14.1 | 14.1 |
| | No | 25 | 9.3 | 9.3 |
| | Yes | 207 | 76.7 | 76.7 |
| | Total | 270 | 100.0 | 100. |

Table 9

**Q9. Will you trust neurosurgeon in his call even if you have mild injury**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | no | 94 | 34.8 | 34.8 | 34.8 |
| | yes | 176 | 65.2 | 65.2 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 10.

About 76.7% think tank that head injury can cause transient loss of memory, whereas 14.1% don't. Also 65.2% will trust of neurosurgeon in his call even if they have mild injury, however 34.8% will not trust him.

**Q10. What do you think is the most common complication associated with head injury and brain surgery**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | bacterial infection | 23 | 8.5 | 8.5 | 8.5 |
| | Faint | 139 | 51.5 | 51.5 | 60.0 |
| | Paralysis | 108 | 40.0 | 40 | 100.0 |
| | Total | 270 | 100.0 | 10 | |

Table 11.

8.5% of participants said bacterial infection and 40% said paralysis, whereas 51.5% said faint as the most common complication associated with head injury and brain surgery.

**Q11. Do you think concussion can cause serious complication**

| | | Frequency | Percent |
|---|---|---|---|
| Valid | concussion lead to paralysis so we need to treat immediately | 21 | 7.8 |
| | I don't know | 17 | 6.3 |
| | I don't think so | 4 | 1.5 |
| | yes and depend on site of and severity of the lesion | 228 | 84.4 |
| | Total | 270 | 100.0 |

Table 12.

The majority of participants 84.4% think that concussion can cause serious complications depending on the site and severity of the lesion, 7.8% think that concussion lead to paralysis, anyhow only 1.5% don't think so.

**Q12. Do you have CPR licence**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | No | 202 | 74.8 | 74.8 | 74.8 |
| | Yes | 68 | 25.2 | 25.2 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 13.

**Q13. Have you attend first aid course**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | No | 129 | 47.8 | 47.8 | 47.8 |
| | Yes | 141 | 52.2 | 52.2 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 14.

Only 25.2% of participants said they had a CPR license. But 52.2% attended at least one First Aid course.

**Q14. How do you define head trauma**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | All of the above | 212 | 78.5 | 78.5 | 78.5 |
| | Brain injury | 19 | 7.0 | 7.0 | 85.6 |
| | I don't know | 7 | 2.6 | 2.6 | 88.1 |
| | Scalp injury | 1 | .4 | .4 | 88.5 |
| | Skull injury | 31 | 11.5 | 11.5 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 15.

**Q15. Which age groups are more expose to head tra**

| | | Frequency | Percent |
|---|---|---|---|
| Valid | childre (up to 13 years) | 147 | 54.4 |
| | elderly (above 40years) | 18 | 6.7 |
| | I don't know | 27 | 10.0 |
| | tennegers (14-17 years) | 35 | 13.0 |
| | youth (18-40 years) | 43 | 15.9 |
| | Total | 270 | 100.0 |

Table 16.

When it came to defining Head Trauma, most (78.5%) agreed that it included either Brain injury, Scalp injury, or Skull injury. And 54.4% said that it was children who have the most head injuries. And 5.5% thought that male have the most incidence rate for head injuries, and 38.5% thought there was no difference between genders.

**Q16. Most of head trauma**

| | | Frequency | Percent | V P |
|---|---|---|---|---|
| Valid | can lead to death | 17 | 6.3 | 6 |
| | I don't know | 17 | 6.3 | 6 |
| | mild | 22 | 8.1 | 8 |
| | modreate | 61 | 22.6 | 2 |
| | severe | 153 | 56.7 | 5 |
| | Total | 270 | 100.0 | 1 |

Table 17.

Most participants (56.7%) thought that the majority of head traumas are severe, whereas only 22.6% said that they were moderate.

**Q17. Clotting of the blood outside the blood vessels is called:**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Concussion | 10 | 3.7 | 3.7 | 3.7 |
| | Hematoma | 128 | 47.4 | 47.4 | 51.1 |
| | I don't know | 45 | 16.7 | 16.7 | 67.8 |
| | Internal bleeding | 87 | 32.2 | 32.2 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 18.

**Q18. Brain Injury that results from moving of the brain suddenly and hitting the inside of the skull is:**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Concussion | 201 | 74.4 | 74.4 | 74.4 |
| | hematoma | 12 | 4.4 | 4.4 | 78.9 |
| | I don't know | 36 | 13.3 | 13.3 | 92.2 |
| | internal bleeding | 21 | 7.8 | 7.8 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 19.

Most participants (56.7%) thought that the majority of head traumas are severe, whereas only 22.6% said that they were moderate.

**Q19. Which of the following consider as emergency signs for brain injury**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | headache for 10minutes | 33 | 12.2 | 12.2 | 12.2 |
| | I don't know | 40 | 14.8 | 14.8 | 27.0 |
| | loss of appetite | 12 | 4.4 | 4.4 | 31.5 |
| | seizures | 185 | 68.5 | 68.5 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 20.

The majority of participants (68.5%) were able to identify seizures as a more serious sign of brain injury, and 14.8% couldn't tell.

**Q20. What do you think is the most common cause**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | car accident | 152 | 56.3 | 56.3 | 56.3 |
| | I don't know | 21 | 7.8 | 7.8 | 64.1 |
| | run over | 10 | 3.7 | 3.7 | 67.8 |
| | slip | 87 | 32.2 | 32.2 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 21.

56.3% said that the most common cause of head injuries is car accidents.

**Q21. In case you're the only one near person who h how will you act**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | call ambulance | 178 | 65.9 | 65.9 | 65.9 |
| | change his body position | 47 | 17.4 | 17.4 | 83.3 |
| | CPR | 24 | 8.9 | 8.9 | 92.2 |
| | I don't know | 21 | 7.8 | 7.8 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 22.

65.9% said that they would call an ambulance first when seeing an unconscious person after a head injury, and 8.9% said they'd initiate CPR first.

**Q22. If there are two people had head injuries, one had severe bleeding and screaming for help and the other person didn't show any movement and no signs of breathing which of them you going to help first**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | first person | 78 | 28.9 | 28.9 | 28.9 |
| | I don't know | 36 | 13.3 | 13.3 | 42.2 |
| | second person | 156 | 57.8 | 57.8 | 100.0 |
| | Total | 270 | 100.0 | 100.0 | |

Table 23.

In a 2 -patients situation, 57.8% said they'd help the unresponsive patient first rather than the screaming bleeding one.

**Q23. If child fell on his head and he vomit once and what to do**

| | | Frequency | Percent |
|---|---|---|---|
| Valid | I don't know | 15 | 5.6 |
| | nothing | 4 | 1.5 |
| | transfer him to hospital immediately | 179 | 66.3 |
| | you observe him for while | 72 | 26.7 |
| | Total | 270 | 100.0 |

Table 24.

In a situation where a child vomits after being hit the head from a fall, 66.3% said they'd take the child immediately to a hospital, whereas 26.7 said they'd observe him for a while instead.

**Q24. If I saw a person having severe seizures and v**

| | | Frequency | Percent |
|---|---|---|---|
| Valid | abdomen | 17 | 6.3 |
| | back | 19 | 7.0 |
| | I don't know | 79 | 29.3 |
| | side | 155 | 57.4 |
| | Total | 270 | 100.0 |

Table 25.

57.4% said that the right position for a seizure patient would be on his side. And if the patient was a child, 37.8 admitted not knowing what to do, 19.6 thought it was right to restrain and prevent the patient from moving, and 26.3 said they would measure and record the duration of the attack.

## Conclusion:

Data analysis showed people on different age groups have acceptable awerncess

on the importance of research topic which reflected by high participant attend first aid course and have average knowledge toward head injury When it comes to causes of head injury more than 60% of the participant agree that due to car accident so our recommendations

are the authority make strict rules to prevent the RTA and encourage the public health rising awareness associations to try reaching to the society through social media and organize for ceremonies for more education about impact of RTA on medical budget Future

studies are needed to focus on how to improve diagnostic tools that is using routinely in the hospital which will affect course, management and outcome of head injuries.

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