**STUDY PROPOSAL**

**Study Title**: Experiences and opinions of healthcare professionals about the audio-vestibular findings of individuals with traumatic brain injury

# STUDY BACKGROUND INFORMATION AND RATIONALE

As a result of an external force, traumatic brain injury (TBI) is defined as a traumatic structural injury and/or deterioration of brain functions following the trauma. TBI is among the leading causes of death and disability worldwide (Rubiano et al., 2015). It is estimated that sixty-nine million people suffer from a traumatic brain injury each year worldwide (Dewan et al., 2018).

There are many different complications associated with TBI, such as cognitive, emotional, behavioural and audio-vestibular impairments (Ahmed et al., 2017; Akin et al., 2017; Knoll et al., 2019). In addition, neck pain, balance disorders and tinnitus (ringing in the ear) have been reported as some of the most common complaints after head and neck trauma in the literature (Kreuzer et al., 2012; Elzière et al., 2016). Moreover, in a review of studies (Chen et al., 2018) conducted from 1966 to 2017, it was reported that even 58 percent of TBI patients who did not have any head fractures had hearing loss, sometimes temporarily. This rate, which emerged as a result of only known and examined studies, suggests that the percentage of auditory-vestibular complaints related to TBI that are not reported and/or not investigated worldwide may be much higher.

While some of the individuals exposed to TBI can recover without specialist intervention, some need specialist intervention to reduce the effects of complications depending on the severity of the trauma. It is thought that the health department, which is applied immediately (acute period) after exposure to TBI, is often the emergency services. According to their assessment there, if the patient needs constant observation and/or surgical intervention, admission to a specialist centre, for instance; neurological centre, neurosurgeons, is required. In addition, after the acute phase, some TBI patients require long-term treatment such as reduction of cognitive difficulties and/or rehabilitation. (NICE, 2014). However, while some patients continue this treatment process as an inpatient, some patients continue the treatment process by returning to their homes because they are in a position to be treated as outpatients. The diversity of complications due to TBI necessitates a multidisciplinary approach to these patients. Accordingly, depending on the severity and type of the complication, a patient with TBI may need many healthcare professionals (HCPs), from neurologists to psychologists. In addition to the necessity of evaluating patients with a broad and sensitive perspective, healthcare professionals should work in cooperation on this patient group in order to minimize complications and ensure their return to their normal lives.

Even in individuals who do not have any other disorders and have only hearing loss and/or vestibular disorders, tinnitus, and hyperacusis (noise sensitivity), patient management may be difficult depending on the severity and type of the complication. The emergence of these disorders with TBI reveals the necessity of a more sensitive and careful approach in the diagnosis and treatment of audio-vestibular disorders in this patient group. Moreover, it is known that untreated hearing loss leads to many diseases such as dementia and Alzheimer's, as well as many emotional-psychological problems such as communication disorder and introversion. Therefore, although there are severe complications that individuals with TBI struggle with, their auditory-vestibular condition should not be neglected especially in outpatients after the acute phase (when complications have become more manageable).

However, due to other physical, cognitive, emotional and behavioural complications, this patient group may not always realise that they have auditory and/or balance disorders. Therefore, it is important that healthcare professionals dealing with individuals with TBI have an idea about the general condition of the patient, even if it is not their field of expertise. Although there are studies investigating the attitudes of healthcare professionals towards TBI, there is no international study evaluating the experience, awareness and attitudes towards the patient regarding hearing and balance problems due to TBI.

# 2.0. STUDY OBJECTIVES AND PURPOSE

The primary purpose of this study is to gain a better understanding of the current practices of HCPs when dealing with individuals who may have audio-vestibular symptoms following a TBI. This study also aims to explore the experiences and opinions of HCPs regarding audio-vestibular problems after TBI.

Information to be collected from the participants for this purpose:

- Demographic information related to profession (e.g. level, how many years worked)

- Experiences of HCPs about audio-vestibular findings from TBI patients

- Opinions of HCPs about audio-vestibular findings from TBI patients

- Understanding the perspectives of HCPs about hearing loss and balance disorders due to TBI and their approach to the patient

## 3.0. SELECTION OF PARTICIPANTS

# *Eligibility Criteria*

# Inclusion criteria:

# Adults (18 years or over)

* Healthcare professionals dealing with outpatients who have sustained TBI

# Access to the internet

# Ability to understand and answer questions in English

# Exclusion criteria:

# Being a specialist in audiology and/or ENT

**4.0. STATISTICS**

## *Methods*

Student co-investigator (Kubra Bolukbas) will share and evaluate the findings with the supervisory team Prof. David M. Baguley and Dr. Laura Edwards. The analysis will be done on a university computer and/or a portable laptop.

## For the purpose of the research, an online questionnaire containing closed-ended and Likert-scale questions will be used, which was prepared in agreement with the research team. The categorical data of all closed questions will be analyzed descriptively and displayed as a percentage.

## *Sample Size and Justification*

It will be aimed to recruit as many participants as possible within the time frame available for the study. No minimum sample size is required because the analysis will be descriptive.

## 5.0. REFERENCES

Ahmed, S. et al. (2017) ‘’Traumatic Brain Injury and Neuropsychiatric Complications.’’ *Indian journal of psychological medicine*, 39(2).

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