

**A CRITICAL EXPLORATIVE ENQUIRY OF  
NEUROPSYCHOLOGICAL ASSESSMENTS AND THEIR  
UTILISATION IN THE FACILITATION OF SETTLEMENT  
OF ROAD ACCIDENT CLAIMS IN THE SOUTH AFRICAN  
COURTS: - A STUDY OF MILD TRAUMATIC BRAIN  
INJURY.**

By

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SUPERVISOR: Professor Tennyson Mgutshini

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## DEDICATION

I am dedicating this thesis to a few special people in my life who have meant and continue to mean so much to me.

First and foremost, to my late mother, Sereko Hazel Daphney Kalane whose memories continue to regulate my life. Mama, my very last call to you was when I was contemplating starting this journey and asking for some assistance from you. You reacted and assisted promptly and gave me feedback before you sadly, exactly 3 days later unexpectedly departed this world. You will be proud to know it has been successfully completed, and I know it is because of your BLESSINGS. I know you are looking down on me, all smiles. I will ALWAYS Love You... This one is for you Mama. R.I.P...

To my father, Albert Butana Kalane whose unconditional and never-ending support and belief in me is unmeasurable. I know that the completion of this project will bring a Huge and Endless smile to your face. Thanks for every bit of advice and encouragement, and for the sacrifices you made in life for me.

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## **DECLARATION**

I declare that the study titled **“A CRITICAL EXPLORATIVE ENQUIRY OF NEUROPSYCHOLOGICAL ASSESSMENTS AND THEIR UTILISATION IN THE FACILITATION OF SETTLEMENT OF ROAD ACCIDENT CLAIMS IN THE SOUTH AFRICAN COURTS: - A STUDY OF MILD TRAUMATIC BRAIN INJURY”** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



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**Manoke Eric Colin Kalane**

**Date: 20<sup>th</sup> March 2022**

**Student Number: 10396527**

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## **ABSTRACT**

**Background:** South Africa has one of the highest rates of road traffic accidents globally, with a substantial proportion of these incidents resulting in traumatic brain injuries (TBI). Among these, mild traumatic brain injury (MTBI), commonly referred to as concussion, represents a significant yet complex clinical and medico-legal concern. A large number of individuals involved in road traffic accidents seek compensation through the Road Accident Fund (RAF), either directly or through legal representation.

While certain injury categories, particularly orthopaedic injuries, are generally more straightforward to assess and adjudicate, MTBI presents unique challenges. Its clinical presentation is often subtle, frequently lacking objective radiological evidence, and relies heavily on subjective symptom reporting. These characteristics contribute to ongoing debates within the clinical community regarding its diagnosis, classification, and long-term impact.

Within the South African medico-legal context, MTBI-related claims are often contested, resulting in prolonged litigation processes that involve multiple expert witnesses, including neurologists, neurosurgeons, psychiatrists, and neuropsychologists. Courts are required to rely heavily on these expert opinions in determining both the legitimacy of claims and the extent of compensation. However, inconsistencies in clinical interpretation and a lack of consensus regarding MTBI contribute to variability in judicial outcomes. Because of the complex nature of mild traumatic brain injuries and disagreements amongst clinicians and court officials, evidence points to disproportionate and inconsistent settlement outcomes and most notably, high rejection rates of injury compensation for those with Mild

Traumatic Brain Injuries (MTBIs). Often, these outcomes contradict what is the norm for comparable mental and physical injuries

The complexity of MTBI is further compounded by divergent perspectives among clinicians and legal stakeholders regarding what constitutes a mild traumatic brain injury, how it should be assessed, and the extent to which it results in persistent neuropsychological sequelae. This lack of uniformity creates uncertainty within the judicial process, where legal decision-making is dependent on the clarity, consistency, and reliability of expert evidence.

**Purpose:** The primary aim of this study was to critically explore the contributory influence of neuropsychological assessments in judicial decision-making with regard to the settlement of Road Accident Fund claims involving individuals diagnosed with mild traumatic brain injury within the South African courts.

**Method:** To achieve the study aim, a multi-approach qualitative study design was used. Data was collected via a Three- Phase approach which combined empirical study, made up of an initial retrospective document review of patient records (Phase 1), individual interviews with a range of stakeholder participants that included clinicians and decision-making court officials (DMCOs) (Phase 2); and lastly the third phase of theory development/framework. With the qualitative data, a combination of thematic and content analysis processes was envisaged. Krippendorff content analysis approach formed the basis of the content analysis aspect and thematic analysis was based on Colliazi's seven step analysis method.

**Results:** The findings revealed that neuropsychological assessments play a central and often decisive role in judicial decision-making, particularly in cases where there is no clear physical or radiological evidence of brain injury. However, significant disparities were identified among clinicians and court officials regarding the diagnosis, interpretation, and perceived impact of MTBI.

The retrospective review of medical records highlighted that a considerable proportion of claimants present with persistent neuropsychological symptoms consistent with post-concussive sequelae, despite classification as “mild” injuries. In addition, variability in expert opinions was found to contribute to inconsistent judicial outcomes, including divergent determinations regarding both the validity of claims and the extent of compensation awarded.

These findings suggest that the absence of a unified understanding of MTBI among professionals/clinicians and court officials directly influences the variability and inconsistency observed in medico-legal decision-making processes.

**Implications for practice:** The findings of this study highlight a lack of uniformity in the assessment, interpretation, and adjudication of MTBI within the South African medico-legal landscape. This inconsistency contributes to uncertainty among legal practitioners and adjudicating officials, who rely on expert evidence to inform their decisions.

The study highlights the need for greater standardisation in neuropsychological assessment practices, clearer diagnostic and interpretive frameworks, and improved interdisciplinary alignment among clinicians and legal professionals. Establishing a more

consistent approach to the evaluation and interpretation of MTBI has the potential to enhance the fairness, transparency, and reliability of judicial outcomes in Road Accident Fund claims.

**Key contributions made by the study:** This study contributes to the existing body of knowledge by advancing a structured and integrated conceptual model, the ***Kalane MTBI Diagnostic and Legislative Responses Framework***. The framework provides guidance on the assessment, interpretation, and application of neuropsychological evidence within medico-legal contexts for efficient assessment and evidence-based appropriation of settlement and compensation of claims for victims of MTBIs.

In addition, the study facilitates a deeper understanding of the complexities associated with MTBI, highlights the challenges faced by both clinical and legal professionals, and opens a critical dialogue regarding the need for greater consistency and alignment in the management of MTBI-related claims. The findings further contribute to ongoing discussions within the medico-legal field regarding best practices in the evaluation and adjudication of mild traumatic brain injuries.

## **KEY CONCEPTS**

**Mild Traumatic Brain Injury (MTBI), Neuropsychological Assessment, Cognitive Functioning, Neurocognitive Impairment, Neurocognitive Disorder, Glasgow Coma Scale (GCS), Road Traffic Accidents (RTAs), Road Accident Fund (RAF), Legal Frameworks, Judicial Decision-Making, Claims Settlement**

## **DEFINITION OF RELEVANT TERMS**

**Mild traumatic brain or head Injury-** Refers to a head injury that causes transient neurophysiologic brain dysfunction. It is considered an injury to the brain that has a Glasco Coma Scale (GCS) score of between 13 and 15 as well as loss of consciousness (LOC) of less than 30 minutes. However, LOC is not necessarily a necessary condition.

**Neuropsychological assessment-** A battery of psychological tests administered by a qualified and trained professional (Psychologist) to assess various areas of cognitive functioning in respect of brain dysfunction.

**Minor Neurocognitive disorder due to Traumatic Brain Injury-** Modest impairment in cognitive functioning as observed in the neuropsychological assessment, or concern by an individual or a knowledgeable informant. Such impairment does not interfere with capacity for independence in their everyday activities.

**Major Neurocognitive disorder due to Traumatic Brain Injury-** significant impairment or decline in cognitive functioning as observed in the neuropsychological assessment or observed or concern by an individual or knowledgeable informant, extreme behavioural changes which interferes with the person's independence and ability to conduct everyday activities.

**Concussion/Concussive head injury** - a type of a head injury that occurs when the brain hits the inside of the skull from an abrupt change in movement of momentum. Its effects are usually considered temporary but can include headaches, and problems with concentration memory and balance/coordination.

**Contusion** - a bruise on the brain that results from direct impact to the head, for example when a person is hit by a foreign object on the head.

**Penetration** -the type where a foreign object penetrates the skull during an injury

**Diffuse Axonal Injury** – an injury that usually occurs when there has been a severe rotation or shaking leading to a shear of axons (long connecting fibres in the brain).

**Coup-Contrecoup** - this type of injury occurs when the brain jerks suddenly within the walls of the skull. This happens in quite forceful or extremely violent accidents such as head-on collisions or rollover.

## **LIST OF ACRONYMS**

DSM- Diagnostic and Statistical Manual of Mental Disorders

GAF- Global assessment of Functioning

GCS- Glasgow Coma Scale

JDM- Judicial Decision Making

MTBI- Mild Traumatic Brain Injury

LOC- Loss of Consciousness

MVA – Motor vehicle accident

PCS – Post Concussive Syndrome

PTA- Post traumatic amnesia

PVA – Pedestrian vehicle accident

RAF- Road Accident Fund

RTA – Road Traffic Accident

TBI – Traumatic Brain Injury

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## CHAPTER 1

### ORIENTATION TO THE STUDY

#### 1.1 INTRODUCTION

South Africa continues to experience a high burden of road traffic accidents, with significant implications for public health, healthcare systems, and the medico-legal environment. Road traffic accidents remain a leading cause of injury and mortality, with a substantial proportion of survivors sustaining a range of physical, psychological, and neurocognitive impairments. South Africa has one of the highest per capita rates of road traffic accidents globally, with fatalities significantly exceeding those reported in many other countries (Feigin et al., 2017).

Although reported as declining in certain periods, road traffic fatalities remain a major concern. For example, a preliminary Easter report indicated that 162 people died in 162 crashes during a single holiday period (Minister of Transport, 2019). While many individuals survive such accidents, a considerable proportion sustain head and brain injuries, most commonly mild traumatic brain injuries (MTBI), often referred to as concussions.

Mild traumatic brain injury is characterised by transient neurophysiological disruption of brain functioning, which may or may not be accompanied by loss of consciousness. Although classified as “mild” based on acute clinical indicators such as the Glasgow Coma Scale (GCS), growing evidence suggests that MTBI can result in persistent cognitive, emotional, behavioural, and functional impairments in a considerable

proportion of individuals. These impairments are often subtle, subjective in nature, and not always detectable through standard radiological investigations, thereby complicating both clinical diagnosis and medico-legal evaluation.

Epidemiological studies indicate that MTBI accounts for a substantial proportion of head injuries globally, with incidence rates varying across settings (Nguyen et al., 2016; Dixon, 2017). Road traffic accidents are among the leading causes of MTBI, accounting for more than half of reported cases. Furthermore, a sizeable proportion of individuals who sustain MTBI experience long-term effects, with up to 80% reporting reduced quality of life and approximately 30% demonstrating persistent neurological sequelae.

Mortality and outcomes associated with MTBI also vary across developing contexts. Studies conducted within African settings report elevated mortality rates and poorer outcomes compared to high-income countries, with estimates ranging from approximately 12% in South Africa to substantially higher rates in other regions (Voss et al., 2015). These findings highlight broader systemic and healthcare challenges that influence both the recognition and management of MTBI within resource-constrained environments.

Within the South African context, individuals who sustain injuries in road traffic accidents may seek compensation through the Road Accident Fund (RAF). While claims involving clearly demonstrable physical injuries are often more straightforward to adjudicate, claims involving MTBI frequently give rise to dispute. This is largely due to the absence of consistent objective markers, variability in clinical interpretation, and differing opinions among experts regarding the extent and impact of such injuries. As a result, many MTBI-

related claims proceed to litigation, where courts rely heavily on expert evidence from various disciplines, including neurosurgery, neurology, psychiatry, and neuropsychology.

The reliance on expert opinion in the absence of standardised interpretive frameworks introduces a level of subjectivity into judicial decision-making. This is particularly evident in cases involving MTBI, where the relationship between the injury and reported functional impairment is not always straightforward. Evidence suggests that inconsistencies in clinical understanding and variability in decision-making contribute to unsatisfactory medico-legal outcomes in MTBI cases (Dean & Sterr, 2013).

In addition, there is evidence that MTBI is frequently underdiagnosed or overlooked in both clinical and compensation contexts, with some studies suggesting that a substantial proportion of individuals are either misdiagnosed or not appropriately recognised (Nguyen et al., 2016). This further complicates the medico-legal evaluation of such cases and may result in inequitable compensation outcomes.

Consequently, there is increasing concern regarding inconsistency in judicial outcomes, particularly in cases where individuals with similar clinical presentations receive markedly different compensation decisions. Such variability reflects broader challenges in the interpretation and application of clinical evidence within medico-legal contexts, especially in conditions characterised by subtle or non-specific findings (Dean & Sterr, 2013; Larrabee, 2012). These inconsistencies highlight the need for a more structured and evidence-informed approach to the assessment and interpretation of MTBI within the medico-legal context.

Against this background, neuropsychological assessment has emerged as a critical component in the evaluation of MTBI, particularly in cases where objective medical evidence is limited. Neuropsychological assessments provide a structured and systematic means of evaluating cognitive functioning, emotional status, and behavioural changes, thereby offering valuable insight into the functional impact of brain injury (Lezak et al., 2012; Silverberg & Iverson, 2011). However, despite its importance, the role and influence of neuropsychological evidence in judicial decision-making remain insufficiently understood, particularly within the South African context.

## **1.2 BACKGROUND TO THE RESEACH PROBLEM**

Traumatic brain injuries represent a significant proportion of injuries sustained in road traffic accidents globally and within South Africa. Among these, mild traumatic brain injury (MTBI) constitutes the majority of cases. Despite being classified as “mild” based on acute clinical indicators, MTBI presents with considerable diagnostic, clinical, and medico-legal complexity. In many instances, the absence of overt neurological signs, combined with normal radiological findings, creates uncertainty regarding both the presence and extent of injury.

From a clinical perspective, head injuries may be broadly categorized into several types, including concussion, contusion, penetrating injuries, diffuse axonal injuries, and coup-contrecoup injuries. These classifications are useful in understanding the mechanisms and potential severity of injury. However, in the context of MTBI, such classifications are often insufficient to fully capture the functional and neurocognitive consequences experienced by affected individuals. This is particularly relevant in cases where structural

imaging does not reveal clear abnormalities, yet patients continue to report persistent symptoms.

MTBI has increasingly been recognized as a condition that may result in a wide range of cognitive, emotional, behavioral, and physical symptoms. These may include difficulties with memory, attention, executive functioning, mood regulation, and overall functional capacity. While some individuals recover within a relatively short period, a significant proportion continue to experience persistent symptoms well beyond the expected recovery window. This variability in presentation and recovery trajectory contributes to ongoing debate within the clinical and research literature regarding the nature, severity, and long-term impact of MTBI.

The complexity of MTBI is further compounded by the fact that symptom presentation is often subjective and may overlap with psychological, emotional, and psychosocial factors. In addition, factors such as pain, stress, pre-morbid functioning, and environmental influences may affect performance on neuropsychological measures, making it difficult to isolate the direct effects of the injury. As a result, clinicians may differ in their interpretation of findings, leading to variability in diagnosis and opinion.

Within the medico-legal context, these clinical uncertainties translate into significant challenges in the adjudication of claims. Courts are required to determine the presence, extent, and functional impact of MTBI based largely on expert evidence. However, in the absence of standardized assessment frameworks and consistent interpretive guidelines, expert opinions may differ substantially. This lack of uniformity contributes to

inconsistencies in judicial decision-making, particularly in cases involving mild head injuries.

Furthermore, there remains a tendency within both clinical and legal settings to rely heavily on acute indicators of injury severity, such as the Glasgow Coma Scale (GCS), loss of consciousness, and initial medical records. While these indicators are useful in the acute phase, they may not adequately capture the longer-term neurocognitive and functional consequences of MTBI. As a result, individuals who present with delayed or subtle impairments may be under-recognized or overlooked in both clinical assessment and medico-legal evaluation.

These challenges highlight a critical gap in the integration of clinical neuropsychological evidence within judicial processes. In particular, there is a need to better understand how neuropsychological assessments are utilized, interpreted, and weighted within medico-legal decision-making, and how this influences the outcomes of claims involving MTBI.

### **1.2.1 General Overview of injury typologies**

Within the study, specific types of head injuries were selected as areas of interest. There are about 5 types of head injuries that people suffer from when involved in car accidents and they include: -

1. Concussion - a type of a head injury that occurs when the brain hits the inside of the skull from an abrupt change in movement of momentum.
2. Contusion - a bruise on the brain that results from direct impact to the head, for example when a person is hit by a foreign object on the head.

3. Penetration -the type where a foreign object literally penetrates the skull during an injury
4. Diffuse Axonal - this injury usually occurs when there has been a severe rotation or shaking and axonal shear.
5. Coup-Contrecoup - this type of injury occurs when the brain jerks suddenly within the walls of the skull. This happens is quite forceful or extremely violent accidents such as head-on collisions or rollover.

The seriousness of the above conditions has primarily been established on the basis of the fact that each have the possibility of causing life-long health issues and/or death as well as long term permanent neuropsychological sequelae. Despite this clarity, there is a growing concern that mild traumatic brain injury (MTBI) represents a serious but often-overlooked imperative for both the health providers and the judiciary. Regarding the health aspects, MTBI has been identified as a “silent killer” much like type-2 diabetes, in that the initial symptoms can be progressive and appear inconsequential but when in fact, they worsen over time and have the most intractable presentation that can seriously and negatively disrupt individuals’ functioning both physically and psychologically. Recent research, for example, McInnes, K, Friesen C et al, (2017) have demonstrated that as high as 50% percent of mild Brain injured victims from a single concussion continue presenting with neurocognitive impairment long after the trauma. This research vastly contradicts the commonly held belief that Mild TB does not usually produce long term, permanent neuropsychological or neurocognitive impairment. The general belief is that spontaneous symptom relief or resolution takes place within 3 months of the suffered head injury.

Depending on the nature and possibly “severity” of the head trauma, the victim would present with a myriad of symptoms which range from mild to severe. These changes can either be cognitive, physical, behavioural/emotional and can even be accompanied by neurological deficits which may include epilepsy or gait disorder. Majority of victims of MTBI present with a mixture of symptoms (i.e., depression, memory problems, personality changes, dizziness, and headaches) which were previously referred to as “post-concussive syndrome,” a diagnosis which has since been renamed in the DSM 5.

As the presentation differs from person to person, the DSM 5 (Statistical Manual of Mental Disorders) distinguishes between two major types of impairment that follow traumatic brain injuries:

- 1. Minor Neurocognitive disorder due to Traumatic Brain Injury-** Modest impairment on cognitive functioning as observed in the neuropsychological assessment, or concern by an individual or a knowledgeable informant. Such impairment does not interfere with capacity for independence in their everyday activities.
- 2. Major Neurocognitive disorder due to Traumatic Brain Injury-** significant impairment or decline in cognitive functioning, extreme behavioural changes which interferes with the person’s independence and ability to carry out everyday activities. (Maybe expand and use DSM 5)

It will be noted that the Statistical Manual of Psychiatric Disorder (DSM 5) makes specific reference to neuropsychological assessment in determining the severity of the neurocognitive impairment and subsequently the category as outlined above.

### **1.2.2 General Overview of presentation of the study problem.**

Brain injuries (particularly, Mild Traumatic Brain Injuries or concussions) are often a subject of many legal battles in the settlement of claims, as often, their effects are usually not immediate, not easy to measure and sometimes complicated by other non-accident-related factors. Some, including Mckee and Daneshvar, (2015) have suggested that this area is fraught with difficulty for a number of reasons that include the fact that mild Traumatic Brain Injuries are not expected to bring about long term permanent neurocognitive impairment and as such, limited attention has been given to their investigation. Guided by this, it is often “presumed” by the courts and legal practitioners and perhaps many professionals in the medico legal space that mild head injuries cannot be regarded as significant injuries and therefore do not deserve compensation (Powell *et al.*, 2008). This position does however present serious challenges as there possibly is a considerable number of victims that present with a cluster of symptoms that have varying impact on their personal, social, and occupational functioning. It is also especially important to understand and be cognisant of the fact that even severe and moderate Traumatic Brain Injuries do not necessarily follow the same course and always produce permanent and long-term neurocognitive impairment. Such categorization has been critiqued by some for lacking specificity, being simplistic and sometimes grossly misleading, in light of the fact that brain injury is a complex phenomenon that can manifest in different ways, and progress in different forms, depending on a number of substantive alternative variables, It is for this reason that neuropsychologists are always required to assess and determine whether the head injury, (whether severe or mild), has

produced any neurocognitive or behavioural impairment. The reality in clinical practice is that it is very difficult to project what type of impairment you can expect in any victim of a head injury.

### **1.2.3 Context of the Study - Geography, Demography of North Johannesburg, South Africa.**

The study was conducted within neuropsychological assessments and treatment centres and with clinicians and court officials that deal with settlement claims related to MTBIs. In the first instance, data was collected from patients at different psychological assessment and treatment centres in the Northern suburbs of Johannesburg, Centurion, and Pretoria; Gauteng, South Africa. The north of Gauteng courts registers possibly the highest number of accident claims in the high courts across the different provinces in South Africa. The map below depicts its location within Johannesburg.



Source: - [portfoliocollection.com](http://portfoliocollection.com) (2019)

The location of the study i.e., Northern Johannesburg, covers one of the most affluent and most trafficked areas in South Africa and indeed in Africa. The centres offer assessment and treatment services to the following suburbs i.e.

- Midrand.
- Randburg.
- Sandton (including Rivonia, Bryanston, Morningside)

(Source: - [portfoliocollection.com](http://portfoliocollection.com), 2019).

As of 2018, the Johannesburg city population was estimated as 4.4 million, whilst the Greater Johannesburg Metropolitan Area population accounted for a further 8 million.

This makes Johannesburg the most densely populated with a density of about 2,900

people per square kilometre (7,400 per square mile). The population is spread over a total surface area of 334.81 square kilometres (129.27 square miles) (Stats-SA, 2019). Most relevant to the current study, Johannesburg greater area is rated as the most trafficked area in Africa and proportionally at greatest risk of road traffic accidents.

According to South Africa's Road Traffic Management Corporation (RTMC), across the country, there were 12 921 reported road fatalities in 2018, which represented an 8% decrease compared to 2017. In 2017, 14 050 road users lost their lives in road crashes a figure close to 2016 figure (14 071 fatalities). These rates of deaths signify the number of RTAs within the country and in many respects, South Africa remains the country with one of the highest numbers of accidents in the world and by inference, it has a sizeable number of people who sustain head injuries within their accidents.

### **1.3 STATEMENT OF THE RESEARCH PROBLEM**

Mild traumatic brain injury (MTBI) represents one of the most complex and contested areas within both clinical practice and medico-legal adjudication. Despite its high prevalence, MTBI continues to present significant challenges in terms of diagnosis, interpretation, and evaluation, particularly within compensation systems such as the Road Accident Fund (RAF) in South Africa.

A key concern relates to the under-recognition and under-documentation of MTBI in acute clinical settings. Individuals who sustain head injuries may present with normal levels of consciousness and minimal observable neurological deficits, resulting in the absence of formal diagnosis or documentation at the time of injury. This reliance on acute clinical indicators, such as the Glasgow Coma Scale (GCS), has been widely critiqued for its

limited ability to capture the functional and long-term consequences of MTBI (Carroll et al., 2004). Consequently, individuals who later develop cognitive, emotional, and behavioural impairments may face significant challenges in establishing the presence and severity of injury within medico-legal contexts.

In addition, there is ongoing lack of consensus within the clinical and research literature regarding the nature, severity, and long-term impact of MTBI. While some perspectives continue to regard MTBI as largely transient and self-limiting, an increasing body of evidence suggests that a proportion of individuals experience persistent symptoms, including deficits in memory, attention, executive functioning, and emotional regulation (McInnes et al., 2017; Silverberg & Iverson, 2011). This divergence in clinical understanding contributes to variability in diagnosis, assessment, and expert opinion.

Within the medico-legal environment, these clinical uncertainties are further compounded by the absence of standardised frameworks for the assessment and interpretation of MTBI-related evidence. Courts are required to rely on expert reports from multiple disciplines, including neurosurgery, neurology, psychiatry, and neuropsychology. However, differences in clinical orientation, assessment approaches, and interpretive frameworks may result in conflicting expert opinions. As a result, judicial decision-making in MTBI-related cases is often characterised by inconsistency, particularly in cases where objective medical evidence is limited (Dean & Sterr, 2013; Larrabee, 2012).

Furthermore, there appears to be a tendency within both clinical and legal contexts to underestimate the significance of mild head injuries, often based on the assumption that such injuries do not result in long-term impairment (Powell et al., 2008; McKee &

Daneshvar, 2015). This assumption may lead to the under-recognition of genuine functional difficulties experienced by affected individuals and may contribute to inequitable compensation outcomes.

Neuropsychological assessment has been identified as a critical tool in addressing these challenges, as it provides a structured and evidence-based approach to evaluating cognitive and functional impairment (Lezak et al., 2012). However, despite its potential value, the role and influence of neuropsychological evidence within judicial decision-making processes remain insufficiently understood. In particular, there is limited empirical research examining how such evidence is interpreted, weighted, and applied within the adjudication of MTBI-related claims.

Taken together, these challenges highlight a critical gap in the integration of clinical neuropsychological evidence within medico-legal processes. Specifically, there is a need to better understand the contributory role of neuropsychological assessment in judicial decision-making, as well as the factors that influence variability in outcomes.

The central problem addressed in this study is therefore the lack of clarity, consistency, and structured guidance in the assessment and adjudication of MTBI-related claims within the South African medico-legal context, particularly in relation to the role of neuropsychological evidence.

## **1.4 PURPOSE OF THE STUDY**

The primary purpose of this study was to critically explore the contributory influence of neuropsychological assessments in judicial decision-making processes related to the facilitation and settlement of Road Accident Fund (RAF) claims involving victims of mild traumatic brain injury (MTBI) in South African courts.

In particular, the study sought to examine how neuropsychological evidence is utilized, interpreted, and weighted within medico-legal contexts, and to identify factors that contribute to variability and inconsistency in judicial outcomes.

Through a combination of theoretical and empirical inquiry, the study further aimed to develop a structured framework to support more consistent, evidence-based assessment and adjudication of MTBI-related claims within the South African medico-legal system

## **1.5 THE OBJECTIVES OF THE STUDY**

The operationalisation of the study involved several theoretical and empirical objectives that included: -

### **1.5.1 Theoretical objectives to be achieved via review of Literature: -**

1. Conducting a desktop review of the range of health and judiciary responses that have been articulated in regional, and national literature as representing the different practices as they relate to the identification and responses to MTBI within the South African Judiciary specially in the of settlement of Road Accident Claims in the South African Courts.

2. Conducting an analysis of the nature and extent of reported MTBIs and the psychological and physical impacts reported by claimants.
3. Identify and describe the range of symptoms and presentations that represent the global diagnostic characteristics of mild traumatic brain injury from national, and global literature.
4. A range of empirical Objectives were achieved via Data Collection from study participants, and they included: -
  - a). Determining the role played by neuropsychology as an influence with respect to diagnostic and post diagnostic medical and legal responses.
  - b) Determining the range and nature of decision-making strategies used by court officials in their role(s) as judges of settlement claims within the judiciary.
  - c). Exploring multi-stakeholder views and perceptions about the best-fit role of neuropsychology regarding the identification and responses to MTBI within the South African Judiciary especially in the of settlement of Road Accident Claims in the South African Courts.
  - d) Evaluating the range and impact of the neuropsychological effects of MTBI on global health presentations and functioning among injury victims and how each of the effects are evaluated by the judiciary and compensators.
  - e) Developing a modification framework and recommendations that support the development of effective health and legal response and service options that can promote the effective identification and management of uptake of MTBI within the South African Judiciary specially in the of settlement of Road Accident Claims in the South African Courts.

5. Guided by the above-objectives, the study was able to answer several research questions derived from the Empirical Objectives and these included: -

- a) . What is the role played by neuropsychology as an influence related to diagnostic and post diagnostic medical and legal responses?
- b) What is the range and nature of decision-making strategies used by court officials in their role(s) as judges of settlement claims within the judiciary?
- c) What are the multi-stakeholder views and perceptions about the best-fit role of neuropsychology regarding the identification of and responses to MTBI within the South African Judiciary specially in the of settlement of Road Accident Claims in the South African Courts?
- d) What are the range and impact of the neuropsychological effects of MTBI on global health presentations and functioning among injury victims and how are each of the effects evaluated by the judiciary and compensators?
- e) What are the key elements of the modification framework and recommendations that support the development of effective health and legal responses and service options that can promote the effective identification and management of MTBI within the South African Judiciary specially in the of settlement of Road Accident Claims in the South African Courts?

## 1. 6 RELEVANT THEORETICAL PERSPECTIVES

The study was primarily focused on facilitating a critical exploration of the complex interplay between two knowledge fields i.e., the area related to the subject of concussion/MTBI and neuropsychological assessment of MTBIs and secondly, the application of legal principles in the decision-making process as applied by court officials, as they determine how MTBI claims must be settled. As an aide to the process, two theories and theoretical contributions were cited as important foundational theoretical frameworks that offered a clarification of key concepts within the study.

Firstly, theoretical inputs were obtained from data sources that offer some insight into how MTBIs are identified and assessed and the complexities surrounding its diagnosis. As a basis for these theoretical contributions, initial content contributions offered clarification on how head injury is defined.

Dikmen, Machamer, & Temkin, (2001) provide this insight and see *head injuries* as any trauma to the head, with or without injury to the brain. The head injuries are classified as minimal, mild, moderate, or severe, as determined by the presenting symptoms and neurological presentation after the injury and the extent to which symptoms persist beyond a few months of the initial injury. On this continuum, individuals with minimal head injury are identified as having some form of trauma to the head, without loss of consciousness, a normal Glasgow Coma Scale (GCS) score, and no symptoms of head injury (Teasdale et al., 2014; Watson, 1992). Mild head injury patients have a GCS of 13 to 15 after head injury (Wakai, McCabe, Roberts, & Schierhout, 2013). Further in-depth discussion and explanation of different classification categories will be addressed in the sessions to follow. Furthermore, traumatic brain injury is specifically classified via the

reliance on several influences that include type, severity, location, mechanism of injury, and physiological response to injury. These wide-ranging variables or heterogeneity represent a serious challenge in appropriately developing effective therapeutic interventions in TBI (Jennett, 2005).

In drawing together, the different diagnostic tools, several factors that represent key classifying influences are relied on, to give a multi-dimensional assessment of a suspected injury. Each of the determining factors are highlighted below: -

#### **1.6.1 Classification by clinical severity**

The primary tool used for the determination of clinical severity of the injury is the GCS, and this has been used extensively to classify TBI into levels of severity and prognosis (Reith, Van den Brande, Synnot, Gruen, & Maas, 2016). Because of traumatic brain injury, there exists an inverse relationship between the GCS score and the incidence of positive findings on CT. Notably the rate of intracranial injury (ICI) and need for neurosurgical intervention doubles when the GCS drops from 15 to 14. (Barlow, 2012)

- Mild/Minor TBI: GCS 13-15; mortality 0.1%
- Moderate TBI: GCS 9-12; mortality 10%
- Severe TBI: GCS <9; mortality 40%.

#### **1.6.2 Classification by Broad aetiology**

Second to classification by severity, broad aetiology is a noteworthy aspect that is relied upon to give definition to the types of a TBI. Classification by broad aetiology offers three categories as articulated below: -

- Blunt TBI: occurs when external mechanical force leads to rapid acceleration or deceleration with brain impact. It is typically found in the setting of motor vehicle-related injury, falls, crush injuries, or physical altercations.
- Penetrating TBI: occurs when an object pierces the skull and breaches the dura mater, seen commonly in gunshot and stab wounds.
- Blast TBI: commonly occurs after bombings and warfare, due to a combination of contact and inertial forces, overpressure, and acoustic waves. (Mckee & Daneshvar, 2015).

### **1.6.3 Classification by involvement/nature**

This relates to how TBIs can be categorised by the area involved, as in diffuse or focal. Within this, the two types frequently coexist.

- Diffuse brain injury includes diffuse axonal injury (DAI), hypoxic brain injury, diffuse cerebral oedema, or diffuse vascular injury (Reith et al., 2016). This is situations where the injury might have affected a wide area or different parts in the brain.
- Focal injury includes specific lesions such as contusions, intracranial haematomas, infarctions, axonal tears, cranial nerve evulsions, and skull fractures. This is where the point of impact is easily identifiable as there is usually physical evidence of the trauma.

#### **1.6.4 Classification by injury progression**

This offers an additional category for understanding what type of injury is being presented and in this, injury is due to the immediate mechanical force, whether blunt, penetrating, or blast, and may include the following:

- o Skull fracture
- o Contusion
- o Haematoma
- o Subarachnoid or focal haemorrhage
- o Axonal shear or laceration.

Secondary injury refers to the evolving pathophysiological consequences of the primary injury and encompasses a multitude of complex neurobiological cascades altered or initiated at a cellular level following the primary injury, and may include the following (Reith et al., 2016)

- o Cerebral oedema
- o Increased intracranial pressure (ICP)
- o Haemorrhage
- o Seizures
- o Ischaemia

- o Infection.

Secondly, regarding the judicial aspect of the enquiry, it was noted that there are three main models of judicial decision-making that explain how judges come to a solution and literary sources suggest that these work alongside each other within any decision-making process, i.e., Legal pragmatism (Realism), Attitudinalism and strategic approach (Posner, 2013; Thomas, 2009). These models aim to predict the decision a judge will make, based on the guiding values of the judge. Legal Pragmatist Realism and Attitudinalism are the most orthodox models for decision making and were initially posited by Epstein, Landes, and Posner (2013), in their seminal works "The Behaviour of Federal Judge". The legal Pragmatist Realism theory is based on an assumption that judges (or judicial decision-makers) make decisions about cases presented to them in accordance with combination of orthodox norms of judicial decision-making; and that within this, they are cognisant of the reality they face, and like other economic agents, decide cases according to their preferences and incentives (Schlegel, 2015) This model has its basis on three important themes that exist with decision-making, as summarised below:-

(I) A distrust of the judicial technique of seeming to deduce legal conclusions from so-called rules of law. The realists believed that judges neither do nor should decide cases formalistically. Law is not, as the formalists claimed, a system of rules that is clear, consistent, and complete (Wood, 2015) Rather, the law is riddled with ambiguities, contradictions, gaps, vague terms, and conflicting rules of interpretation. As a result, there is often (perhaps always) no uniquely correct answer to any hard case that appellate judges decide. Law is incurably "indeterminate".

(ii) A belief in the instrumental nature of the law. Like Dewey and Pound, the realists believed that law does and should serve social ends. Judges unavoidably take account of considerations of fairness and public policy, and they are right to do so.

(iii) A desire to separate legal from moral elements in the law. The realists were legal positivists who believed that law should be treated scientifically. A clear distinction should be drawn between what the law is and what it should be. Law can only be viewed as an empirical science, as it ought to be, if moralistic notions are either excluded or are translated into empirically verifiable terms. The idea that legal talk of "duty", "right", etc. is just talk about how judges are likely to decide cases, is a clear example of how many realists tried to purge law of moralistic language and translate everything into "realistic" talk of actual consequences and testable prediction (Richter, 2018).

Attitudinalism by contrast, is described as the process by which judges' decision-making tends to be reflective of the attitudes of the parent entity that has appointed them, be it the state governor, an appointment committee, or the public at large. This model gives the most weighting to the values and preferences of the judge as the primary factors that drive his/her decision-making. Both initial appointment of judges, and their retention or reappointment may serve to filter out judges whose attitudes are not wholly in agreement with the electing body's approach. A review of related literature supports this asserted viewpoint. For example, three hypotheses emerge from the literature: First, that judges' decisions conform with the preferences of their appointing agents (Schlegel, 2015)

Second, that the degree of such conformity depends on various institutional features of the method of appointment (whether reappointment decisions are made via a legislative

body or through public elections, and if made through elections, whether these are competitive and whether they are held on a partisan or non-partisan basis. These two hypotheses do not distinguish between selection and incentive effects. The third hypothesis does. It suggests that the conformity between the preferences of the judge and his/her appointing agent becomes more pronounced as reappointment or re-election approaches, and that it becomes less pronounced when judges are serving their last term in office (Posner, 2013)

As an extension of attitudinal and legal realism decision making models, the strategic model of decision making is a combination of the two approaches. Its primary tenet is that while the judge has personal policy preferences and goals, he or she must realise those within existing legal constraints.

As a theoretical bases, each of the above cited theories highlighted the concepts that will be relevant to the current study. As such, data collection instruments will include specified clarification / exploration of the key stand-out concepts that were highlighted by the theoretical framing of what constitutes MTBI and the different approaches to judicial decision-making.

Figure 1 below provides a diagrammatic summation of the concepts that will be specifically explored within the different data collection phases. From these identified concepts, the researcher will be able to look closely at the primary factors.

## **1.7 OVERVIEW OF METHODOLOGICAL CONSIDERATIONS.**

To achieve the study aim, a multi-approach qualitative method design was primarily used. The research problem addressed in this study is inherently complex, situated at the intersection of clinical neuropsychology and medico-legal decision-making. It involves not only the assessment and understanding of mild traumatic brain injury (MTBI) from a clinical perspective, but also the interpretation and application of such evidence within judicial processes, particularly in the context of Road Accident Fund (RAF) claims in South Africa. The study therefore required a methodological approach capable of engaging with both clinical realities and interpretive legal processes in a manner that is sufficiently flexible, integrative, and contextually grounded.

The critical exploration of the contributory influence of neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of Road Accident Fund claims among victims of MTBI represents a complex phenomenon that cannot be adequately captured through a single methodological lens. Multi-approach research offers the advantage of enabling a multi-perspective exploration of the various interrelated issues within the area of study, thereby providing richer and more comprehensive insight (Snelson, 2016).

Given the exploratory nature of the study and the emphasis on understanding processes, perceptions, and interpretive practices, a qualitative approach was considered most appropriate. The phenomena under investigation—namely subjective symptom presentation, clinical interpretation, expert opinion, and judicial reasoning—are not readily

reducible to quantitative measurement. Instead, they require in-depth, context-sensitive exploration to capture their meaning and complexity.

The study adopted a multi-source qualitative design incorporating both retrospective clinical data and stakeholder perspectives. This approach allowed for methodological triangulation, thereby enhancing the credibility, depth, and robustness of the findings. By integrating different forms of data, the study was able to move beyond a single perspective and examine the interaction between clinical evidence and judicial interpretation.

Although the study was initially conceptualised as a multi-phase design, it is important to clarify that the conceptual framework did not constitute a separate empirical phase of data collection. Rather, the overall design aligns conceptually with an exploratory sequential approach, in which initial data collection informs subsequent stages of inquiry (Creswell, 2007).

The empirical component of the study was implemented in two primary phases.

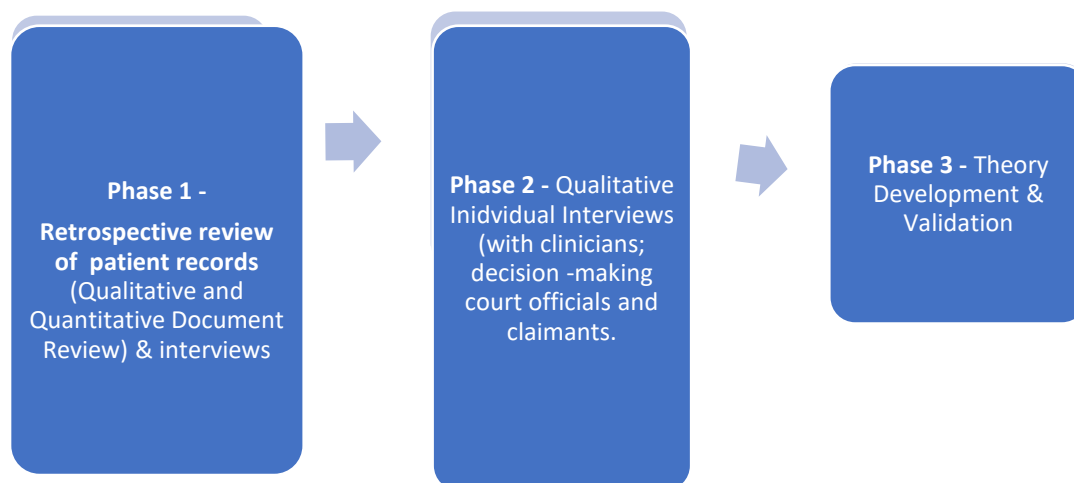
The first phase involved a retrospective review of patient records of individuals who had sustained MTBI. The purpose of this phase was to establish a clinically grounded understanding of MTBI within real-world practice. The review focused on documented injury characteristics, pre-morbid functioning, presenting complaints, medical findings, and neuropsychological outcomes. This phase enabled the identification of patterns of presentation, variability in documentation practices, and the extent to which MTBI-related

impairments are captured within clinical records. Importantly, it also provided a broad overview of the documented status of MTBI across a range of road traffic accident victims.

The second phase involved qualitative individual interviews with key stakeholder groups. These included neuropsychologists, neurologists, neurosurgeons, psychiatrists, claimants, and decision-making court officials. The inclusion of multiple stakeholder groups was a deliberate methodological choice aligned with the study's objective of capturing both clinical and medico-legal perspectives.

The multiple Data collection approaches utilised within the current research represented an appropriate choice because they offered insight and meaning that would be overlooked by mono-method approaches. This approach offered scope to produce more holistic knowledge that would inform practice & policy (Snelson, 2016)

The study was implemented as a three -stage process as diagrammatically summarised below.



*Figure 1: Exploratory Sequential Mixed Method (Adapted from Creswell, 2007)*

Participants were selected using purposive sampling to ensure relevance and expertise. Data collection continued until thematic saturation was reached, participants and stakeholders which included neuropsychologists, neurologists, neurosurgeons, claimants, and court officials, respectively.

Semi-structured interviews were utilised to explore key areas, including participants' understanding of MTBI, its physiological and psychological manifestations, their views on the potential outcomes of MTBI, and the influence of emotional, psychological, and contextual factors such as pain on cognitive functioning. Participants were further asked to provide insights into the challenges associated with diagnosis and post-diagnosis management, as well as their perspectives on current medico-legal systems and the settlement of MTBI-related claims.

In the case of decision-making court officials, specific attention was given to the factors influencing judicial decision-making processes, including how expert evidence is evaluated, interpreted, and applied in determining outcomes. This component of the study was particularly important in understanding the role of neuropsychological evidence within legal contexts.

The use of semi-structured interviews allowed for both consistency and flexibility. While a guiding framework ensured that key themes were addressed, participants were able to elaborate on issues of particular relevance to their experience. This facilitated the generation of rich, detailed data and enabled the identification of areas of convergence and divergence across stakeholder groups.

The integration of retrospective clinical data and stakeholder perspectives provided a comprehensive basis for analysis. This multi-source approach enabled the study to examine not only the clinical realities of MTBI but also the interpretive processes that shape medico-legal decision-making. The triangulation of data sources enhanced the credibility and trustworthiness of the findings.

The conceptual framework developed in this study emerged through an analytical synthesis of the literature review and the empirical findings derived from both phases of data collection. This process involved identifying recurring themes, patterns, and relationships across the data and integrating these into a structured model aimed at improving consistency in the assessment and adjudication of MTBI-related claims.

Sample sizes for each these aspects were determined via purposive sampling and data saturation to a maximum of 7 interviewees per key informant group i.e., neuropsychologists (max 7), neurologists (max 7), neurosurgeons (max 7), claimants (max 7) and court officials (max 7).

In summary, the methodological approach adopted in this study was designed to align closely with the complexity of the research problem. By combining clinical data, stakeholder perspectives, and theoretical insight, the study was able to generate a nuanced and contextually grounded understanding of the contributory influence of neuropsychological assessments in judicial decision-making. This approach further supported the development of a framework that is both analytically robust and practically relevant within the South African medico-legal environment.

### **1.7.1 Population\target population and sampling methods.**

Data related to the study focus was collected from a range of participant groups that included service-providers, clinical experts, claimants, and decision-making court officials with ongoing involvement in adjudicating over MTBI settlement claims. The identification of the appropriate psychological centres was done via purposive sampling and centres with psychological experts who work with individuals affected by MTBI. The centres also confirmed that they offer services to individuals whose injuries are/were dealt with by claims courts. The identification of decision-making court officials who represented the other participant-group, was primarily done via purposive sampling of individuals who worked in local courts and had presided over MTBI settlement cases.

For the individual interviews, multi-disciplinary teams of clinicians and decision-making court officials were interviewed, and maximum variation purposive sampling was conducted to ensure the inclusion of the following neurosurgeons (max of 7) neurologists (max of 7), psychiatrists (max of 7), clinical and neuro psychologists (max of 14); and decision-making court officials (n=7). For the interviews, each participant group was interviewed until data saturation was reached or to a maximum of 7 per participant group. According to Flick (2007), data saturation refers to the point in data collection where, no new information is expected to enhance or change the findings of a study. With respect to the survey, a representative group of claimants (i.e., individuals who have been victims of MTBI) were identified and selected for inclusion as potential survey respondents. Sample calculation was based on the epi-info sample size calculator, and as such, 189 surveys were sent out.

### **1.7.2 Data analysis**

With the qualitative data, a combination of thematic and content analysis processes was used. Krippendorff's content analysis approach formed the basis of the content analysis aspect and thematic analysis was based on Colliazi's seven step analysis method.

## **1.8 ETHICAL CONSIDERATIONS**

Ethical clearance for the study was sought and provided by the University of South Africa's, Department of Health Studies Ethical research committee. In addition to obtaining academic clearance, additional gatekeeper permissions were sought via the Department of Health, whose ethical oversight committee also, specified a range of prerequisites to ensure maximum protection of participants from harm during and because of the study. In addition to the above, additional provisions were integrated into the study design and each gave the highest priority to ensuring that potential participants were adequately informed about the study and fully understood the expectations and likely impacts to them.

Research ethics involves protecting the rights of the participants and the institutions in which the research is conducted and in maintaining professional integrity (Babbie 2013:32).

In preparing for the consent procedures related prospective participants, several specific steps were taken which included: -

-Disclosure of information: The researcher provided all participants with sufficient and understandable information regarding their participation in the study. Essential information was presented in written and verbal form to the participants.

- Understanding: The information on the consent form was in simple English to facilitate understanding and appropriate professional technical language was also used since participants were either health professionals or members of the judiciary.
- Voluntary decision-making: The researcher provided all essential information about the study and provided participants with the chance to decide whether to take part in the study or not without coercion or any undue influence. The researcher also assured participants that participating in this study was voluntary and that they were at liberty to decline or withdraw their participation if they so wished and that nobody would be sanctioned for participating or refusing to participate in the study.
- Confidentiality: The researcher protected all data gathered during the study from being divulged or shared with other people without authorization of the participant. This means that the research data was kept closed and inaccessible to outsiders. The interview sessions were conducted on a private and safe platform on a one-on-one interview basis to ensure freedom of participants.
- Anonymity: The participants were kept nameless in relation to their participation in the study. Numbers were provided so that their identities could not be linked, even by the researcher, with their individual responses (Burns & Grove 2009:196-205).
- The principle of justice: (Parahoo 2006:112) affirms that justice entails being fair to participants by not giving preferential treatment to some and depriving others of the care and attention they deserve. To this end, the researcher treated all participants equally and ensured justice by selecting participants based on research requirements. The researcher also honoured all agreements entered and more importantly the participants

in this study were assured that their involvement in the study would not be used against them in any way.

### **1.8.1 Scientific integrity of the research**

In addition to respecting the rights of the participants, the researcher ensured protection of the integrity of knowledge and undertook specific actions to avoid, fabrication, falsification or forging, Manipulation of design and methods, Selective retainment and or manipulation of data, Plagiarism, and Irresponsible collaboration (Van der Walt & Van Rensburg 2010:40-41).

## **1.9 SIGNIFICANCE OF THE STUDY**

The significance of this study lies in its contribution to an under-researched yet critically important area at the intersection of clinical neuropsychology and medico-legal practice within South Africa. Mild traumatic brain injury (MTBI) remains one of the most complex and contested conditions in the context of Road Accident Fund (RAF) claims, largely due to diagnostic ambiguity, variability in clinical interpretation, and the absence of standardized frameworks for assessment and adjudication.

This study provides a comprehensive examination of how neuropsychological assessments contribute to judicial decision-making in MTBI-related claims. By integrating clinical evidence, stakeholder perspectives, and theoretical insights, the study offers a nuanced understanding of the challenges associated with the evaluation and compensation of MTBI within the South African legal system.

The findings have important implications for multiple stakeholders. For clinicians, particularly neuropsychologists, the study highlights the need for greater clarity, consistency, and standardization in the assessment and reporting of MTBI. For legal practitioners and decision-making court officials, the study provides insight into the interpretation of neuropsychological evidence and the factors that contribute to variability in judicial outcomes. For policymakers and regulatory bodies such as the Health Professions Council of South Africa, the study offers evidence that may inform the development of guidelines and best practices within medico-legal contexts.

Importantly, the study contributes to bridging the gap between clinical practice and legal decision-making by highlighting the need for a more integrated and evidence-based approach. By addressing inconsistencies in the assessment and adjudication of MTBI-related claims, the study has the potential to support more equitable and consistent outcomes for claimants.

In addition, the study contributes to the broader body of knowledge by providing one of the few empirical investigations within the South African context that specifically examines the role of neuropsychological assessments in RAF-related claims. This positions the study as a foundational contribution upon which future research and policy development can build.

#### **1.10 THE UNIQUE CONTRIBUTION MADE TO THE RESEARCH AREA**

As per requirement for a doctoral study, the fact that this study made a unique contribution to the research area represented, the most noteworthy differentiating characteristic that demonstrated the doctorateness of the study. In respect of this, the current study's

contributions were multifaceted. For example, it is the only known study that empirically investigates the contribution of neuropsychological assessments and their influence in the facilitation of mild brain injury settlements of Road Accident Claims in the South African Courts. The emergent framework is the first of its kind in South Africa and represents a novel and seminal contribution to the study area. Beyond contributing new knowledge in the form of a framework, this research offers several specific and distinct contributions, some of which are individually noted below: -

- **The choice of research design adopted:** - The reliance on a qualitative multi-approach design provides a rare opportunity for critical insights and for empirically supported understanding of MTBI and its evaluation within the South African judiciary. This design is unlike any other published study within this subject field. Previous research within the subject field has either relied on qualitative methodologies or quantitative approaches but never within the same study. Beyond the opportunity for rare insights, the adoption of a mixed methods design minimised the limitations for each design whilst maximising the benefits associated with each methodology. This study represents one of the few empirical investigations that explicitly examines the interface between clinical neuropsychological assessment and judicial decision-making in the adjudication of Road Accident Fund (RAF) claims. While previous research has explored traumatic brain injury from either a clinical or legal perspective, limited attention has been given to the interaction between these domains. In this regard, the current study provides a novel integrative perspective that bridges an important gap in the literature

- **The multiple participant groups:** - The current study engaged a wide range of participant groups to focus on this issue from multiple perspectives. The inclusion of multi-discipline clinicians; claimants and decision-making court officials, as data sources to explore the contributory influence of neuropsychological assessments in judicial decision-making allowed for a rare consideration of opinions and viewpoints from all the stakeholders within this process and as such, the resulting conclusions Alpha as close a depiction of the naturalistic truth as has been achieved in the field. Other similarly focused studies have tended to look at this issue from the single perspective of one participant group at a time.
  
- Secondly, the study adopts a multi-source qualitative, multi-approach research design that incorporates both retrospective clinical data and stakeholder perspectives. This methodological approach provides a rare opportunity for critical insight into the evaluation of MTBI within the South African medico-legal system. By integrating multiple data sources, the study was able to identify patterns, inconsistencies, and areas of convergence and divergence across clinical and legal contexts. This approach differs from previous studies within the field, which have typically relied on either qualitative or quantitative methodologies in isolation. The current study therefore advances methodological application within this area by demonstrating the value of a multi-perspective, integrative approach.
  
- **Development of a Conceptual framework:** - The emergent conceptual framework represents additional landmark achievement within the subject field. The framework offers the opportunity for consistent and evidence-driven

management of MTBI-related settlement claims, with a level of consistency that has not been previously possible within the field. Importantly, the study contributes to theoretical development by integrating clinical models of brain injury with frameworks of judicial decision-making. This interdisciplinary approach provides a more holistic understanding of the factors that influence MTBI-related outcomes within medico-legal settings and advances conceptual thinking within the field

Most notably, the study culminated in the development of the **Kalane MTBI Diagnostic and Legislative Responses Framework**, which represents a novel and seminal contribution to the research area. The framework is the first of its kind within the South African context and provides a structured approach to the assessment, interpretation, and adjudication of MTBI-related claims. It offers the potential for more consistent, transparent, and evidence-based management of such cases, addressing longstanding challenges associated with variability in both clinical interpretation and judicial decision-making.

## **1.11 OVERVIEW OF THE THESIS**

The development and presentation of this thesis was in a seven-chapter format that included the following chapters: -

### **Chapter 1: - Background and Orientation to the study.**

This initial chapter presents an orientation to the study and here, each of the aspects of the study are briefly outlined as a basis for setting the context for the reader. Here, the

rationale for the study choice is offered and most importantly, the statement of the research problem is presented in the chapter as the basis for the ensuing study.

## **Chapter 2: - Literature review.**

The chapter provides an overview, analysis, critical exploration, and appraisal of theoretical and empirical predecessor work as a means of articulating the state of knowledge about the contributory influence of neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of Road Accident Claims among victims of mild brain injury. The chapter also provided a justification for the study focus that was opted for within the current study.

## **Chapter 3: -Theoretical and Conceptual Framework of the study.**

This chapter provides a critical overview of theories that served as guides in the conceptualisation of the study and data collection priorities. As an overall purpose of this chapter, the researcher was able to identify the range of concepts that were critically important to the understanding of the influence of neuropsychological assessments in judicial decision-making within settlement courts.

## **Chapter 4: - Methodology**

This chapter specifies all the methodological considerations made within the study including the data collection methods used within the field, sample size determination and how data would be analysed.

## **Chapter 5 - Data presentation, analysis & interpretation.**

This chapter presents the findings and associated interpretations from the qualitative data collection aspects within the study. This chapter offers content in which the research findings are discussed, interpreted and where appropriate, contrasted against existing literature within the field.

## **Chapter 6: - Theory Development and Verification**

This chapter focussed on aspects related to theory and/or framework development. Here, a conceptual framework, based on the findings from the empirical phase of the study, is presented and critiqued.

## **Chapter 7: - Discussion and Recommendations.**

This summative chapter provides a summarised overview and critical analysis of all the aspects of the study. Critically, this chapter summarises the recommendations from the study and importantly, direction for future research.

## **1.12 CONCLUSION**

The proposed critical exploration of the contributory influence of neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of Road Accident claims among victims of mild brain injury in the South African Courts, represents a complex phenomenon. South Africa has one of the world's highest per capita rates of road traffic accidents with more than half of all drivers being at risk of being in a road traffic accident incident/ accident within a year of driving. MTBI has a high prevalence within South Africa and affected individuals have received minimal and varied attention

and support from the judiciary with respect to compensation for the injury sustained. This represents a significant area of concern especially considering the serious social and cognitive functioning consequences that are associated with these types of injuries. This study is the first of its type within the South African context and it has the potential for providing unique opportunities for effective judiciary responses to victims of MTBI. The current chapter provided a road map of the entire thesis whose primary intention was to offer seminal and unprecedented evidence-based guidance to clinicians and court officials on this area of work. Chapter 2 presents the review of literature related to the primary research question. This will include a review of the state of knowledge with head injuries and how they are managed within courts, most notably within South African settlement courts.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 INTRODUCTION

Chapter one gave an overview of the entire study and the elements that will be discussed throughout the study. This chapter will focus on finding relevant literature to the study, reading it, and analyzing the selected documentation (Hart 2010:1). The literature review brings together other published work done by accredited scholars that relate to the current research topic. From the selected literature, the review synthesized the literature, and themes were established which will be discussed in detail in the following sections of the literature review (Trafford & Leshem 2008:73). Hart (2010:13) was also in support of the definition and purpose of a literature review in asserting that, its purpose is to analyze, evaluate and lastly, synthesize the selected literature studied by other researchers.

The literature review has been conducted to understand and acquire information relating to what has already been studied in relation to the topic. A literature review is an on-going process that begins from the time the researcher decides to conduct the study right through to completion of the study. It is used to develop the aims and objectives of the study. The entire literature review gives the researcher a broad understanding of what other researchers have done in the past in relation to the study topic (Neuman, 2014).

Through the process of the literature review key points were determined which reflected critically the content, design, and methodology that the researcher should best follow in conducting the study. The purpose therefore of this literature review was to position the

researcher's topic, Mild TBI, particularly compensation thereof, within the context of other studies that were done by scholars in the past.

### **2.1.1 The purpose of the literature review**

The purpose of a literature review is to acquire information relating to what other researchers have done in the past in relation to the topic at hand. The review is an on-going process from inception of the study when the researcher initially decides to carry it out. The process guides the researcher in developing the aims and the objectives of the current study. During the entire process, the researcher has an opportunity to see what other research work has been done in the field of study.

There are six different types of reviews according to Neuman (2014:127) and these include methodological, integrative, historical, self-study, theoretical and context reviews. The researcher used a combination of review methods from different authors in this review process. The researcher will organize the literature using techniques such as integration, criticizing and identification of the most important and significant findings from the different academic articles (Creswell 2014:29)

According to Moustakas (1994:129) a literature review is an approach that is designed to gain insights into the experiences by others in relation to the phenomena of interest.

Using multiple-data collection processes, the proposed study primarily aims to gain an in-depth understanding of the nature, role, and utility of Neuropsychological assessments in the facilitation of settlement of Road Accident Claims in the South African Courts with specific reference to mild brain injury.

The initial search strategy for relevant content for the review involved searching for books, journals and articles that relate to Neuropsychological assessments and Road Accident Claims from the university library and online database. The searching of literature is viewed as the location and the summarizing of topics that relate to the study (Creswell, 2009:287)

### **2.1.2 Conducting the literature review.**

- Literature review began by identifying key words such as Neuropsychological, Accidents and Claims.
- Books and journals from the UNISA library containing keywords were searched for.
- Grouping of books and articles was done with those relevant to the study.
- Online databases such as ScienceDirect, researcher-id, ERIC, SCOPUS, CINAHL were used to find journals and articles that are relevant to the study topic. This process was found to be most efficient method of locating relevant literature using search engines and keywords relating to the study.

### 2.1.3 Literature review steps

The following diagram depicts the steps followed in conducting the literature review:

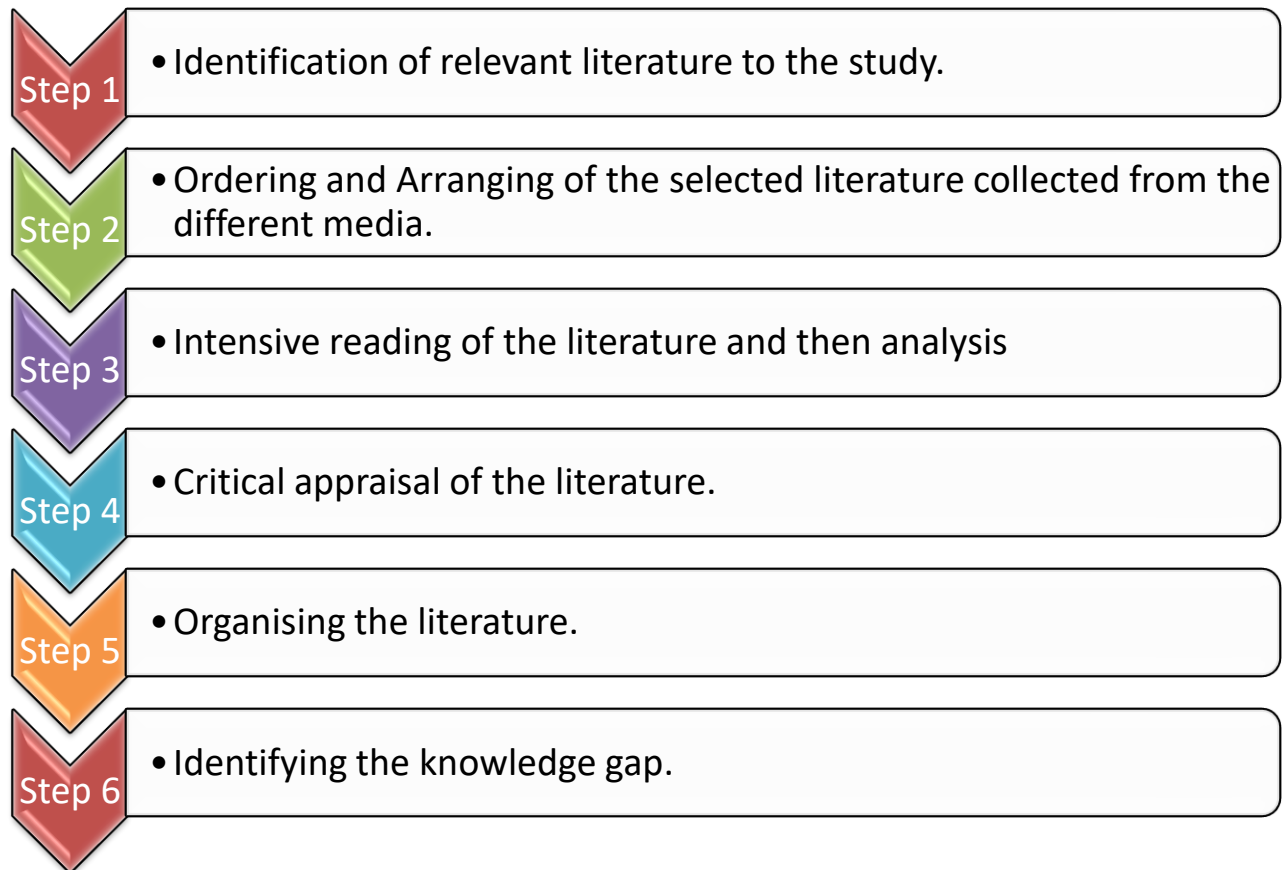


Figure 2: Literature review steps

#### Literature review steps as per Figure 2.1.

**Step 1:** The relevant literature for the study was identified by the researcher. This literature was repeatedly read with the purpose of trying to determine the experiences other researchers had in relation to the topic. While searching for the relevant literature the technique of scanning and skimming was used to search for the articles.

**Step 2:** The selected literature was arranged in order of relevancy. An objective judgement was made by the researcher on which literature is relevant and which literature must be isolated from the study phenomenon.

**Step 3:** The researcher read and analysed the selected articles with intensity. The researcher identified meaningful statements and gave those statements a meaning. The researcher grouped similar data to eventually determine the central themes.

**Step 4:** The selected articles were critically appraised by the researcher. The themes were summarized to create a holistic picture. For constant information validation the researcher maintained continuous contact with the sources. Common themes were identified and arranged orderly in developing an exhaustive description of Road Traffic Accidents related to MTBI.

**Step 5:** The researcher organized the literature into central themes and methodologically.

**Step 6:** The researcher identified the knowledge gap in the study topic.

#### **2.1.4 Type of literature review used for this study.**

The researcher used the Methodological Review (MR) process for this study. The MR approach provided the framework relevant in understanding the themes of the study and the methodology used in that specific study. When the researcher understands the themes, he can analyze and critique the literature to identify the gap in existing knowledge. The approach helps the researcher understand the consistency within the

methodological design which comprises sampling, data collection and data analysis used by the author.

### **2.1.5 How the literature review is organized.**

#### **2.1.5.1 Thematic**

The researcher selected the Thematic Review process as it enables the researcher to understand the background of the study being undertaken. The researcher gets additional sources of citations through this process. The researcher then groups the citations into themes in accordance with the topic they cover.

#### **2.1.5.2 Methodological**

The Methodological review typology focusses on study methods used by different authors/ researchers. Together with the thematic review the researcher used the methodological review in the analysis of the methodological foundations of the chosen articles. The researcher also determined the relationship between the research design, data collection, data analysis and any ethical issues in the literature.

## **2.2 IDENTIFICATION OF THE LITERATURE RELEVANT TO THE STUDY**

### **2.2.1 Literature mapping**

The outline of the literature review document is shown using a Literature Map (Machi and McEvoy 2008:50) that relays information using symbols. It shows the interconnectedness of literature amongst scholars. The mapping process helps organize the information collected from other researchers (Creswell 2009:33).

As per the literature map below (Figure 2.2) the middle represents the title of the study, and the surrounding information represents the body of the literature that was searched.

Mapping comes in three different approaches:

- Mapping that has been developed from keywords from the research topic.
- Mapping that has been developed through themes from the research topic.
- Mapping by author which identifies the experts in the field (Machi & McEvoy, 2008:50).

As established by Machi & McEvoy (2008; 50) the mapping for this study was done by themes. Alias & Suradi (2008:4) prefer discard keyword mapping as they describe keyword mapping as “may not produce a good literature review.”

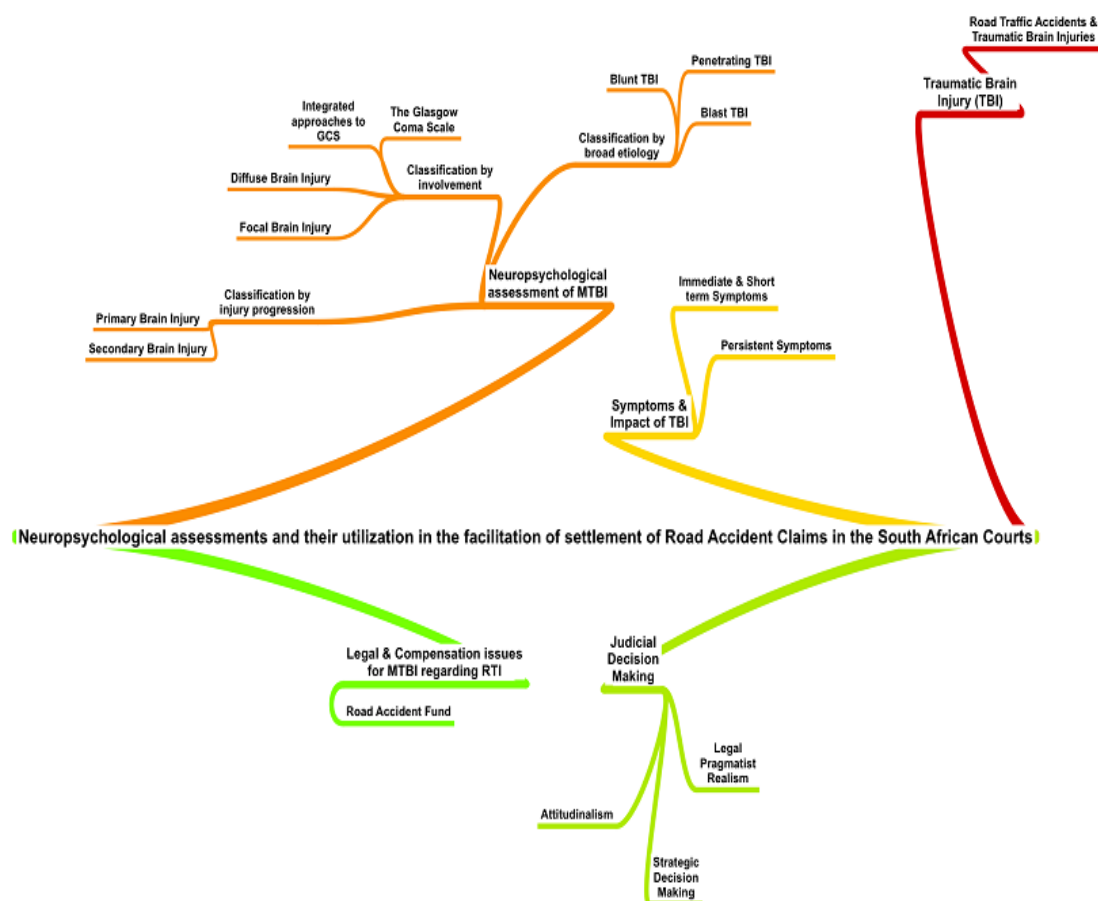


Figure 3: Literature search map

### 2.2.2 Content and methodology literature search

Figure 2.2 demonstrates how the mapping was done to establish the themes of the study. The mapping was used to search for content and methodology literature that is relevant to this study.

#### 2.2.2.1 Searching techniques.

Searching involved scanning and skimming through various articles as an initial search methodology. These approaches, as described by Parahoo (2016), offer a time-efficient initial foray into literary material about a topic of interest, as briefly articulated below:

1. **Scanning techniques** involve looking for keywords in a given article. In this study, key words were used in searching through the articles like Symptoms, Impact, and legal. The researcher also used citation searching through looking at the list of references that cited relevant articles.
2. **Skimming techniques** is reading quickly through the articles to get an idea of what needs to be included or excluded. The process included reading the articles' title, heading and subheadings, abstracts, and key terms to decide. The researcher used skimming to identify if the article was relevant to the study. Incomplete articles were not considered for this study.
3. **Intensive reading** is different from scanning and skimming in that an article is read in its entirety and is considered careful and thoughtful reading with the purpose of inclusion and exclusion criteria. For this study we have used this method to

determine the concentration of methods used by the different authors, the research findings and conclusions and other relevant assumptions from the other authors.

## **2.3 ARRANGING THE SELECTED ARTICLES IN ORDER OF RELEVANCE**

The researcher ordered the literature according to relevance, authority, and currency of the study. The articles that were not relevant were excluded.

The source is considered relevant if it gives information that assists the researcher in understanding the topic the researcher is studying.

### **2.3.1 Relevancy**

Through the scanning, skimming and intensive reading process the relevant articles were identified using the keywords identified. Keyword search has always been an important tool to use when searching and scanning through literature. The key word search is therefore considered to be the core of all literature searches as it is used as the main information retrieval tool for any study (Polit et al, 2019). The key words identified by the researcher were the ones used to formulate the study title, and the study purpose and objectives which include TBI, MTBI, Neuropsychology, Judicial Decision Making and Legal Compensation.

The articles that were chosen by the researcher were compared in terms of their relevance to the study topic. The researcher determined the relevance of the articles using the following 5 questions:

**What was the article about?**

The researcher browsed through the article to ascertain if the information contained was required for the study. The relevant information for the study was about the Neuropsychological assessments and their utilisation in the facilitation of settlement of the Road Accident Claims in the South African Courts.

**Who wrote the article?**

The researcher identified if the author(s) had sound academic credentials, whether they wrote in scholarly outlets and what relevant knowledge they had with regards to the topic. The researcher further established if the author had firsthand or secondhand information in relation to MTBI. The researcher also assessed the author's knowledge about the topic.

**Where did the information come from?**

The researcher investigated if the author had obtained the information for the study from a government, academic researcher, or a general population source. The researcher also checked if the article was published in a journal and whether the journal was a scholarly peer reviewed one.

**Why was the study done?**

The purpose of the article was verified by the researcher. The researcher further established if the article was for ordinary discussion or for scientific research where a scientific methodology was used.

## **When was the survey conducted?**

The researcher also established the currency of the article. The researcher ensured that the information from the article was still relevant and represented a topical exposition of the key debates as related to the phenomena.

## **2.3.2 Authority**

### **2.3.2.1 Key journals**

A scientific journal is a publication which is published on an on-going basis and is intended to report any new research relating to the subject of the journal by scientists.

#### ***2.3.2.1.1 TBI and MTBI***

The researcher used international peer reviewed interdisciplinary journals that focused on factors relating to MTBI and Road Traffic Accidents and that focused on either a qualitative or mixed methodology on TBI. The researchers made use of online open access journals that focus on TBI, open access journals that covered publications in TBI and Road Accident Injuries and internationally multidisciplinary peer-reviewed journals that cover research on TBI and any legal matters.

The researcher used additional journals to cover this topic widely.

#### ***2.3.2.1.2 Methodology***

The researcher made use of interdisciplinary journals that were published and explained the mixed methods of conducting data analysis. The researcher found that the journals

that were international interdisciplinary peer reviewed were the preferred journals for the study.

#### **2.3.2.2 Key authors**

Authorship: Scientists that have written scientific articles on different themes that are published in journals that are relevant to TBI and Road Accident Injuries.

##### ***2.3.2.2.1 TBI, MTBI and Road Accident Injuries***

The researcher widely researched using many sources of information and a vast number of articles. After perusing through the articles, the researcher picked a few authors who contributed to the shaping of this study.

These sources are the key ones that studied TBI, MTBI and Road Accident Injuries.

##### ***2.3.2.2.2 Methodology***

The researcher selected the below authors who evidently shaped the current study; the researcher discussed the different methodologies that were used by the different authors. These guided the researcher in selecting an appropriate methodology.

#### **2.3.2.3 Key search engines**

Search engine: a search engine is a web-based tool designed to search for data on specific information. The key search engines used were Cochrane Library, Google Scholar, ERIC, Global Health, Global Health Libraries, Research Gate, Pedro, ScienceDirect and Scopus.

#### **2.3.2.4 Literature sources**

A thorough search of a body of literature aimed at finding information and answers about a topic under study is called a Literature source. A literature review has three different sources which are primary, secondary, and tertiary sources.

##### **➤ Primary**

A primary source of data is raw materials that include recordings, interviews, and software that a researcher can use to collect first-hand information. Primary sources can also include academic journals or use the original article, such as historical documentation (Trafford & Leshem 2008:73).

##### **➤ Secondary**

A primary source is a study which is usually prepared to analyse, evaluate, interpret or criticise a primary source. These are called secondary sources because they were created after the event had occurred. Secondary sources do not produce any new and original research.

##### **➤ Tertiary**

Tertiary sources include dictionaries and encyclopedias and any other documents that are prepared as a compilation of other sources. These compilations may come from Government reports and any other reports from different institutional bodies.

### 2.3.3 Currency

The literature review investigated studies that were current and used those as the key articles in shaping the study. The older articles that were used are articles that have had a notable impact in knowledge relating to the study topic.

## 2.4 INTENSE READING AND ANALYSIS OF THE SELECTED ARTICLES

### 2.4.1 Inclusion of sources of data

All relevant articles that were found were included as part of the sources that will need to be reviewed. The irrelevant articles were excluded from the study.

Out of 82 sources the researcher selected 33 as the key sources of information and the key articles that shaped the study. The 82 authors all used either qualitative, quantitative, or mixed methods for their research. From the thorough reading of 154 articles the researcher selected 82 to be analyzed. The researcher selected the journals while guided by the current study design.

*Table 1: Comparison across the articles*

|                                    | International<br>Journal<br>Qualitative<br>Methods | of<br>Inquiry | Qualitative<br>Research | Qualitative<br>Health<br>Research | Total<br>articles |
|------------------------------------|----------------------------------------------------|---------------|-------------------------|-----------------------------------|-------------------|
| Total Articles identified          | 154                                                | 18            | 24                      | 109                               | 324               |
| Articles selected for<br>relevancy | 82                                                 | 9             | 10                      | 17                                | 77                |
| Relevancy in greater<br>depth      | 33                                                 | 5             | 6                       | 9                                 | 30                |

Table 1 illustrates a list of all the identified and visited journals from which the analyzed articles were found. Notably, the studies of relevant literature reviewed tended to focus a lot on women and children.

All relevant articles that were found were included as part of the sources that will need to be reviewed. The irrelevant articles were excluded from the study.

The following Table 2 illustrates the key articles that have been included in this study.

*Table 2: Articles used and the inclusion criteria – Revised*

| <b>Title &amp; Author</b>                                                                                | <b>Purpose/ Findings of the study</b>                                                                                                                                                                   | <b>Method/<br/>Sampling</b> | <b>Sample size</b>          |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|
| The Epidemiology of Traumatic Brain Injuries (TBI)- A Literature Review.<br><br>* Kaylan, et al., (2007  | The purpose of this paper is to place in perspective, the epidemiology of TBI, by looking at the published literature in the rest of the world. The findings are that the incidences are high.          | Secondary                   | N/A                         |
| Traumatic brain injury: The South African landscape.<br><br>*Naidoo, 2013:                               | Background on TBI. CONCLUSION: SA needs improved data on TBI to develop protocols.                                                                                                                      | Secondary                   |                             |
| An audit of traumatic brain injury (TBI) in a busy developing-world trauma service exposes a significant | To determine the burden of TBI and the adequacy of available resources to manage in the Pietermaritzburg Metropolitan Trauma Service (PMTS). 301 patients were treated for TBI in PMB. The mean age was | Secondary                   | 2 632 males and 564 females |

| <b>Title &amp; Author</b>                                                                                        | <b>Purpose/ Findings of the study</b>                                                                                                                                                                                                                                                                                     | <b>Method/<br/>Sampling</b> | <b>Sample size</b>                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| deficit in resources available to manage severe TBI.<br><br>*Jeromel, et al., 2017                               | 27.4 (standard deviation 14.4) years.<br>Resources not enough to manage TBI patients                                                                                                                                                                                                                                      |                             |                                                                                                                                                |
| Incidence of traumatic brain injury in the United States, 2003.<br><br>*Rutland-Brown, et al., 2006              | Review on the causes of and how many TBI injuries in the U.S.<br>CONCLUSION: Leading cause of TBI were RTA and falls.                                                                                                                                                                                                     | Secondary                   |                                                                                                                                                |
| Manual of Traumatic Brain Injury : Assessment and Management.<br><br>*Zollman, 2006.                             | Defining of the different types of head injuries                                                                                                                                                                                                                                                                          | Secondary                   |                                                                                                                                                |
| Disease and Mortality in sub-Saharan Africa<br><br>*Jamison, et al., 2006                                        | The most common reasons for Mortality in Sub-Saharan Africa.<br>CONCLUSION: Most common reason for TBI in RSA it RTA                                                                                                                                                                                                      | Secondary                   |                                                                                                                                                |
| An Extended Glasgow Coma Scale (GCS-E)With Enhanced Sensitivity to Mild Brain Injury.<br><br>*Nell, et al., 2000 | The Glasgow Coma Scale–Extended (GCS-E) was developed to flag mild cases of concussion. Wide use of the GCS-E would hold mild traumatic brain injury cases in the treatment loop, improve access to counselling, rehabilitation services, and personal injury compensation, and reduce the “cognitive dissonance” between | Quantitative                | The GCS-E was applied to 561 consecutive admissions with GCS scores of 13 to 15 at two hospitals in South Africa and two in the United Kingdom |

| Title & Author                                                                                                                                        | Purpose/ Findings of the study                                                                                                                                                              | Method/<br>Sampling | Sample size |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------|
|                                                                                                                                                       | victims of mild traumatic brain injury and treating professionals                                                                                                                           |                     |             |
| Clinical trials for paediatric TBI. In Paediatric Traumatic Brain Injury: New Frontiers in Clinical and Translational Research<br><br>*Adelson, 2010; | Lessons about TBI in childhood and the challenges. CONCLUSION: GCS unreliable for determining TBI in children; TBI more common than burns or poisoning in emergency departments             | Secondary           |             |
| Traumatic brain injury<br><br>* Blennow, et al., (2016).                                                                                              | How novel biomarkers, animal and human studies are contributing to the understanding of the consequences of TBI on the development of AD-like pathology, CONCLUSION: TBI can cause dementia | Secondary           |             |
| When physics meets biology: low and high-velocity penetration, blunt impact and blast injuries to the brain<br><br>*Young, et al., (2015)             | Elements of physics of the various TBI types, Elements include ballistic, blast, blunt trauma and accelerative forces. RESULTS: Diagnostics and Therapy of MTBI is very difficult.          | Secondary           |             |
| Clinical characteristics and pathophysiological mechanisms of focal and diffuse traumatic brain injury                                                | The clinical consequences of TBI and current concepts of the pathological processes underlying damage of nerve cells and their                                                              | Secondary           |             |

| <b>Title &amp; Author</b>                                                                                                                                                           | <b>Purpose/ Findings of the study</b>                                                                                                                                                                 | <b>Method/<br/>Sampling</b> | <b>Sample size</b>                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------|
| *Andriessen, et al., (2010).                                                                                                                                                        | axons. RESULTS: Experimental trials have been successful but treatment on humans has not been successful                                                                                              |                             |                                                                              |
| The reliability of the Glasgow Coma Scale: A systematic review.<br><br>*Reith, et al., (2016)                                                                                       | Reliability of the GCS. RESULTS: Reliability of GCS was adequate                                                                                                                                      | Secondary                   | 52 studies identified which determined reliability of GCS on 13142 patients. |
| Predicting outcome after traumatic brain injury: development and International validation of prognostic scores based on admission characteristics<br><br>*Sederberg, et al., (2008) | Is TBI a leading cause of death and disability? RESULTS: Early prediction of outcome helps health care delivery                                                                                       | Quantitative                | n=8509                                                                       |
| Principles of Neurological Surgery<br><br>*Ellenbogen, et al., (2018)                                                                                                               | Defining TBI, MTBI and Neurological Surgery.                                                                                                                                                          |                             |                                                                              |
| Mild Traumatic Brain Injury After Motor Vehicle Collisions: What Are the Symptoms and Who Treats Them? A                                                                            | 1 year course of symptoms after MTBI from RTA and care-keeping. RESULTS: sleep disturbance, tiredness, dizziness, memory loss, impaired vision, impaired hearing, headache, neck pain, back pain, 75% | Quantitative                | n=1716                                                                       |

| <b>Title &amp; Author</b>                                                                                                                              | <b>Purpose/ Findings of the study</b>                                                                                                                                                                                             | <b>Method/<br/>Sampling</b> | <b>Sample size</b>                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------|
| Population-Based 1-Year<br>Inception Cohort Study<br><br>* Hartvigsen, et al., (2014)                                                                  | reported having more than 3<br>symptoms and 30% body pain. Care-<br>keeping continues for 1 year after<br>accident.                                                                                                               |                             |                                                                                       |
| Long-Term Outcomes after<br>Uncomplicated Mild<br>Traumatic<br><br>Brain Injury: A Comparison<br>with Trauma Controls<br><br>*Ponsford, et al., (2011) | Tests undertaken on traumatic brain<br>injury and whether litigation took<br>place. RESULTS: Few participants in<br>either group were engaged in<br>litigation. MTBI resulted in reduced<br>concentration and memory difficulties | Experimental                | MTBI allocated to<br>intervention n=123.<br><br>TC allocated to<br>intervention n=100 |
| Traumatic brain injury: A risk<br>factor for Alzheimer's disease.<br><br>* Sivanandam & Thakur,<br>(2012)                                              | Can TBI cause Alzheimer's?<br><br>CONCLUSION: TBI can lead to<br>Alzheimer's; 30% Alzheimer's deaths<br>are due to TBI                                                                                                            | Secondary                   |                                                                                       |
| The Supreme Court and the<br>Attitudinal Model Revisited.<br><br>* Segal & Spaeth, (2002)                                                              | Does Judicial Independence exist in<br>the U.S. RESULTS: Decisions driven<br>by the Constitution, Judges seen as<br>politicians                                                                                                   | Secondary                   |                                                                                       |
| The Judicial Process : Law,<br>Courts, and Judicial Politics<br><br>*Banks & O'Brien, (2016).                                                          | The role of courts in American society<br>and elsewhere. The politics behind<br>judicial process.                                                                                                                                 | Secondary                   |                                                                                       |

| Title & Author                                                                                                | Purpose/ Findings of the study                                                                                                                                                                | Method/<br>Sampling | Sample size |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------|
| <p>The Judicial Process: Realism, Pragmatism, Practical Reasoning and Principles.</p> <p>* Thomas, (2005)</p> | <p>Bridging gap between legal theory and judicial practice. RESULT: Judicial decisions driven by theory more than practical situation</p>                                                     | <p>Secondary</p>    |             |
| <p>Rules and Principles: A Theory of Legal Certainty</p> <p>* Braithwaite, (2002).</p>                        | <p>Are decisions made according to rules or standards. RESULTS: Some decisions are politically influenced, Other decisions made due to incompetence and therefore guidance manual needed.</p> | <p>Secondary</p>    |             |
| <p>The Collegial Game</p> <p>* Maltzmann, et al., 2000</p>                                                    | <p>Supreme Court Justices as strategic actors in decision making. RESULTS: Decisions based on policy views, Also influence from colleagues</p>                                                | <p>Secondary</p>    |             |
| <p>Strategic Judicial Decision Making</p> <p>* Spiller &amp; Gely, (2007).</p>                                | <p>Legislative discretion in decision making in the U.S. RESULTS: Some stages room for decision making other stages politically influenced</p>                                                | <p>Secondary</p>    |             |
| <p>Modeling Supreme Court strategic decision making: The congressional constraint.</p>                        | <p>The impact of institutional constraints on the U.S. Supreme Court's decision making, RESULT: Ideologies matter, Court sometimes</p>                                                        | <p>Qualitative</p>  |             |

| <b>Title &amp; Author</b>                                                                                                                                                                  | <b>Purpose/ Findings of the study</b>                                                                                                                                                                                                                 | <b>Method/<br/>Sampling</b> | <b>Sample size</b>                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------|
| * Bergara, et al., (2003)                                                                                                                                                                  | affected by politics, When court constrained it responds strategically                                                                                                                                                                                |                             |                                                                                            |
| Draft Policy on The Restructuring of the Road Accident Fund as Compulsory Social Insurance in Relation to the Comprehensive Social Security System<br><br>* Department of Transport (2010) | Policy relating to the RAF and CSIR in South Africa                                                                                                                                                                                                   | Secondary                   |                                                                                            |
| Mild traumatic brain injury after traffic collisions: a population-based cohort study<br><br>* Cassidy et al., (2004)                                                                      | To study the incidence and claim closure of traffic related mild traumatic brain injury and the effect of insurance factors.<br><br>Mild traumatic brain injury incidence and claim closure is affected by both health and insurance related factors. | Quantitative                | 657 adults, 18 years or older,                                                             |
| A longitudinal study of the relationship between financial compensation and symptoms after treated mild traumatic brain injury<br><br>* Paniak et al., (2002)                              | Examining the relationship between financial compensation and symptoms of MTBI. RESULTS: No relationship found between the 2 variables.                                                                                                               | Quantitative                | n=50 not receiving financial compensation and n=18 those receiving financial compensation. |

In the latter part of the literature identification process, the researcher was able to draw on all sourced literature and from that, deduce the themes and critical discussion points that were dominant in relation to the phenomena. This thematic alignment represents a key step within the development of a thematic review of literature and gave direction to the discussion of the above-cited studies and other related literature sources.

#### **2.4.2 Exclusion of sources of data**

The researcher discarded 72 articles due to irrelevance in relation to the study topic.

All the articles that were found to be irrelevant and did not contribute to the topic were discarded and not included as part of the review. For this study, an article was found not to be relevant if it did not discuss any of the issues below:

- was not discussing road accidents and/or MTBI.
- The presentation was not scientific.
- The article was not peer reviewed.
- The article was not current or considered to be a very respected and important piece of literature.
- There was no clear methodology used.
- The results of the study were not communicated.
- the article was not written in English.

## **2.5 CRITICAL ANALYSIS OF SELECTED ARTICLES**

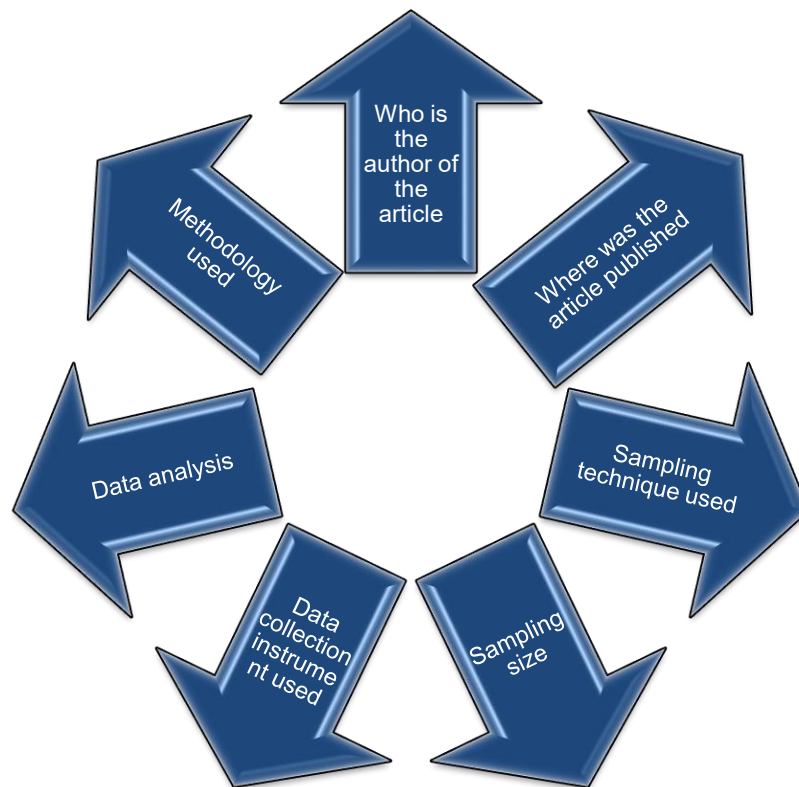
The critical appraisal approach should be used to review pieces of literature (Aveyard, 2010: 111). For this study, the researcher used the Seven Spike Critical Review which is explained below to critically analyse the literature.

### **2.5.1 The Seven Spike Critical Review Tool**

Seven questions were used to criticize the article. These seven questions form the Seven Spike Critical Review tool. The seven questions that were asked included the following:

- Who is the author of the article?
- Where was the article published?
- How was the sampling technique and was it consistent with the research design?
- What was the sample size in relation to the research design?
- What was the type of data collection instrument used in relation to the research design?
- How was the data analysed?
- What methodology was used to analyse the data?

Figure 5 is an illustration of the seven spikes critical review tool (SSCRT) used in this study.



*Figure 4: Seven Spikes Critical Review Tool*

**Spike 1:** Who is the author of the article?

When a researcher has invested religious, political, social, or financial interests in the study conducted there are possibilities of Conflict of Interest. These interests sometimes negatively affect the professionalism of the researcher. Usually, studies that focus on only women and children or they are racial disparities have a possibility of bias.

**Spike 2:** Where was the paper published?

If the paper was published for example in a politicized region, it is possible that the remarks were biased towards a political agenda to avoid conflict.

**Spike 3:** Sampling technique used.

A sampling technique that is not consistent with the research design affects the results negatively. The researcher excluded any research that did not have a clear sampling technique relative to the research design.

**Spike 4:** Sampling size

Usually, small sample sizes are hard to ensure that the sample participants were selected using a credible technique. The researcher excluded any research that did not have a satisfactory sample size relative to the research design.

**Spike 5:** Data collection instrument used.

The researcher excluded all the research papers that did not disclose what data collection instrument was used.

**Spike 6:** Data analysis

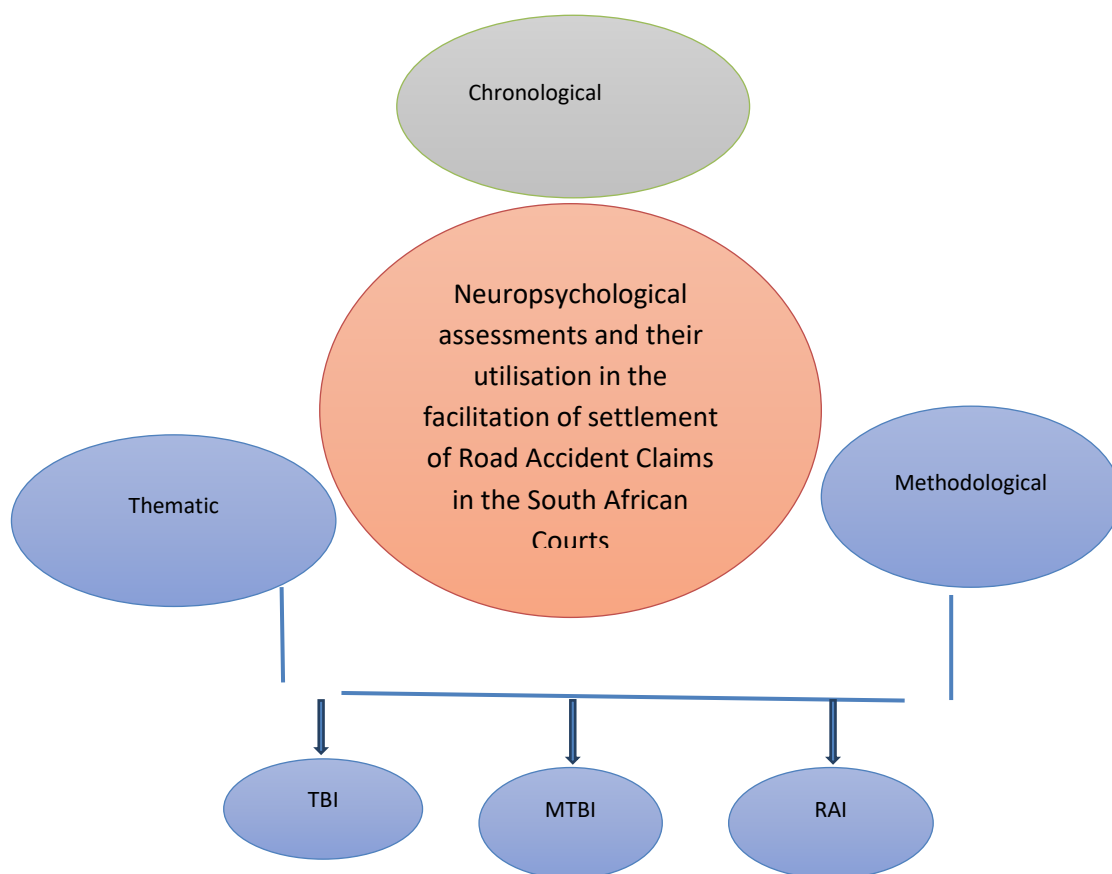
The studies where research results were reported without going through a clear and understandable data analysis were excluded from the review.

**Spike 7:** Methodology used

The researcher excluded all sources that did not have a clear methodological design.

Articles are not consistent in the quality, purpose, and content due to the various situational factors faced when the research is conducted. These factors include the funding challenges faced by the researcher, the conditions under which the research was conducted, the area or community where the research was conducted and the skills and calibre of the researcher.

The researcher used the seven spikes critical review tool (SSCRT), but even so, was guided by the principles of thematic review, chronological review, and methodological review which are demonstrated below in Figure 6:



*Figure 5: Organising principles*

### **2.5.2 Thematic and methodological review of the literature**

The current study is analytically inductive and therefore the researcher conducted a thematic and methodological review guided by the primary objective of the current study, which centers on Neuropsychological assessments and their utilization in the facilitation of settlement of Road Accident Claims in the South African Courts. The researcher developed the themes of the study through the literature review and from this, the researcher also established what the gaps in knowledge are.

In the methodology review the researcher offers a critical assessment of the methodologies used by the different researchers relative to the research paradigm used. There are limited South African studies focusing on TBI, MTBI and Road Accident Injuries, and as such, most of the studies reviewed related to international research.

The following themes were developed, and the thematic and methodological review was reported using these themes as below:

## **2.6 A REVIEW OF THE LITERATURE AND EMERGING THEMES**

### **2.6.1 Situational analysis of TBI**

The phenomenon of traumatic brain injury (TBI) represents a critically important area of study, particularly given its complexity, variability, and wide-ranging impact on individuals and health systems. Part of this complexity arises from the differing definitional perspectives that exist across clinical, research, and medico-legal contexts regarding the nature and consequences of TBI. As such, it is important to begin by clarifying the conceptual and epidemiological foundations of TBI.

Traumatic brain injury is a frequently occurring medical condition resulting from an external mechanical force applied to the head, which may subsequently lead to temporary or permanent impairment in cognitive, physical, and psychosocial functioning, and in severe cases, death (Tagliaferri et al., 2006; Rutland-Brown et al., 2006; Kaylan et al., 2007; Naidoo, 2013). The global burden of TBI is substantial, with incidence rates varying across regions. In Sub-Saharan Africa, the occurrence of TBI has been estimated to range between 150 and 170 per 100,000 individuals, which is higher than the global average of approximately 106 per 100,000 (Jeremiah et al., 2017).

Population-based studies conducted in Sub-Saharan countries, including South Africa, indicate that road traffic accidents are the leading cause of TBI (Jamison et al., 2006). This is particularly relevant within the context of the present study, given the significant role of Road Accident Fund (RAF) claims in the medico-legal evaluation of brain injuries. In addition to road traffic accidents, other major causes of TBI include falls and interpersonal violence, both of which contribute significantly to overall incidence rates.

International evidence further supports the role of road traffic accidents and falls as leading contributors to TBI. Studies conducted in the United States have identified road traffic accidents and falls as major causes of closed head injuries (Geddes et al., 2001). Similarly, research by Murray et al. (1999) found that falls accounted for approximately 23.8% of all recorded TBI cases, making them one of the most significant contributors to overall incidence. In Canada, falls and road traffic accidents collectively account for nearly half of all TBI cases (Brain Injury Canada, 2015).

In addition to accidental causes, interpersonal violence represents an important and, in some contexts, increasing contributor to TBI incidence. Studies conducted in South African trauma settings have identified interpersonal violence as a leading cause of TBI, accounting for a notable proportion of cases (Jeremiah et al., 2017). Similarly, Murray et al. (1999) reported that violent assaults contributed to approximately 5% of TBI cases. Open head injuries are frequently associated with assaults involving weapons such as firearms and knives (Najem et al., 2018).

While severe traumatic brain injury is often associated with high mortality and clear neurological impairment, mild traumatic brain injury (MTBI) constitutes the most commonly occurring form of TBI. Despite its classification as “mild,” MTBI can have significant adverse effects on the long-term performance and health of individuals (Thornhill et al., 2000; Jurkovich et al., 1995). However, its effects are often not immediate, not easily measurable, and may be complicated by non-injury-related factors, making it particularly challenging to diagnose and evaluate.

These characteristics contribute to ongoing challenges within both clinical and medico-legal contexts. The variability in causes, presentation, and outcomes of TBI underscores its complexity as a clinical phenomenon and highlights the need for a more nuanced understanding of MTBI. This is especially important in contexts where clinical interpretation intersects with legal decision-making, as is the case in the adjudication of compensation claims.

### **2.6.1.1. Road Traffic Accidents and TBI**

Global data indicates that the highest proportion, which is 60% of all TBIs, were caused by RTA (Jeromel, et al., 2017; Rutland-Brown, et al., 2006). Males younger than the age of 45 are more likely to have TBI because of their high exposure to the RTA (Naidoo, 2013). The mechanism of the accident and force of the impact during collision will affect the extent of TBI (Zollman, 2006). High-energy vehicle impact can be classified as a vehicle which is travelling at initial speed greater than 64km/h at collision which large deformation of the passenger compartment that is greater than 30 cm and the process of removing a person in a vehicle that has been involved accident greater than 20minutes (Vosa, et al., 2012) .

TBIs caused by RTA are a health concern especially in the case of TBI that does not result in immediate death but, results in cognitive disability, and an increased risk of epilepsy (Jamison, et al., 2006). This increases the likelihood that MTBI can be overlooked, as it does not result in immediate death; the onset of symptoms is often delayed and consists of a high proportion of all TBIs. This silent nature of MTBIs has been acknowledged as cause of concern and with reference to the current study, it served as one of the key driving motivators for the conceptualization and empirical focus on the chosen study area. This becomes more pronounced when the head injury is mild or a concussion, with medical practitioners having strikingly vast opinions regarding the possible long-term consequences that can be expected from such injuries (a mTBI or concussion).

In a study conducted in Pietermaritzburg, South Africa, a sample of TBI medical records at two major hospitals (Grey's and Edendale hospitals), found that 16.7% of TBI resulted from interpersonal violence, 16.7% were from collisions between motor vehicles and 14.1% were from collisions between pedestrians and motor vehicles. (Jeromel, LaingII, BruceIII, SartoriusIV, BrysiewiczV, & Clarke, 2017). In a study of 123 MTBI adult patients of Alfred Emergency & Trauma Centre (E&TC) in Melbourne, Australia, 40.9% of the injuries were caused by road traffic accidents that represented the highest proportion in all the causes of injuries and more than three quarters of the MTBIs were soft tissue related or lacerations (Ponsford, Cameron, Fitzgerald, Grant, & Mikocka-Walus, 2011).

A further complication regarding RTA is that they a lot of them are poly-trauma which often leads to emergency services and casualty officers in emergency hospitals and clinics focusing a lot on the physical and/or orthopaedic injuries, often to the omission or neglect of the head injury. This results in a significant number of head injured victims missed with no radiological investigations having done as it perhaps was considered not necessary, especially because the physical injuries were more prominent and urgent.

As most MVAs happen in moving vehicles, a lot of them result in frontal lobe injuries or coup-contra coups, which most likely ends up affecting the frontal lobe and other lobes often leading to diffuse axonal injury. The frontal lobe of the brain is the largest lobe and one that usually mostly gets injured. A combined decision mechanism based on a combination of quantitative severity measures such as Glasgow Coma Scale (GCS) and qualitative classification factors can be used in the classification and assessment of MTBI (NICE, 2007). This section will investigate different measuring scales and approaches of

classification of TBI which encompass quantitative measures of clinical severity, broad aetiology, involvement, and injury progression.

#### **2.6.2.1 The Glasgow Coma Scale (GCS)**

The Glasgow Coma Scale (GCS) is a frequently used quantitative measurement of the period and intensity of the undermined consciousness of the individual following the head injury (Nell, Phil, Yates, & Kruger, 2000). The main advantage of this quantitative measure is that it is accepted by the international community, easy to apply, familiar as it is frequently used and is exceptionally reliable predictor. (Nell, et al., 2000; Steyerberg, et al., 2008). The scale has limitations in distinguishing the differences in severity of minor cases of TBI as there is a tendency of individuals to score higher when they are initially assessed because they will still be well oriented. Furthermore, it is difficult to measure a complex and non-homogenous process using a single score and the GCS has been found to be unreliable and inconsistent in the classification of TBI in young children (Stanford & Dorflinger, 2009; Adelson, 2010; Miller, 2007). Despite this limitation, developing countries still consider GCS as a reliable quantitative measure and will normally consider a patient for admitting based on a score of 13 or lower.

According to Barlow (2012), Zollman, (2006) and Romer et al., (1995), the following classifications and expected mortality can be used to classify the severity of brain injury:

- Mild/Minor TBI: GCS 13-15; with the rate of mortality being 0.1%. In this case, the patient is awake with some possible confusion but can still exchange information in the form of holding a conversation, has to ability to listen and follow instructions.

- Moderate TBI: GCS 9-12; with the rate of mortality being 10%. In this case, common symptoms include a state of drowsiness, but the patient has the ability to open their eyes and respond to painful stimuli and is not in a state of a coma.
- Severe TBI: GCS <9; with the rate of mortality being 40% and the chances of disability being in the range from 55% to 77% (Cremer, et al., 2006; Myburgh, et al., 2008). These patients have high chances of falling into a state of coma and may exhibit behaviour of a person with a non-functional or significant brain injury such as failure to communicate using appropriate words, making sounds that are difficult to comprehend and failure to respond to stimuli of pain.

#### **2.6.2.2 Integrated approaches to GCS**

While the Glasgow Coma Scale (GCS) remains one of the most widely used tools for the initial assessment and classification of traumatic brain injury (TBI), it has increasingly been recognised that reliance on GCS alone is insufficient for accurately identifying and characterising mild traumatic brain injury (MTBI). This is particularly the case in clinical and medico-legal contexts, where subtle or delayed impairments may not be adequately captured by a single measure of consciousness.

In response to these limitations, there has been a growing emphasis on integrated approaches to TBI assessment. Such approaches combine the quantitative classification provided by the GCS with additional clinical indicators, including duration of loss of consciousness (LOC), post-traumatic amnesia (PTA), neurobehavioral symptoms, and findings from neuroimaging techniques. This multidimensional approach is considered

more effective in improving the identification and classification of TBI, particularly in cases of MTBI where objective findings may be limited (Blennow et al., 2016).

Within this integrated framework, MTBI is typically defined using a combination of criteria, including a GCS score ranging from 13 to 15, loss of consciousness of 30 minutes or less, post-traumatic amnesia of less than 24 hours, and the presence of transient neurological or cognitive disturbances (Blennow et al., 2016; McAllister, 2011; Vosa et al., 2012). These criteria reflect an attempt to move beyond a purely numerical classification of injury severity and instead capture the broader clinical picture associated with MTBI.

Importantly, the use of integrated approaches highlights the limitations of relying solely on GCS scores in determining injury severity and long-term outcome. Individuals presenting with similar GCS scores may experience markedly different functional outcomes, depending on a range of factors including injury mechanism, individual vulnerability, and contextual influences. This variability has significant implications for both clinical assessment and medico-legal evaluation, where accurate classification of injury is essential.

Further developments in this area have led to the expansion of the traditional GCS framework. The World Health Organisation-supported development of the Glasgow Coma Scale–Extended (GCS-E) represents one such effort to enhance the sensitivity of assessment. The GCS-E incorporates measures of post-traumatic amnesia into the standard GCS framework, thereby providing a more comprehensive assessment of cognitive and behavioural functioning following injury (Nell et al., 2000).

Empirical investigations of the GCS-E have demonstrated its potential utility in improving the identification of mild concussion and prolonged confusion. For example, Nell et al. (2000) examined the application of the GCS-E in both South African and United Kingdom clinical settings, including large hospital samples such as Chris Hani Baragwanath Hospital and Glasgow Royal Infirmary. Their findings indicated that the GCS-E was more sensitive in detecting cases of mild concussion and identifying patients who exhibited confusion persisting beyond 15 minutes, which may not be adequately captured by standard GCS scoring.

Despite these advances, challenges remain in the consistent application and interpretation of integrated assessment approaches. Variability in clinical practice, differences in training, and the influence of contextual factors may all contribute to differences in how these tools are utilised and interpreted. This variability is particularly relevant within medico-legal contexts, where the classification of injury severity plays a central role in the adjudication of claims.

The limitations of single-measure approaches and the variability associated with integrated models necessitate the need for structured and standardised frameworks for the assessment of MTBI. This is especially important in contexts where clinical findings are used to inform legal decision-making, as inconsistencies in assessment may translate into variability in outcomes.

#### **2.6.2.3 Classification by broad aetiology**

In addition to using severity quantitative measures, TBI can be classified through the method that it occurred also referred to as broad aetiology. According to McKee &

Daneshvar, (2015) and Zollman, (2006), TBI can be classified using broad aetiology as follows:

- Blunt TBI: occurs when there is a direct impact to the head as a result of an external force, rapid acceleration or deceleration and rapid circular forces. It is typically found in the setting of motor vehicle-related injury, falls, crush injuries, or physical altercations.
- Penetrating TBI: occurs when an object pierces the skull and breaches the dura mater, seen commonly in gunshot and stab wounds.
- Blast TBI: commonly occurs after bomb explosions and warfare, due to a combination of contact and inertial forces, overpressure, and acoustic waves. The damage occurs because of transfer of high quantities of heat, potential and electromagnetic energy to the brain which results in impairment of the blood brain barrier.

According to Kaylan, et al., (2007) this classification is based on the way that the injury to the brain arises which are blunt trauma, penetrating trauma and combination of acceleration and deceleration forces. The difference in this is classification is that blast trauma is not mentioned as a possible mechanism through which TBI can occur. Young, et al., (2015) further splits penetrating TBI into low velocity and high velocity penetrating trauma. In the case of Low velocity penetrating TBI the injury is mainly caused by cuts and compressive forces on the brain along the trajectory of the penetrating object. High velocity penetrating TBI is the most common and causes more serious injuries due to the high energy impact that causes damage to the brain. A wound is inflicted on the brain through the application of high compressive forces in the trajectory of the penetrating object. Furthermore, application of tensile and shear forces results in damage of tissue in

adjoining areas of the brain. Finally, the high velocity penetrating object causes damage to blood vessels in the brain resulting in bleeding.

#### **2.6.2.4 Classification by involvement**

TBIs can alternatively be categorised by the characteristics of pathology and area of structural injury involved, such as in diffuse or focal. These two types of brain injury frequently occur simultaneously, and this makes it difficult treat such cases with single treatment (Skandsen, Kvistad, Solheim, & al., 2010).

Focal brain injury (FBI) is a result of the impact of forces on the skull which result in compressive forces acting on the tissue below the cranium at the point of impact or brain tissue that is situated across the point of impact (Andriessen, et al., 2010). This includes compression and trauma to the focal medial temporal lobe, specific lesions such as contusions, subdural and epidural hematomas, intracranial haematomas, infarctions, lesions axonal tears, cranial nerve evulsions, and skull fractures (Ahmed, et al., 2000; Andriessen, et al., 2010). The resultant of focal brain injury includes the loss of consciousness, falling in a state of coma, weakening and impairment of the motor pathways in the brain and posttraumatic amnesia that is mainly a result of the trauma and compression to focal medial temporal lobe (Ahmed, et al., 2000; Iverson, 2005; Jang, 2009). FBI can easily be detected and identified using a CT scan and MRI technology (Andriessen, Jacobs, & Vos, 2010). Therefore, imaging technology can be used with ease to identify and classify the extent of brain injury in the case of FBI

Diffuse brain injury includes diffuse axonal injury (DAI), hypoxic brain injury, diffuse cerebral oedema, or diffuse vascular injury (Reith, Brande, Synnot, Gruen, & Maas,

2016). Diffuse brain injury is mainly a result of high acceleration and deceleration resulting in blunt TBI which is usually caused by high-speed road traffic accidents (Andriessen, et al., 2010; Zollman, 2006). The most frequently occurring resultant of diffuse brain injury is diffuse axonal injury (DAI) which causes considerable damage to the white matter and can result in the patient falling into a state of coma for periods longer than 6 hours. (Adam, Doyle, Ford, & al., 1989). The reason for the occurrence of DAI is that the limit of elasticity of the axons is surpassed due to the occurrence of events such as the high-speed road traffic accidents (Meythaler, Peduzzi, Eleftheriou, & al., 2001). This results in permanent strain to the axons that comprises their ability to function normally.

In contrast to FBI, DAI is not easily identified by imaging technologies such as CT and MR due to shear injuries that occur at same time with the DAI and obscure the detection using these technologies (Li & Feng, 2009). Technologies such as T2 gradient echo and diffusion tensor imaging are new techniques of imaging that have improved the detection of DAI. (Smith, et al., 2003; Bihan, 2003).

#### **2.6.2.5 Classification by injury progression**

MTBI can be categorised according to the type of injury based on the cause of the injury and the time the injury initially occurs. Primary injury is a type of head injury that initially occurs because of direct impact of mechanical forces to the head (Zollman, 2006). It usually results in structural damage such as damage to vessels and tissue in brain. The consequence of structural damage of primary TBI may include skull fracture, contusion, haematoma, subarachnoid or focal haemorrhage and axonal shear.

Subarachnoid haemorrhage (SAH) is a result of bleeding around the area in the brain known as the subarachnoid area because of ruptured brain vessels (Harvard Health Publishing, 2018). The bleeding in the subarachnoid area results in large compressive forces being applied to the brain that reduces the ability of the brain to function properly. In moderate and severe cases of TBI, SAH is a cause of concern because it can have adverse consequences to the health of a patient after a 6-month period. (Steyerberg, Mushkudiani, & Perel, 2008).

Skull fracture is the rupture of the skull caused by severe impact to the head such as in the case of blunt or penetrating TBI (Zollman, 2006). Skull fractures can be categorised into linear, depressed, diastatic and base skull fracture. Linear skull fracture is the most frequently occurring and occurs when there is fracture in the skull but there is no movement of the skull bones and has the least adverse effect on the patient. Base skull fracture has the most adverse effects on the patient, occurs when there is a fracture of the base skull bone covering the brain, and may cause leakage of cerebrospinal fluid coming out of the nose or ears of the patient (Wilberger & Gordon Mao, 2019). Depressed fractures usually cause seizures and can be surgically treated through elevation of the depressed skull (Temkin, 2001; Zollman, 2006).

Contusions are caused by lesions of the surface of the brain which may result in the rupture of blood vessels in the brain and frequently causes damage in the focal region resulting in FBI (Volpe, et al., 2018 ;Payne-James & Byard, 2016). Most of the contusions are likely occur at the frontal and temporal parts of the brain and to a lesser extent may occur at cerebellum and the brain stem (Ellenbogen, et al., 2012;Ellenbogen, et al., 2018). Contusions are usually detected in patients who have mild to moderate TBI and small

contusions that are identified in patients with mild TBI have no detrimental effect to the life and health of the patient. (Schapira, Byrne, Frackowiak, Mizuno, & Silberstein, 2007). Contusions can be categorised as coup or contra coup injury. Coup injuries occur when the impact of a force on the head directly affects the brain tissue under the point of contact or application of force (Schapira, Byrne, Frackowiak, Mizuno, & Silberstein, 2007). In contrast to this, contrecoup injuries occur on the side that is opposite or remote to the point where the force is applied. Primary traumatic axonal injuries are caused by inertia force on the axons, which transpires at a rapid rate, resulting in a DAI and frequently occurs because of road traffic accidents. (Conn, 2017).

Secondary injuries occur because of pathophysiological outcomes of the primary injury and encompasses various complex neurobiological and chemical successive processes that cause additional damage to the brain (Reith et al., 2016; Galgano, et al., 2017). The successive processes that can occur in minutes, days or weeks involve the production of neurotransmitters by neurons in the brain leading to increased production of intracellular calcium that initiates processes that activate enzymes and free radical that cause the breakdown and damage to brain cells. Consequences of the secondary injury processes also include inflammation, damage to blood-brain barrier, disruption to ionic homeostasis, secondary haemorrhage, Ischaemia, seizures, infection, cerebral edema and increased intracranial pressure (ICP). (Jennet, 2005; Zollman, 2006).

Cerebral edema is the result of changes in the osmosis of brain fluids that results in the decrease of passage of fluids through the blood vessels in the brain (Atala, Lanza, Mikos, & Nerem, 2019). Cytotoxic edema occurs because of the development of an osmotic gradient that causes water to flow into spaces within the brain cells leading to an increase

in the amount of water in brain tissue and causes an increase ICP. Vasogenic edema is caused by disturbance of capillary endothelium in the cerebrum of brain at the blood brain barrier resulting in development of an opposite osmotic gradient, whereby the fluid flows from the spaces inside the cells to spaces outside the cells and similarly hydrostatic pressure results in an increase in ICP (Enna & Bylund, 2008; Atala, et al., 2019). Secondary haemorrhage occurs when there is micro bleeding of the vessels in the brain (Hovda & Glenn, 2014).

### **2.6.3 Symptoms and Impact of TBI**

The correct identification of symptoms of MTBI is important for the correct diagnosis of MTBI. Symptoms of TBI can be temporary, whereby a patient can easily recover in the short term or can be more persistent in the long term. In the case of MTBI, post-concussion symptoms can be a cause of concern especially in cases where they continue to persist in the long term and negatively affect the normal functioning or behaviour of an individual (Friedland & Dawson, 2001). These may include headaches, feeling dizzy, problems maintaining balance, feeling tired, depressed, anxious, irritated and reduction in the ability to memorise information. (Belanger, et al., 2005; Blennow, et al., 2016; Vosa, et al., 2012)

#### **2.6.3.1 Immediate and Short-term symptoms**

Short-term loss of consciousness (LOC) of 30 minutes or less is considered as an important indication of MTBI. (Blennow, et al., 2016; McAllister, 2011; Vosa, et al., 2012). LOC can occur for short periods or long short periods. The longer the duration of loss of consciousness the more likely the patient has experienced severe symptoms. The loss

of consciousness also frequently occurs immediately after MTBI occurs. Hartvigsen, et al., (2014) investigated the 1-year symptoms of 1716 patients following MTBI caused by an RTA in a period of 2 years. The research study found that slightly over one quarter of the patients had experienced immediate LOC (22.6%) immediately after the collision.

PTA immediately after MTBI is another commonly occurring symptom. PTA for a period less than 24 hours is an indicator of MTBI.(Blennow, et al., 2016 ;McAllister, 2011 ; Vosa, et al., 2012; Friedand & Dawson, 2001).Hartvigsen, et al., (2014) found that slightly above one fifth of the patients (22.9%) had experienced immediate PTA immediately after the collision in an RTA for a sample of 1716 patients.

Visual defects in the short term such as feeling dizzy, being unable to see visions clearly and experiencing problems in maintaining balance may occur in the case of MTBI which is a sign of pressure being applied to the brain(Carroll, et al., 2004; Belanger, et al., 2005; Okusanya & Basson, 2020).Vosa, et al., (2012) identified post-traumatic seizures, indications of base skull fracture, fracturing in the form of depression of the skull and vomiting as important symptoms or risk factors in the identification of MTBI.

### **2.6.3.2 Persistent symptoms**

Loss of memory, fatigue and headaches are persistent symptoms that are common over the long term and are likely to occur when a patient has been discharged (Nell, et al., 2000; Belanger, et al., 2005). Headaches can occur repeatedly with increasing levels of pain and periods that can affect the normal activities or functions of a patient. (Okusanya & Basson, 2020). The loss of memory can result in the loss of the ability to retain and use information as well as have a negative effect on the ability to understand new knowledge

(Anderson, et al., 2006 ;Cohen, et al., 2009).These symptoms are likely to affect the performance an individual over the long term and can be overlooked in the initial diagnosis as they occur in the long term. Hartvigsen, et al., (2014) investigated the 1-year symptoms of 1716 patients following MTBI caused by an RTA in a period of 2 years. The research study found that slightly above two out of five of the respondents had fatigue (44%), slightly two out of five respondents had headaches (39%), slightly above one quarter of the respondents had loss of memory (27%) and slightly one quarter of the respondents had feelings of being dizzy (25%) after a period 1 year following the RTA. Ponsford, et al., (2011) found that MTBI patients displayed extremely low scores on Visual Memory within periods of 1 week and 3 months after the occurrence of the injury. However, there was improvement of the visual memory over the long term.

Furthermore, MTBI has been found to cause dementia and increase the risk of a patient having Alzheimer's disease that has a negative effect on the long-term health and performance of the individual (Sivanandam & Thakur, 2012; Uryu, et al., 2007).

Taken together, the foregoing discussion highlights the inherent complexity associated with the classification, assessment, and interpretation of traumatic brain injury, particularly in cases of mild traumatic brain injury (MTBI). The limitations of single-measure approaches such as the Glasgow Coma Scale, the variability introduced by integrated assessment models, and the diverse mechanisms and presentations of injury all contribute to challenges in achieving consistent and reliable diagnosis (Blennow et al., 2016; McAllister, 2011). This complexity is further compounded by the often subtle, delayed, and subjective nature of MTBI symptoms, which may not be adequately

captured through conventional clinical or radiological assessment (Silverberg & Iverson, 2011).

These challenges extend beyond clinical practice and have direct implications for medico-legal processes. In contexts where clinical findings form the basis of legal adjudication, variability in assessment and interpretation is likely to translate into inconsistency in judicial outcomes (Larrabee, 2012). The absence of standardised and consistently applied frameworks for the evaluation of MTBI therefore represents a critical limitation within the current medico-legal landscape.

It is within this context that the role of the judiciary becomes particularly significant. The following section therefore examines the judicial processes involved in the adjudication of MTBI-related claims, with a specific focus on how clinical evidence is interpreted, weighed, and applied within legal decision-making.

#### **2.6.4 Judicial Decision Making**

Secondary to clarifying the contested viewpoints as they relate to the diagnosis of brain injuries, an additional aspect of note related to the way in which the severity of injuries is assumed and processed within the judicial system when it comes to the processing of compensatory payments. This realm is influenced by several factors including principles and working practices as they relate to judicial decision-making. It is this acknowledgement that gave the area of judicial decision-making an essential influencing presence in the current literary review. The beliefs and principles of judges affect the decision a judge makes and are a critical component in the process of judicial decision making (Segal & Spaeth, *The Supreme Court and the Attitudinal Model Revisited*, 2002).

Judicial decision-making is a complex process that is difficult to fully comprehend. The complexity is increased by the fact that judges are continuously creating laws in the process of decision-making (Feeley & Rubin, 1998). According to Klein & Mitchell, (2010) the simplified steps that judges experience when they are faced with a case are as follows:

- Exposure to the case
- Consideration of the preferences of the judge
- Review, comprehend and understand the facts of the case
- Ascertain and establish which policy options are available and applicable
- Allow preferences to influence and motivate
- Study all the necessary data concerning the case including precedents
- Interact with colleagues
- Make a decision based on the intrinsic rights and wrongs of a case

The process above describes simplified steps of the judicial process. The next sections will give an overview of perspectives and limitations of different concepts underlying the complex process of judicial decision making.

From the legal perspective factors that influence disproportionalities and inconsistencies settlement of Road Accident Claims for victims of Mild Trauma Brain Injuries are numerous. For the purposes of the current study, it should suffice to critically evaluate a few. Further, the influence of Neuropsychological assessments has on these factors that are intrinsic to judicial decision making.

To put matters into perspective, the science behind law needs a brief discussion. Law is a subdivision of philosophy. Law is classified as a social science. The main aim behind this science is to solve human problems by providing human solutions. The connection between philosophy and law as a social science stems from the fact that science draws its methodology, principles and its world views from philosophy.

The legal science, as sometimes referred to as, has been greatly shaped by legal philosophy. Some of the characteristics of legal philosophy, as a way of illustration, are as follows:

- It aims to view the law as a whole with its rules and principles, their application and functioning within the matrix of a wider social and political context.
- It is said to be social in nature, a theoretical field of study and integrated in its approach.

To this day legal philosophy continues to shape legal science, for instance there is an idea in legal positivism that law is based on facts and therefore Judges in their judicial-decision making are guided by these facts. One could say legal positivism is the default mode of the South African judiciary.

Judicial decision-making is not a clear cut and tidy science. Judges in their judicial decision making are constrained by multiplicity of factors. Suffice to mention and critically evaluate these factors. Judges are constrained by the facts and evidence before them;

separation of powers between the three arms of government; the 'black' letter of the law; the 'spirit' of the law; the precedent system and determination of quantum.

Law students graduate to be lawyers. Lawyers include Judges, Advocates and Attorneys. During their training they attain certain competencies intended to transform them into legal practitioners. Consequently, they are trained to understand their discipline. By training lawyers are taught that (civil) cases are adversarial in nature and by implication the parties oppose each other with their respective versions of the facts giving rise to the claim before the court.

The allegations regarding the cause of action must be backed up by evidence. Otherwise, the courts are reluctant to entertain claims without evidence supporting them. The way civil cases are adjudicated is that for one to have the case decided in their favor, they will have to persuade the court by proving their case on the balance of probabilities. This simply means that the one with a more convincing version of the facts wins the favor of the Court.

The next sections will give an overview of perspectives and limitations of different concepts underlying the complex process of judicial decision making.

#### **2.6.4.1. Legal Pragmatist Realism**

The perspective of legal pragmatist realism is concerned with a systematic investigation into social and psychological features that influence the process of decision-making (Banks & O'Brien, 2016). Legal pragmatist realism is an empirical, practical, and feasible

approach in the process of judicial decision-making. The pragmatic and realistic nature of legal pragmatist realism ensures that the decision made by a judge is both functional and practical. Pragmatism is dependent on experiences and principles which implies it incorporates both legal theories followed by the experimentation (Thomas, 2005). The real-world experimentation ensures that pragmatism is complementary to realism, which is important to ensure that the law is applicable and realistically addresses the concerns and objectives of the society. This approach integrates the application of predictive scientific methods based on experimentation. In this perspective the law should not be based only on prescribed rules but should be flexible to different ways of evaluation and implementation that reflects the real world. (Thomas, 2005).

Sceptics of legal theory argue that in judicial decision-making, legal theory is either not required at all, has a limited use or that it has exceeded its limitations (Halpin, 2001). Legal pragmatist realism encompasses both legal practice and theory in a way that aims to strike a balance between legal practice and theory based on the application of scientific methods of experimentation. A central attribute of pragmatism is that it does not agree with the idea of complete and unlimited use of theory (Thomas, 2005).

The advantage of legal pragmatist realism is that it incorporates the application of empirical and pragmatic approaches that can improve the quality and prediction capabilities in the process of judicial decision that consists of extensive concepts and is complex (Braithwaite, 2002). Furthermore, there is a real-world perspective of the feasibility of the process of judicial decision-making which can reduce variability and increase predictive capabilities in the process (Thomas, 2005). The real-world perspective also accepts and takes into consideration that there is political influence in

the process of making laws, regulations, and policies. Legal pragmatist realism is appropriate where rules or laws are flexible, there is a high possibility of change in the law and in situations where there is a need for creation of new laws in the process of judicial decision-making.

However, legal pragmatist realism has experienced a reduction of approval from legal theorists because there is an increase in the opposition and reluctance of the use of the scientific method by advocates of legal pragmatist realism. Furthermore, the concepts, issues and arguments for legal pragmatists' realism are not well established, ambiguous, vague, and inexplicit. However, this is expected as the process of judicial decision-making is complex and non-homogenous, and it is difficult to provide structured and non-ambiguous concepts and perspectives of judicial decision-making.

In South Africa with fear of being seen to violate the doctrine of separation of powers the courts are faced with the challenge of having to navigate their mandate with this in mind. In South Africa development of jurisprudence regarding cases of Mild Trauma Brain Injuries is still in its infancy. The reason for this could be found in the above-named doctrine and the fear of being seen violating it. This serves as a constraint on Judges because they do not want to be seen fiddling with policy issues. The road accident fund, which is an independent state institution, has its own definition of how matters are supposed to be compensated in court.

The current policy is that Road Accident Fund should only compensate for serious injuries. A Serious injury when it comes to head injuries is not described by the Road Accident Fund Act. This becomes even harder to have a criterion dealing with Mild

Trauma Brain Injuries. According to section 17 (1A) of the RAF claimants are to be examined by a medical practitioner, to determine if they suffered a serious injury (Government Gazette 42593,2019). RAF provides a list of conditions that are not considered serious injuries, one of them being a whiplash. This is a very concerning and disturbing exclusion as whiplash does not happen in the absence of a violent shake of the head, and possibly the brain, which on its own can cause a concussion, which is a form of brain injury.

A patient that arrives fully conscious in hospital after an MVA where there was no evidence of focal injury will not be treated as a head injury patient. As the medical records are primary and very first documents, the experts assessing and compiling medicolegal reports are likely to rely on the information they provide, and the court is most likely to lean in the direction of not awarding compensation, which would be unfortunate as the claimant might have been a case of a missed brain injury and misdiagnosis. The law would therefore be at pain to avoid awarding compensation as it would be encroaching in the RAF space thus violating the separation of powers. Only the constitutional court of the republic can overrule such decisions.

### **The 'Black Letter' of the Law**

Judges are bound by the facts before them. They apply the law to these facts. For our study Road Accident Fund will be used as an example. When interpreting this legislation our courts often primarily rely on the plain meaning of the text of the law. Thus, in the way to decide compensation for Mild Trauma Brain Injury the court will look for the grammatical meaning of the law to try and find the solution to the case before them.

The plain text theory of interpretation is linked to the separation of powers in that it was misconceived as the way to achieve independence of the three arms of government without appreciating the need for their interdependence. To this day this theory continues to impact on cases of Mild Trauma Brain Injuries. This misconception is based on an ideal world and in the real-world “Mild Trauma Brain Injury” cases are not afforded the equitable settlement. Paradoxically, the Judges are still constrained by the text of the law. They have to find a solution in a confined environment of the plain text of legislation to find the meaning to Mild Trauma Brain Injury cases.

To achieve this, Judges, start with plain meaning of the words in the legislation. So, when interpreting and applying the law plain meaning of the words is given effect to. However, there are times when the meaning is not clear from the text. In practice it is often found that courts are confronted with ambiguous, vague, or misleading words and end up resorting to other means. Personal prejudices may find the way influencing techniques used to find the meaning beyond the text. This may, in turn, result in the Judge failing to appreciate the role and function of neuropsychological assessment in the whole value chain especially when there is an agreement by the neurosurgeons and neuropsychologists, and everyone involved that the injury was a MILD BRAIN INJURY. The debate ends up surrounding the definition of the term Mild, ending up using the literal and meaning of the word, which throws the claim into chaos.

These interpretation tools have unintended consequences. Some of those are contributory factors in how these cases are settled. They create inconsistencies and disproportionate awards for settlement of Mild Trauma Brain Injuries. It is befitting to demonstrate the challenges Judges have to endure in judicial decision making. King J

was at pains explaining the constraints they face. In the case of *S v Adams*, he stated as follows,

“An Act of Parliament creates law but not necessarily equity. As a Judge in a court of law, I am obliged to give effect to the provisions of an Act of Parliament. Speaking for myself and if I were sitting as a court of equity, I would have to come to the assistance of appellant, unfortunately, and on an intellectually honest approach, I am compelled to conclude that the appeal must fail.” (*S v Adams* 1979 (4) SA 793 (T) 801.)

The next paradigm to be discussed is attitudinalism, which is believed to be based more on the human element in the judges and their own personal beliefs.

#### **2.6.4.2 Attitudinalism**

The attitudinalism concept suggests that judges make decisions based on their beliefs, perspectives, views, principle and integrates legal realism with economic theory, behavioralism, and psychological science (Maltzmann, et al., 2000). The concept of behavioralism were incorporated through legal scientific investigation which involved the use of aspects in social sciences of prediction, clarification, observation, quantifying data and finding insights that are based on well-established legal theory (Segal & Spaeth, *The Supreme Court and the Attitudinal Model Revisited*, 2002). The psychological aspect states that judicial decision making should take into consideration those actions in the society are based on the perspective of the situation and the object. (Harold J. Spaeth,

1972). The impact of economic theory takes into consideration that rational judicial decision-making will incorporate objectives, expected results, rules, underlying principles, norms, situations, and constraints (Segal & Spaeth, 2002; Schlegel, J. H. 2015; McAdams, 2000). The rational behaviour in according to economic theory will influence actions such that the outcomes of the objectives are maximised.

The main advantage of attitudinalism is that it has concepts that are well established in comparison to legal pragmatist realism which integrate economic behaviour, scientific methods of social sciences and psychological aspects of the judicial decision-making process.

The limitation of this perspective of judicial decision making is that it does not consider the variations of the motivations to the decision judges make under different conditions. Under different conditions, the judge could be influenced differently by policy or legal objectives or both in the process of decision making. (Klein & Mitchell, 2010). Attitudinalism is based on the economic concept that judges will behave in a rational manner that may not be true for different conditions depending on the motivations and preferences of the judges.

For instance, “The Spirit of the Law” is one form of a well-established legal theory. The spirit of the law is simply the purpose behind the law, so where the meaning of the words in the legislation is not revealed the Judge is allowed to resort to the contextual framework of the law. Thus, the judges when deciding cases are bound by the context or background that led to the law being passed.

The issue is often the purpose of the text of law before the court. This purpose would mostly include the social and policy direction. In the case of Road Accident Fund the social issue that had to be dealt with was that there are a lot of motor vehicle accidents resulting in deaths and injuries that deprive members of society of the ability to support themselves or their families and further deprive them of enjoying quality of life as before the accident. The flip side is that there are too many road fatalities that cost the economy a lot of money in payouts to the road accident victims. The policy direction is to provide the victims of the motor vehicle accident with the means to either support their surviving dependents or to help the victim to with the financial means to sustain themselves after being deprived of the ability to enjoy the quality of life they had before the accident or to save taxpayer's money and protect the ailing government institution (RAF) from illegitimate claims or abuse.

When it comes to the plaintiff attorneys, at the center of this is the financial means to help victims with the funding to be able to consult health care practitioners to help them deal with the after-effects of the accidents. In most cases long after the accident the victims find themselves having to regularly visit health care practitioners to help them deal with physical or psychological effects of such accidents. In the case of Mild Trauma Brain Injuries victims need financial assistance from RAF to help them with variety of issues that evidently were caused by the accident.

Despite the contextual framework of the Road Accident Fund Act being to provide victims of motor vehicle accident survivors with compensation for loss of amenities to life, Mild Trauma Brain Injuries are still misunderstood from the legal perspective. Neuropsychological perspective could be converged with the legal understanding to find solutions for these cases.

It is said that this contextual approach to interpreting is intended to draw a balance between grammar and context. This means that social aims and policy aims are reconciled by this exercise, to come to equitable judicial decision making. Interestingly this contextual theory appreciates that, "...the flexibilities and peculiarities of language, and all the intra-textual and extra-textual factors, are accommodated in the continuing timeframe within which legislation operates."

However, in practice, evidence shows that Mild Trauma Brain Injuries victims are at times disregarded as eligible under the Road Accident Fund Act. The problem is compounded by lack of appreciation and understanding of manifestation of these injuries.

This context-oriented approach is limited, to some extent, in dealing with Mild Trauma Brain Injuries because in most of such cases by the time they have to be lodged there is no clear evidence of permanent neuropsychological impairments and when evidence surfaces it is too late to lodge them. This evidence may evade health care practitioners in the early diagnosis and result in a case that is not eligible for compensation by the Road Accident Fund.

Section 23 (1) of the Road Accident Fund Act provides that the claim of the motor vehicle accident may prescribe in three years where the claim was not lodged and where the

claim was lodged it shall prescribe in five years. If for some reason the impact of Mild Trauma Brain Injuries becomes apparent after the above-mentioned timeframes the victims are left on their own, which happens a lot in pediatric head injuries, which did not form part of this study. Regardless of the scientific evidence of the nature of these cases, the courts are still finding it difficult to go beyond the context of the Road Accident Fund Act because the case lodged to the Road Accident Fund must be accompanied by medical reports.

The medical reports may not be there during the prescribed time because the victim may not yet have experienced post-motor vehicle accident side effects. For example, one may experience persistent headaches after six years and after the neuropsychological assessment diagnosis links their case with the motor vehicle accident.

The Act also envisages compensation for only serious injuries, and the courts have understood the impact of Mild Trauma Brain Injuries. If the nature of these cases was fully appreciated by our judiciary, the victims would be placed in a better position to deal better with their difficulties.

The science behind neuropsychological assessment on Mild Trauma Brain Injuries warrants these kinds of cases being included in the ambit of Road Accident Fund Act given the background of the Act. Case law sharing this sentiment is scant hence the disproportionate and inconsistent settlements.

The limitation of this perspective of judicial decision making is that it does not consider the variations of the motivations to the decision judges make under different conditions. Under different conditions, the judge could be influenced differently by policy or legal

objectives or both in the process of decision making. (Klein & Mitchell, 2010). Attitudinalism is based on the economic concept that judges will behave in a rational manner that may not be true for different conditions depending on the motivations and preferences of the judges.

#### **2.6.4.3 Strategic Decision-Making**

The strategic judicial decision-making process takes into consideration the several factors, preferences and concerns the judge experiences during the process of decision making and the political choice the judge makes based on competing alternative interests (Spiller & Gely, 2007). Preferences of the judges will tend to be affected by their ideals and the levels of being liberal or conservative. Epstein, et al., (2001) found that the judicial decisions were made in way that reflected the court's transformation and adjustments to changes in politics. This is consistent with strategic decision making because the judges considered their preferences according to the changes in the political environment. Bergara, et al., (2003) found that court decisions are frequently consistent with the strategic approach because the courts are influenced by the government and political environment through the legal constraints that they impose.

The strategic judicial decision-making process requires that the judges should be highly knowledgeable and aware of the legal processes and their policy preferences (Gely & Spiller, 1990). Strategic judicial decision-making provides a simple and empirical approach with hypothesis that can be scientifically investigated through testing. The results of the empirical investigation and hypothesis testing serve as proof of the decisions (Spiller & Gely, 2007). Similarly, to attitudinalism, the strategic perspective does

not take into consideration the variability and non-homogenous nature of motivations in under different conditions in the process of judicial decision-making. (Klein & Mitchell, 2010). Strategic judicial decision-making has less robust qualities in comparison to the stronger rule-based approaches of attitudinalism (Lax, 2006).

The strategic decision approach is more flexible and is an extension of the attitudinal decision model such that it has a more widespread application (Spiller & Gely, 2007). It enables more factors to influence the judicial decision-making process. The attitudinal model can be integrated into the strategic decision-making model which makes the strategic decision model more widely applicable and adaptable to changing conditions.

The precedent system is one of the factors of legal process that judges must be mindful of when executing their duties. The precedent system also restricts Judges in the judicial decision making. This doctrine stipulates that where a court decides on a point of law for the first time, when deciding the same point of law in future it is bound to follow its previous decision and the courts lower in hierarchy are also bound by that decision. (Kevin Ritchie, 2006 page 17)

Accordingly precedent dictates that the Judges are not to deviate from their previous rulings and Judges in the lower courts are not free to arrive at different decisions when faced with similar facts where the higher courts have pronounced on those similar facts.

This means even if new information has entered the body of knowledge to the effect that Mild Trauma Brain Injury is to be compensated proportionally to the effects as long as that case is heard by a lower court and there is a decision of the higher court contradicting that that court is not free to decide otherwise.

It is believed that this is aimed at bringing certainty and consistency into the legal system. But as has been observed, in practice, this is not always the case (Morris E, Mullins J and Da Silva, 2010). If the courts are bound by judgments that are not accommodative of new empirical evidence of long term neuropsychological sequelae on the Mild Trauma Brain Injuries cases this means the victims are left without protection of the law and left helpless. This may lead to further questions such as to what extent will these proclaimed consistencies in the legal system be pursued while victims of Mild Trauma Brain Injuries continue to experience neglect from the law that is supposed to protect their interests?

Where the previous judgment or the higher court have not pronounced that Mild Trauma Brain Injury case is to be assessed as serious and have not decided differently from the fact that these cases will be settled only if lodged within the prescribed time periods, the Judges in the lower courts or in the same court are bound to follow blindly the decisions of the higher or same courts.

South African Judges often state that their role is not simply mechanical because they apply their mind to these cases before them, but practice seems to contradict this contention.

The other important consideration is that clients of lawyers present their facts by way of a story, the lawyer then translates that story into legal matter, and the judges adjudicate over such. The facts and evidence constrain the judge that the court's decision is confined to the tendered facts.

It is worth noting that in the cases that involve Road Accident Fund, lawyers represent victims with the aim of getting them the best possible settlement for their particular claim. They rely on facts to prove their present cases. It is these facts that are going to be placed before the Judge to decide on.

What these lawyers do before the case goes to court is of great significance. For instance, the lawyer gathers facts that strengthen their case and weaken their opponent's case. (Kevin Ritchie, 2006 page 17). Thus, in the case of Road Accident fund claims, lawyers perform this exercise before going to court and vice versa.

It is largely believed that, for lawyers to prepare the case adequately, they ought to have a proper grasp of the facts. They do so within the confines of the Rules of Court and the broader law. Failure to gather the right facts means failure to get what their client deserves. In practice, however, the ability to present the cases of Mild Trauma Brain injuries to the court depends largely on knowledge of the lawyer, how convincing their experts' reports, and testimonies are, the framework from which the Judge operates. The victim ends up getting the settlement that is not befitting for their respective damage. This difficulty continues to influence the disproportionate and inconsistent settlement.

The poorly prepared case leaves the Judge with no room to navigate regardless of the existing real effects that a victim is suffering. Bringing medico-legal cases to court is not a clear-cut exercise and is an intricate process. This is because this involves highly specialized interdisciplinary aspect to the courts (Judge) and the lawyer who often lacks the training to understand the neuropsychological impact of Mild Trauma Brain Injuries on victims. The Judge having to hear such a case may be deprived of the information

necessary to decide on the case adequately. By implication the proportionate compensation regarding the extent of the neuropsychological impairment and the way to establish criteria to be used for the assessment of Mild Trauma Brain Injury is lost in translation.

#### **2.6.5 Issues for MTBI regarding road traffic injuries Legal and compensation**

According to the World Health Organisation (WHO), more than 1.3 million deaths are caused by road traffic accidents and up to 50 million people suffer injuries that do not result in fatalities (World Health Organization, 2018). In South Africa, there were over 200,000 non-fatal injuries that were caused by road traffic injuries (South African National Traffic Agency, 2020). Road traffic accidents are a frequent cause of MTBI and several symptoms that negatively affect the health and performance of a patient may be persistent over the long term (Hartvigsen, Boyle, Cassidy, & Carroll, 2014). In developing countries such as South Africa, the GCS score lower than 15 is widely considered as the reliable basis for admitting a patient and basis of consideration of receiving compensation in the case of a claim (Nell, Phil, Yates, & Kruger, 2000). The GCS-E could be used as reliable quantitative measure in developing countries as a measure for severity of MTBI and for determining whether a patient was eligible to receive compensation because it was reliable in assessing cognitive behaviour disabilities that could persist in the long term (Nell, Phil, Yates, & Kruger, 2000).

In South Africa, the Road Accident Fund (RAF) compensates victims who have been involved in RTA and sustained serious injuries (Department of Transport, 2010). Claiming through the RAF requires complex legal process, takes extended periods of time and this

can result in a remarkably excessive cost in legal expenses. The RAF bases compensation on medical assessments and classification that are internationally accepted by well-trained medical professionals with relevant accreditations (Department of Transport, 2020). Therefore, classifications or assessments for cases of MTBI using international accepted standards and well-grounded classifications can be used in the determination of whether a patient qualifies for compensation under the RAF. In the case of settlement of disputes regarding classifications and medical assessments, the panel consults with other peers in the judicial decision-making process.

Cassidy et al., (2004) found that claims for victims, from a sample consisting of 479 adults with MTBI, were settled more expeditiously if they used medical prediction techniques and assessments. Therefore, this offers a strong support to the notion that well-grounded neuropsychological assessments and medical classification techniques of MTBI are highly likely to facilitate the process of judicial decision making such that claims are settled easily, more accurately and at a quicker rate. Paniak et al., (2018) found that for a sample consisting of 68 adults who had experienced MTBI, that respondents claiming compensation had more symptoms of MTBI. This finding highlights the need for correct medical classification and assessment of symptoms of MTBI so that patients receive the correct compensation for the extent of their injuries. The rate at which a claim is processed and closed is another area of concern in the compensation for MTBI patients. Cassidy et al (2004) found that MTBI patients who had claimed for compensation following an RTA were more likely to have their claims open for longer if they experienced pain on other parts of their body as well and not just MTBI. This indicates that patients who are expressing more body pain or symptoms are entitled to a larger compensation than the

MTBI cases and therefore are more likely to have their claims concluded quicker than those of MTBI. This is concerning since MTBI patients with more symptoms who are likely to claim have a higher chance of their claims being opened for longer periods.

Suhr, et al., (1997) investigated the claims for a sample consisting of 30 patients with MTBI who were in the process of claiming or involved in legal cases for compensation. The study found that longitudinally, patients with MTBI who were least likely to receive compensation, had more severe problems in terms of memory loss and ocular focus. This observation confirms the notion that, symptoms seem to be seen as more valid than others and as much, are more likely to attract compensation. This also shows the challenges related to determining financial compensation on the basis on medical examinations and neuro-psychological assessments because of the difficulty in assessing the validity and true nature of the symptoms expressed.

Greiffenstein et al (1996) found that patients (n=131) who had MTBI in the past and were claiming compensation or involved in legal cases for compensation were likely to have defects in their motor neural abilities even though this was not evident at the time of the claim. This indicates the difficulties in claiming for patients of MTBI as they would be perceived to be functioning normally and would not qualify for compensation even though they have a neurological disorder because of the MTBI. This necessitates the need for thorough neuropsychological assessments, medical classification techniques and investigation on the impact of MTBI in the process of claiming or litigation for compensation.

The chances of exaggerating symptoms for the purposes of increasing financial compensation is higher in the cases of MTBI than in the moderate or severe cases of TBI (Zasler & Martelli, 2003). This is concerning as clients might falsify symptoms that are critical for assessment of financial assessment claims such as being unconscious for 30 minutes, feeling disoriented for 24 hours and giving false responses for the purposes of influencing their GCS score. According to Zasler & Martelli (2003), a patient may magnify their symptoms by exaggerating their impairments for the purposes of increasing financial compensation. Furthermore, a worst-case scenario is a patient may be dishonest, untruthful and give false responses that manipulate the results in medical reports for the purposes of increasing their financial compensation.

Feinstein, et al., (2001), investigated the impact of litigation on how MTBI patients expressed their symptoms for a sample consisting of 100 patients with MTBI. The study found that patients who were seeking legal compensation expressed more symptoms of anxiety ( $p < 0.0001$ ), depression ( $p < 0.01$ ), and lower results on their Glasgow Outcome Scale (GOS) scores ( $p < 0.002$ ) in comparison to patients who were not seeking legal compensation. This emphasises the need for the medical examiners to be critically and objectively aware in their symptom-assessments, especially the fact that responses to injury can be easily influenced by the patient's thresholds which, in turn impacts the financial compensation.

Zasler & Martelli (2003) argue that one of the important neuropsychological observations is that the characteristics of the symptoms should be consistent with expected complaints and the extent of injuries that the patient would have experienced. Therefore, if the symptoms that the patient is expressing are not consistent with what is expected given

the extent of injuries based on experience, a thorough investigation and examination should be conducted to validate the symptoms being expressed.

#### **2.6.6 “Social-Factor” Bias and the decision-making process – the prevailing arguments**

Discussions about judiciary decision-making particularly in relation to compensation related to road traffic accidents have offered extremely limited attention on issues of bias that emanate from social factors that have historically been shown to impact outcomes for affected populations (Wilkinson, 2003). The area of decision-making as it relates to compensation issues for victims of road traffic accidents, is as argued by McLay (2008), subjected to the same inequities that exist in other areas of the judiciary. For example, as summarized by Bull (2013), poor people have less favorable decisions than their materially advantaged counterparts; similarly, black people have less favorable outcomes than their Caucasian counterparts, and with respect to gender divisions, some have suggested noteworthy discrepancy in the way that female claimants are treated in relation to their male counterparts (Rachlinski et al, 2008).

A critical consideration of the above social factors, one at a time, may offer more tangible explorations of the way in which discriminating social factors contribute to decision-making process even in relation to MTBI. For example, the influence of race has been shown to affect both the nature of symptom-reporting and symptom identification by claimants and the clinicians that treat them.

By virtue of the lower acceptance rates for psychological disorders amongst the black populations, it is likely that substantial underreporting of symptoms occurs in black victims

of injury than in their white counterparts. This assertion is inferred from literature that has looked specifically at health seeking behaviors between black populations and their white counterparts especially in South Africa (Riley et al, 2002 and Mossey, 2011). Anderson et al (2009), cite several studies that show that the combined effect of a generalized lack of trust of health services, along with disproportionate levels of material deprivation amongst black populations has resulted in lower-than-expected claiming rates. The impact of race goes beyond aspects related to the reporting and acceptance of brain trauma symptoms and in fact has been implicated in relation to the diagnostic practices of medical and psychological professionals. For example, Edwards et al (2001) assert the view that health professionals have tended to be more perceptive of psychological distress amongst their white patients by comparison to their black counterparts. The range of racial biases highlighted in literature are both conscious and unconscious on the part of those that make decisions. Despite this acceptance, the identified causal pathways remain contested within the literature, but one reality is universally acknowledged i.e., the differing experiences and outcomes that may exist for claimants have a racial component to it.

Beyond the influence of race, other social factors such as gender have been implicated in discussions about pain tolerance / thresholds and how reporting may be differently expressed between males and females. Chesterton et al (2003) discuss this very issue in relation to the intensity and likelihood of symptom reporting that may exist between women and men, and in their work, they cite evidence that shows male victims of injuries are less likely to comprehensively report symptoms compared to their female counterparts and as such, the levels of requested compensation will differ because of

this. The evidence utilized to support this assertion originates from observations made in the course of their work as judiciary decision makers and in terms of evidential credibility, care should be taken in accepting the conclusions thereof.

## **2.7 SUMMARY OVERVIEW OF REVIEW**

Apart from being a motivating factor for the conceptualization of the current study, the lack of primary and secondary data relating to subject focus of the study also presents several challenges with respect to conducting a review of background literature. For example, literary sources that exist with respect to judiciary issues have tended to be outdated primarily because the area of legislative practice is founded on seminal rulings and laws, many of which date as far back as 50 years ago. The lack of new literature with respect to issues such as judicial decision-making processes represented a noteworthy feature of the current review.

As mentioned above, this is also an important motivating factor finding the need for new empirical work in this field such as the currently proposed study. In addition to issues of outdated literature, it is notable that many of the laws that govern judiciary processes add directly inherited from western legal systems and most particularly, Roman Dutch laws. this feature of the data cannot be ignored but instead is acknowledged within the current literature review, is a characteristic of current knowledge which needs to be modified particularly within the South African context where there are several social cultural variations that make the vade-mecum substantially different from the western world where many of the laws were created and intended for. The observation being made here strongly identifies a lack of culturally contextualized laws is one of the key gaps of

knowledge that represents an important challenge with respect to the principles that judges follow when making decisions about the compensation of individuals with minor traumatic brain injuries.

In addition to an observed lack of current and culturally relevant data, the topic focus borders a number of disciplines and as such it represents a complexity that one would expect to be difficult to critically explore. In summary, the study of legal responses to the issue of traumatic brain injury represents a multifaceted divergent topic and any critical exploration requires that the reviewer utilizes data from neuropsychology, psychology, legislative practice, and pathophysiology. This multiplicity requires that the reviewer engages with literary sources from different domains in a way that allowed for an integrated summation of observations. As much as this was challenging, it is the very reason why the current study represents a new foray into subject matter that has not really been empirically explored. The reviewer was acutely aware of the challenges that would arise from venturing into uncharted territory but on balance argues that the benefits of such a complex engagement with literature far outweigh any limitations that may be evident.

Throughout the review, no more than a handful of cited sources were from South Africa and more generally, from the African context. This observed pattern highlights an earlier-made observation about the fact that the work in this domain has thus far had limited cultural relevance to the South African context, purely because much of the empirical work and case law that has been drawn upon has come from contexts outside of South Africa. In many instances, credible inferences could be made from literature, and care has been taken to ensure that where possible, discussions have been contextualized to

South Africa. Even so, it is important to acknowledge that the use of inferential literature posed a particular challenge which had to be taken account of throughout the review process. This was the case for both fields of knowledge as there is very little literature on both within the South African context. It is for these reasons that the researcher went to great lengths and was at pain to demonstrate how difficult it was to get relevant literature, hence a detailed and elaborate discussion on literature review process in the beginning of the chapter.

## **CONCLUDING REMARKS AND IDENTIFIED GAPS IN KNOWLEDGE**

In addition to the above observed challenges and actions that were taken by the reviewer in ensuring a comprehensive review, and number of emergent themes were noted. Most importantly, the review highlighted the number of knowledge gaps in the discourse some of which serve as direct impetus for the current study. Even though the literature shows agreement with respect to the fact that mild traumatic brain injuries are often misdiagnosed, extremely limited empirical attention appears to have been given to the likely impact that may arise from this widespread misdiagnosis particularly with respect to how judiciary processes rationalize the way in which affected individuals are compensated.

To date, no published study in South Africa has exclusively focused on this and all the evidence that was found and indeed cited within the current review emanated from opinion pieces and discussion papers, all of which acknowledge the absence of clarity in relation to how the judiciary respond to claims for compensation from individuals affected

by mild traumatic brain injuries. The lack of agreement originates from varied approaches to diagnosis, differing appreciations of the impact that MTBI may have on the day-to-day functioning of individuals. The research thus far also identifies that, in addition to diagnostic inconsistencies, there is a lack of consistency in the way that judicial decision makers appreciate the phenomena of MTBI. This latter observation has been shown to have a clear and often under-appreciated impact on the decision-making as it relates to the level of compensation given to victims of MTBI by comparison to their counterparts who may have clear physical injuries and disabilities. The above noted gaps in knowledge served as the primary impetus for the current study in which the researcher's primary objective he wants to carry out a critical exploration of frameworks for decision-making in relation to the compensation of those affected by MTBI within South Africa.

## CHAPTER 3

### THEORETICAL AND CONCEPTUAL FRAMEWORK OF THE STUDY

#### 3.1 INTRODUCTION

Chapter two, the previous chapter presented a discussion of pertinent literature related to discourse area of Mild brain injury, its consequences and most importantly, the management of resulting health complications by the judiciary. The current chapter progresses the scholarly exploration of the topic area and in so doing, it focuses on two specific theoretical frameworks that were utilised within the study as a basis for developing and understanding of the concepts that were deemed to be relevant to the wider study. Beyond the critical presentation of the relevant theoretical frameworks, the current chapter draws various concepts from each of the specified frameworks and collates them into a single conceptual framework. As noted by Rocco and Plakhotnik, (2009), this single conceptual framework is inductively used within the study to guide the development of relevant data collection tools that were used by the researcher.

To ensure a meaningful engagement with both conceptual and theoretical frameworks, the chapter will begin with a discussion of what theoretical frameworks are and what conceptual frameworks are. This initial definitional engagement will be followed up by a brief foray into the role of theory within a doctoral study and in particular how theoretical frameworks and conceptual frameworks are utilised in studies.

Theory helps to shape the researcher's grasp of a specific phenomenon and in spite of it being abstract, it allows for the researcher to methodically verify aspects of the phenomena by research. Polit and Beck, (2012) define theory as an abstract

generalisation that offers a systematic explanation about how phenomena are interrelated and in basic terms, how a theory has two distinct but related purposes that relate to explaining phenomena and offering prediction about how actions related to a phenomenon may result in several specified outcomes. They go on to assert the view that theory within a PhD may be used in three ways that include, its use as that which underpins research design (theory as a paradigm); that which may inform our understanding of the phenomena under investigation (theory as a lens) and finally that which may emerge from our study (theory as new knowledge). Within the current chapter, the presentation of theoretical perspectives speaks to the second purpose, that is, the utilisation of theory as a means of understanding the phenomena or as a lens by which the researcher was able to develop theoretical and conceptual understandings as they related to the phenomena of interest.

Building on from this, Kitchel and Ball, (2014) deconstruct the term theoretical framework by acknowledging that this term is simply an output of joining up of two words namely, theory and framework, both of which have separate but interrelated definitions. As noted above, Theory broadly relates to interrelated constructs, definitions that offer a comprehensive view of the phenomena by specifying how particular variables are related. On the other hand, a framework, as noted by Kivunja, (2018) relates to a collation of mindsets and ideas that one uses to form decisions and judgments. It offers the researcher a specific ability to organize their study and in relation to this study , the framework gives a structure for how the researcher could develop perspectives about mild traumatic brain injury; the nature and seriousness of the health implications thereof; the way in which it is understood and responded to within the judiciary particularly in

relation to compensatory settlements. Ngulube, Mathipa and Gumbo, (2015) offer a much more specific definition and put forward the view that a theoretical framework is a lens which offers the organisational methods of the study in a philosophical, epistemological, methodological, and analytical way. For that reason, the identification and resulting selection of a theoretical framework should be done so after a deep and thoughtful understanding of the phenomena under study and it is essential that the identified theories are rigidly attached to the area of interest and interact with each other in ways that ensure that they can be a meaningful foundation for the study. They can also guide other elements including: - (1) the concepts and that will be explored as part of data collection processes; (2) the choice of research design and (3) the data analysis approaches that will be utilized within the study (Hartas and Lindsay, 2011).

When compared to each other theoretical and conceptual frameworks differ in that, the former is based on the propositional statements made by a pre-existing theory whilst the latter is a product of what the researcher has established through his or her analysis of theories (Ngulube, Mathipa and Gumbo, 2015). Most specifically, the conceptual framework is drawn up by identifying the range of specific concepts from each of the foundational theories that relates specifically to the phenomena under study. Through the development of a conceptual framework, the researcher is often able to demonstrate that their intended study is an appropriate and reasonable extension of existing knowledge . (Journal, Tamene and Education, 2016)

Within the current study, two theories were used as the basis of the theoretical framing of the phenomena and these theoretical frameworks were the “brain injury classification template from Dikmen, Machamer, & Temkin, (2001) and Epstein, Landes and Posner

(2013)'s theory on "the behaviour of Judges". The sourcing of these theories was intended to give meaningful insights into the complex interplay between two knowledge fields i.e., the area related to the neuropsychological assessment of MTBIs and secondly, the application of legal principles in the decision-making process as applied by court officials, as they determine how MTBI claims must be settled. These frameworks have been extracted from the Health Sciences, psychology, and judiciary decision-making, theory fields. The combined presentation of the different theoretical perspectives offered the researcher the ability to develop a much more nuanced and specific understanding of the theoretical interplay between Psychology, the Health Sciences and decision-making practices within the judiciary (LAW) so as to allow for a single conceptual framing that can serve as a basis for looking at the factors that influence how settlement decisions are made in relation to traumatic minor brain injuries within South African courts.

This offers the potential for a singular conceptual point-of-departure for exploring the contributory influence of neuropsychological assessments in judicial decision-making about the facilitation of settlements of Road Accident Claims among victims of mild brain injury in the South African Courts. The nature of the study necessitated a critical exploration of the complex interplay between two knowledge fields i.e., the area related to the neuropsychological assessment of MTBIs and secondly, the application of legal principles in the decision-making process as applied by court officials, as they determine how MTBI claims must be settled.

By integrating different concepts from each of the above theories, the researcher was able to develop a single conceptual framework that was subsequently used as the basis for developing the construct in items that were included within the data collection

instruments for the study.

### **3.2 THEORY OVERVIEW RELATED TO THE NEUROPSYCHOLOGICAL ASSESSMENT OF MINOR/MILD TRAUMATIC BRAIN INJURIES.**

Theoretical inputs were obtained from data sources that offer some insight into how MTBIs are identified and assessed. As a basis for these theoretical contributions, initial content contributions offer clarification on how head injury is defined. Dikmen, Machamer, & Temkin, (2001) provide this insight and see head injuries as any trauma to the head, with or without injury to the brain. The head injuries are classified as mild, minor, moderate, or severe, as determined by the presenting symptoms after the injury and the extent to which symptoms persevere beyond three months of the initial injury. On this continuum, individuals with minimal head injury are identified as having some form of trauma to the head, with no loss of consciousness, a normal Glasgow Coma Scale (GCS) score, and no symptoms of head injury (Teasdale et al., 2014; Watson, 1992). Mild head injury patients have a GCS of 13 to 15 after head injury (Wakai, McCabe, Roberts, & Schierhout, 2013). Furthermore, traumatic brain injury is specifically classified via the reliance on several influences that include type, severity, location, mechanism of injury, and physiological response to injury. These wide-ranging variables or heterogeneity represent a serious challenge in appropriately developing effective therapeutic interventions in TBI (Jennett, 2005).

In drawing together, the different diagnostic tools, several factors that represent key classifying influences are relied on to give a multi-dimensional assessment of a suspected injury. Each of the determining factors are highlighted below: -

### **3.2.1 multi-dimensional assessment of a suspected injury.**

#### **3.2.1.1 Classification by clinical severity**

The primary and most commonly used and trusted tool for the determination of clinical severity of the injury is the Glasgow Coma Scale, GCS, and this has been used extensively to classify TBI into levels of severity and prognosis (Reith, Van den Brande, Synnot, Gruen, & Maas, 2016). As a consequence of traumatic brain injury, there exists an inverse relationship between the GCS score and the incidence of positive findings on CT. Notably the rate of intracranial injury (ICI) and need for neurosurgical intervention doubles when the GCS drops from 15 to 14 (Barlow, 2012).

- Mild/Minor TBI: GCS 13-15; mortality 0.1%
- Moderate TBI: GCS 9-12; mortality 10%
- Severe TBI: GCS <9; mortality 40%.

#### **3.2.1.2 Classification by aetiology**

Second to classification by severity, broad aetiology is a noteworthy aspect that is relied upon to give definition to the types of a TBI. Classification by broad aetiology offers a number of different types but only three categories are discussed below: -

- Blunt TBI: occurs when external mechanical force leads to rapid acceleration or deceleration with brain impact likely leading to an observable damage to the brain. In the road accident arena, it is typically found in the setting of motor vehicle-related injury where the victim would have been thrown out of the vehicle, hit directly by a fast-moving car or

hitting against the inside of the car. It also happens in falls, crush injuries, or physical altercations.

- Penetrating TBI: occurs when an object pierces the skull and breaches the dura mater, seen commonly in gunshot and stab wounds.
- Blast TBI: commonly occurs after bombings and warfare, due to a combination of contact and inertial forces, overpressure, and acoustic waves. (McKeen & Daneshvar, 2015).

#### **3.2.1.3 Classification by involvement**

Classification by involvement relates to how TBIs can be categorised by the area involved, as in diffuse or focal. Within this, the two types frequently coexist.

- Diffuse brain injury includes diffuse axonal injury (DAI), hypoxic brain injury, diffuse cerebral oedema, or diffuse vascular injury (Reith et al., 2016).
- Focal injury includes specific lesions such as contusions, intracranial haematomas, infarctions, axonal tears, cranial nerve evulsions, and skull fractures.

#### **3.2.1.4 Classification by injury progression**

Classification by injury progression offers an additional category for understanding what type of injury is being presented and in this, injury is due to the immediate mechanical force, whether blunt, penetrating, or blast, and may include, skull fracture, contusion, haematoma, subarachnoid or focal haemorrhage, or axonal shear or laceration.

### **3.2.1.5 Secondary Brain Injury**

Secondary brain injury refers to the evolving pathophysiological consequences of the primary injury and encompasses a multitude of complex neurobiological cascades altered or initiated at a cellular level following the primary injury, and may include the following (Reith et al., 2016): Cerebral oedema, Increased intracranial pressure (ICP), Haemorrhage, Seizures, Ischaemia, Infection (Jennett, 2005)

### **3.3 Epstein, Landes, and Posner (2013)'s Summative Theory on "the behaviour of Judges."**

Regarding the judicial aspect of the enquiry, it was noted that there are three main models of judicial decision-making that explain how judges come to a solution. Literary sources suggest that these work alongside each other within any decision-making process, i.e., legal pragmatism Realism, attitudinalism and strategic (Posner, 2013; Thomas, 2009). These models aim to predict the decision a judge will make, based on the guiding values of the judge. Legal Pragmatist Realism and Attitudinalism are the most orthodox models for decision making and were initially posited by Epstein, Landes, and Posner (2013), in their seminal works "The Behavior of the Federal Judge". The legal Pragmatist Realism theory is based on an assumption that judges (or judicial decision-makers) make decisions about cases presented to them in accordance with a combination of orthodox norms of judicial decision-making; and that within this, they are cognisant of the reality they face, and like other economic agents, decide cases according to their preferences and incentives (Schlegel, 2015) This model has its basis on three important themes that exist with decision-making, as summarised below:-

(i) A distrust of the judicial technique of seeming to deduce legal conclusions from so-called rules of law. The realists believed that judges neither do nor should decide cases formalistically. Law is not, as the formalists claimed, a system of rules that is clear, consistent, and complete (Wood, 2015) Rather, the law is riddled with ambiguities, contradictions, gaps, vague terms, and conflicting rules of interpretation. As a result, there is often (perhaps always) no uniquely correct answer to any hard case that appellate judges decide. Law is incurably "indeterminate".

(ii) A belief in the instrumental nature of the law. Like Dewey and Pound, the realists believed that law does and should serve social ends. Judges unavoidably take account of considerations of fairness and public policy, and they are right to do so.

(iii) A desire to separate legal from moral elements in the law. The realists were legal positivists who believed that law should be treated scientifically. A clear distinction should be drawn between what the law is and what it should be. Law can only be viewed as an empirical science, as it ought to be, if moralistic notions are either excluded or are translated into empirically verifiable terms. The idea that legal talk of "duty", "right", etc. is just talk about how judges are likely to decide cases, is a clear example of how many realists tried to purge law of moralistic language and translate everything into "realistic" talk of actual consequences and testable prediction (Richter, 2018).

Attitudinalism by contrast, is described as the process by which judges' decision-making tends to be reflective of the attitudes of the parent entity that has appointed them, be it the state governor, an appointment committee, or the public at large (Cameron and Kornhauser, 2017). This model gives the most weighting to the values and preferences

of the judge as the primary factors that drive his/her decision-making. Both initial appointment of judges, and their retention or reappointment may serve to filter out judges whose attitudes are not wholly in agreement with the electing body's approach. A review of related literature supports this asserted viewpoint. For example, three hypotheses emerge from the literature: First, that judges' decisions conform with the preferences of their appointing agents (Schlegel, 2015) Second, that the degree of such conformity depends on various institutional features of the method of appointment (whether reappointment decisions are made via a legislative body or through public elections, and if made through elections, whether these are competitive and whether they are held on a partisan or non-partisan basis. These two hypotheses do not distinguish between selection and incentive effects. The third hypothesis does. It suggests that the conformity between the preferences of the judge and his/her appointing agent becomes more pronounced as reappointment or re-election approaches, and that it becomes less pronounced when judges are serving their last term in office (Posner, 2013)

As an extension of attitudinal and legal realism decision making models, the strategic model of decision making is a combination of the two approaches. Its primary tenet is that while the judge has personal policy preferences and goals, he or she must realise those within existing legal constraints.

As a theoretical basis, each of the above cited theories highlight the concepts that will be relevant to the current study. As such, data collection instruments included specified clarification / exploration of the key stand-out concepts that were highlighted by the theoretical framing of what constitutes MTBI and the different approaches to judicial decision-making.

### 3.3 CRITICAL ASPECTS FROM THE THEORETICAL FRAMEWORKS

Both the above cited models have emanated from theoretical perspectives whose origin was from the northern hemisphere and as such, their application to the context of South Africa should be treated with the commensurate sensitivity. It is important to note that as history has shown, even the most objective of Sciences such as the science of diagnosis can be subjected to cultural variations and it is important that a study that is interested in specificity should take account of each of these nuances and where possible make accommodations in relation to existing theory so as to account for how each of the concepts may differ by virtue of them being explored within the South African context. It is most notable that the initial theoretical contribution by Reith et al (2016) gives a number of classifications focus areas for MTBI and it is here that it is critical for an analysis of each of the theories to be conducted from a South African lens. The current critique identifies that factor such as the measurement of clinical severity, involvement, and injury progression as universally measured globally and as such it is likely that this aspect of the theoretical framing within the current study is unlikely to have been affected by geographical and cultural differences between the source of the theory and the current context in which this study was carried out. Summatively, this gave assurance to the researcher that the Jurati's theory of injury progression (Juratli *et al.*, 2014) could be utilised in its entirety without any need for context based adjustments or adaptations to be effected.

By contrast, the theoretical perspectives that were used to inform the judicial decision-making aspect of the study offered a different proposition primarily because decision-

making processes differ from one cultural context to the next and there are such definitions of concepts such as legal pragmatism, attitudinalism and strategic realism are likely to be understood and applied in ways that may vary from one culture to the next. It is notable however, that the model presented by Epstein, Landes, and Posner (2013), only guides thinking about the different contributing norms that play a part in judicial decision-making, and it does this without prescribing how these norms play out from one context to another. More simply put, the theoretical framework offers skeletal tenets that should be taken account of, but it gives individuals the freedom to specify from within their context what realism, attitudinalism and strategic realism look like for them.

Within the South African context in particular, it is argued that judicial norms are much more heavily weighted on by the political environment and political expectations and less so on the individual decision-making style of the particular judge who may be enacting the judgment. To ensure a contextually appropriate application of the latter theoretical concept, the researcher developed a conceptual framework that specifically highlighted the role and interplay of political decision-making factors and norms on the eventual settlement decisions that were made from case to case. The resulting conceptual framework that was conceptualized after a combined engagement with each of the two theories is diagrammatically presented below. To that end, Figure 1 below provides a diagrammatic summation of the concepts that were specifically explored within the different data collection phases. From these identified concepts, the researcher will be able to look closely at the primary factors.

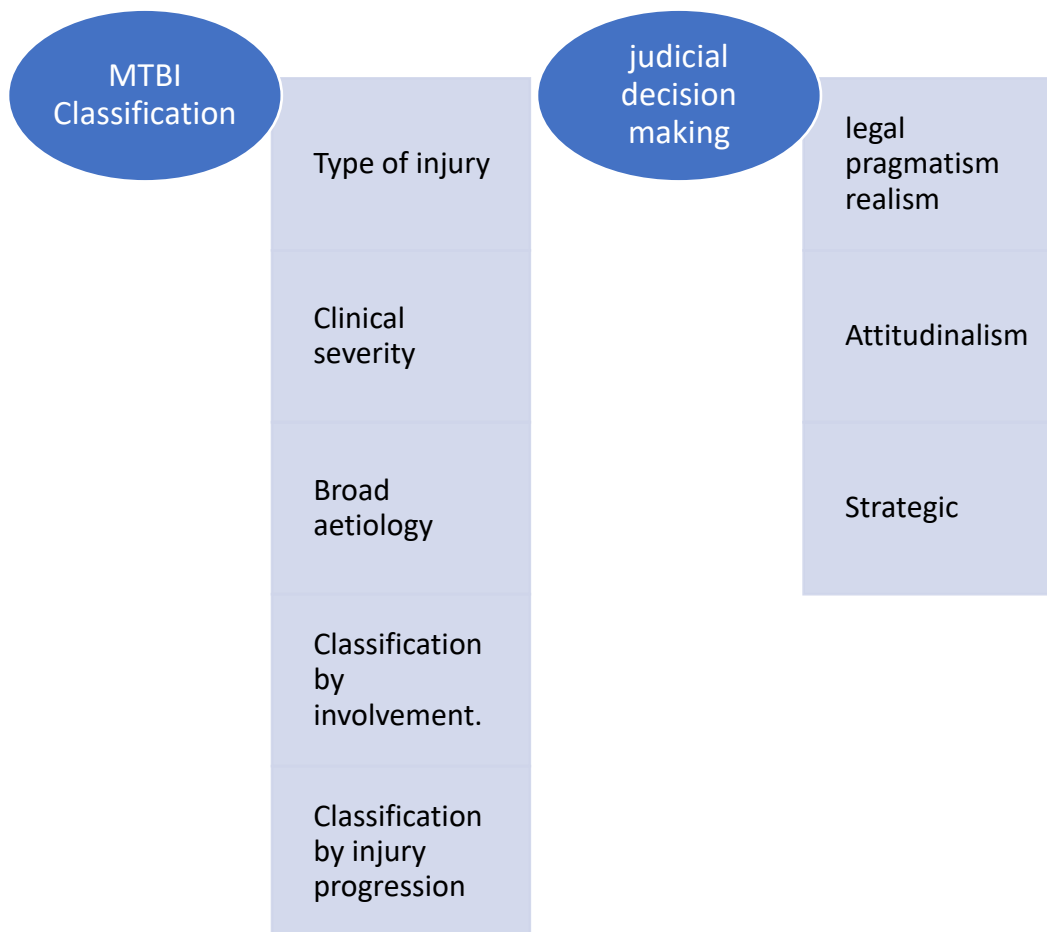


Figure 6: Diagrammatic Summary of Concepts of Interest for the Current Study

### 3.4 KEY CONCEPTS ADAPTED FROM THE THEORETICAL CONCEPTS

As identified in the earlier part of this chapter, one of the functions of theoretical frameworks is that they offer an opportunity for a complex and multidisciplinary phenomenon to be understood in a singular and more inclusive way as can be expected from a conceptual framework. True to this expectation, the theoretical frameworks of the current study not only guided conceptions about the phenomenon of interest but they also served as a basis for the development of the data collection instruments that were used

within the study. As such, the “brain injury classification template from Dikmen, Machamer, & Temkin, (2001) and Epstein, Landes and Posner (2013)’s, “The Behaviour of the Federal Judge”, included components and concepts that guided the development of the different data collection tools that we used for (i) the retrospective review of patient records (ii) and the individual interviews with neuro psychological conditions with clinicians and members of the judiciary who were involved in court settlements related to car accidents. The neuropsychological theories offered important insights into the range of clinical presentations that were worthy of assessment as part of the process of determining the severity of injuries sustained during the road traffic accidents. Similarly, the decision-making theories that were utilized gave direction about the factors and influences that play a part in decision-making processes.

Each of the theories directed the researcher to several constructs which were later selected for inclusion within the emerging conceptual framework. Table 3 below provides a diagrammatic summarization of the process by which the different theoretical frameworks of the study were used to provide direction about the development of different data collection instruments.

*Table 3: A summary overview of the application of different theoretical frameworks within the study*

| <b>Models</b>       | <b>Components / characteristic within the model.</b>                                                                             | <b>Integration into the data collection tools</b>                                                                                                                                                                                                                                                 |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MTBI classification | Type of injury<br>Clinical severity<br>Broad aetiology<br>Classification by involvement.<br>Classification by injury progression | To identify the different contributors that assist in the classification and assessment of the seriousness of a traumatic brain injury. These components and characteristics function as the basis for specifying the seriousness of an identified injury in their assessment provides a critical |

|                                                                                           |                                                                  |                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                           |                                                                  | measurement of the medical urgency as perceived by the assessor.                                                                                                                                                                                                                                                     |
| <b>Epstein, Landes, and Posner (2013)'s Summative Theory on "the behaviour of Judges.</b> | Legal pragmatism realism<br>Attitudinalism<br>Strategic Approach | To assess the role played by different legal influences in decision making. Legal pragmatism realism: Attitudinalism and Strategic influences are the primary frameworks for decision making within. The judiciary – the extent of contribution by each influence needs to be assessed within the specified context. |
| Literature review derived themes                                                          | Political influences                                             | The political climate and the role played by legislative political influences plays a critical part in directing and or restricting decision makers from making decisions in fear of their contradictory existence in relation to the political status quo.                                                          |
|                                                                                           | Patient empowerment                                              | The pursuit level of empowerment of affected individuals is seen as having an Influence on their ability to pursue all available avenues to question unwanted decisions about claims.                                                                                                                                |

### 3.5 FROM THEORETICAL FRAMEWORK TO CONCEPTUAL FRAMEWORK AND DATA COLLECTION INSTRUMENT

Some, including Ngulube, (2014) have identified that, the processes related to the development of data collection instruments often varies from study to study and in many instances, they reveal the poor conceptual alignment that exists between the primary aim, objectives of the study and the eventual data collection instruments that are utilized by the researchers. Abell *et al.*, (2009) identify the utilization of conceptual frameworks as best practice in the development of data collection tools that speak to the data needs is, they are specified by the concept under study. The current study followed through on this gold standard and in so doing utilized key components from the two theoretical

frameworks and used them as the basis for developing a conceptual framework which later functioned as the foundational document for the different components of the data collection processes within the study. In addition to being the directive source of the key concepts under investigation, the conceptual framework also functioned as a directing factor which was used to identify which participant groups or data sources were best placed to provide answers to the concepts of interest as specified within the conceptual framework. As noted above, the current study's focus was on identifying how key neuropsychological symptoms and their severity or nature were taken account of within the decision-making process.

Developing insights into the interplay between these two phenomena depended on accessing several participant groups that included a range of clinicians involved in neuropsychology; the patients who were themselves victims of accidents and finally, different members of the judiciary who participate in the decision-making process as it relates to road traffic accident claims. Even though the conceptual framework does not direct the researcher in terms of deciding who the best source of data is, the conceptual clarity offered by such a framework allows for easier differentiation of which participant group would be best suited to provide insights into elements of the phenomena under investigation. The output of this process contributed to the choice of the different data collection instruments that were utilised within the current study.

### **3.6 SUMMATIVE OVERVIEW OF THE CHAPTER**

The chapter's focus on theoretical frameworks served an important purpose and demonstrated the way in which theory can be utilised as a lens by which phenomena can be understood. To that end, the chapter presented the theoretical frameworks that guided conceptual understanding of the key concepts that were central within the research. By providing insights into each of the theories, the chapter was able to distil out any of the factors that play a significant role, firstly in determining the severity and nature of a traumatic brain injury and secondly in guiding the processes that inform decision-making within the courts.

Regarding the classification of mild traumatic brain injury, the classification theory identified that several factors including:- (i) type of injury, (2) clinical severity, (3) broad aetiology, (4) classification of involvement and (5) classification by injury progression, were all important influences within issues to do with deciphering the nature and severity of any identified brain injury. By contrast, the source theory for legal decision-making identified that legal pragmatism realism, (ii) attitudinalism and strategic foci were the driving influences in decision making within the judiciary. As an added observation from the broader literature, there was evidence from some literary sources that political influences have a substantial and notable role in decision-making particularly within the South African context and it is on this basis that the political influence is acknowledged and taken account of within the specified data collection instruments.

Theory driven research such as the current study, provides the ground for valid, rigorous, and theory-informed understanding of the phenomena under study. Through the combined exploration of the contributing theoretical frameworks, the researcher has been able to present a comprehensive understanding of the phenomena under investigation and from this it has been possible to identify and specifying the exact contents of any emerging data collection instrument.

## CHAPTER 4

### RESEARCH DESIGN AND METHODOLOGY

#### 4.1 INTRODUCTION

The preceding chapter on theoretical and conceptual frameworks facilitated an in-depth exploration of the different models that were utilised to inform thinking about the different concepts within the current study. The chapter enabled a critical discussion and engagement about the value of utilising the MTBI classification model and Epstein, Landes, and Posner (2013)'s Summative Theory on "the behaviour of Judges, as guiding theoretical foundations. From this, the researcher was able to identify in a much more rigorous and evidence-based way, the different concepts that have relevance to the study.

Their clarification served as the foundation of context for the design and implementation of methodological aspect of the study. Informed by chapter 3, the current chapter presents the study's methodological considerations and in so doing offers insights into the research paradigm, the research design, and other elements that related to the methodology aspect of the study. As a precursor to the articulation of the different methodologies used within the research, this chapter allows for discussion of the researcher's philosophical assumptions, the research choices and methods used to answer the specified research questions.

Notably, the research design aspect of the study is explored in terms of its relatedness to the mixed method design as was used within the study. To that end, the study population, the range of sampling techniques, the data collection tools and resulting processes for data analysis are discussed in depth. Critical to the study is an emphasis and focus on

the ethical considerations that were taken account of by the researcher. To ensure viability in this regard, the latter part of the methodology chapter provides an in-depth exploration and rationalisation of the ethical considerations that were integrated into the study design.

To allow for an easy-to-follow presentation, the chapter is organised chronologically in terms of the phases that were undertaken in completing the study. Initial data collection within the study was conducted via a retrospective review of patient records followed by individual participant interviews. It is important to note that the individual interviews were initially intended to be contact based face-to-face engagements but, the emergence of COVID-19 and the procedural guidelines that relate to social distancing, necessitated revision of data collection approaches so that the researcher relied on non-contact options. That included online alternatives on electronic learning management systems such as MS-teams, Zoom, Moodle, and Sakai.

## **4.2 RESEARCH PARADIGM**

As noted by Creswell, (2014), the foundational basis of any research emanates from the researcher's philosophy about science and scientific inquiry and subsequently, the researchers identification and use of a variety of methods for investigation. Importantly, the researcher's philosophical orientation may have its genesis from a number of potential paradigm choices that include positivism, interpretivism, social constructivism and pragmatism all of which are chosen on the basis of the discipline and the type of research questions to be answered (Shannon-Baker, 2016). In some permutations, the researcher may generate a general idea, develop a theory, and assert a testable hypothesis during

this process. Testing of this hypothesis through the use of data (deductive enquiry) is one approach whilst the other may include, more inductive processes, that are founded on the collection of data and subsequent generation of observations that provide the ground for testing (induction) (Taylor, 2013). As noted by Flick (2017), the researcher's decision about the most appropriate research design must be based on them having had a holistic appreciation of the range of paradigm options that exist and guided by this, the researcher within the current study explored the most dominant paradigm options, as summarised below.

#### **4.2.1 Positivist Research Paradigm**

In the former mode of enquiry (i.e. deductive enquiry), the philosophical stance of the researcher is guided by positivism which exists as the underlying paradigm that guides quantitative scientific methodologies (Denzin, 2010). Within this assumptive paradigm, the researcher's position is that all phenomena are measurable using deductive principles from the scientific realm. Proponents of this paradigm are of the view that positivist methodologies represent the only objective means by which researchers can establish truth and objective reality. Here, the widely held view is that science is based on accepting a single intangible reality which is unlikely to change across time and setting (Bryman, 2007).

Similarly, there is an asserted view that, research relies entirely on observations and objective measurements and if researchers follow specific methods, techniques, and procedures, then it can be expected that repeatable outcomes will be likely. Within this paradigm, concepts such as randomization, the use of controls, identification of specified

variables, relies on closed-ended questions and the use of statistical data analysis procedures are the gold standard of research activity. This paradigm gives low evidential credence to the subjective experience and for that reason factors such as individual attitude, cognitions are not seen as representing valid evidence in rigorous knowledge purely because within the objective assessment of the positivist, they lack a potential for reliability and validity (Fink, 2010). Other aspects of the study such as the individual interviews and focus groups relied on the adoption of varied philosophical positions such as constructivist or interpretivist research paradigms. The acceptance of subjective realities that relate to the current research question served as the primary disqualifying factors which rendered the positivist paradigm not appropriate as the dominating way of thinking about neuro psychological issues as they relate to judicial compensation

#### **4.2.2 Constructivist or Interpretivist Research Paradigms.**

Constructivists or interpretivist research paradigms represent a group of paradigms that hold the view that perceptions about reality are either socially constructed or have their genesis in the interpretations that individuals make. In this respect, these paradigms acknowledge the subjective nature of awareness and in so doing they give priority to the role played by socialization and by individual patterns of interpreting events and/or experiences.

As noted by Maxwell and Reybold, (2015), constructivists believe that reality is socially constructed and for that reason, it can exist in many intangible forms that differ only by virtue of the differing people who are constructing them . Within this paradigm, assertions about what is true or false are heavily guided by cultural, historical and context based

influences (Onwuegbuzie, Bustamante and Nelson, 2010). It is important also to note that these realities can be expressed either as a form of individual realism or as group shared realisms and it is these differentiations that allow for the possibility of individual participant interviews and focus group discussions as methods for gaining insight into the realities as portrayed by those experiencing them. By the same account, the researcher accepts his/her exposure and how their values, beliefs and perceptions may inevitably impact their processing of the realities that are shared with them. In essence, the constructivist and interpretivist research paradigms understand that socialisation and an individual's thinking style may impact the range and nature of responses that are possible during any inquiry.

The current study's focus on the classification of mild traumatic brain injury and issues related to judicial decision-making represented an appropriate fit to the central designs of constructivism and interpretivism and it is on this basis, that the use of open-ended questioning formats was readily utilized within the study. Furthermore, the researcher was cognisant of the fact that individual views and opinions were given high status as sources of evidence in ways that would have contradicted positivist studies. Despite an acceptance that constructivist and interpretivist research paradigms were relevant, it was important to assess whether more in depth and meaningful insights can be gained by adopting a more practical, eclectic understanding of the issue under investigation, being guided by a practical pursuit of answers to a phenomena alliance directly with the pragmatist research paradigm. In keeping with the ethos of assessing how each research design and paradigm suited articulated research questions, the pragmatist research paradigm was also considered to ascertain whether or not it represented an appropriate

fit for the current range of research questions.

#### **4.2.3 Pragmatist research paradigm**

Pragmatism is premised on a worldview that assumes that reality is a multifaceted and complex phenomenon whose existence relies on equal importance being given to both quantitative and qualitative approaches. As such, the philosophical assumption of pragmatist designs is that reality is both measurable and objective and can also be subjective. Pragmatism has been cited by many including Cameron, (2011) and McKim, (2017) as the research design of the future particularly in the exploration of complex human phenomena by virtue of its acceptance of both positivist and non-positivist processes. To that end, it is neither reliant exclusively on qualitative nor quantitative research approaches but works on the acceptance of both these paradigms that allow for holistic insights that would not be possible with reliance only on one paradigm. Pragmatists above all, argue that pragmatism represents the new foray into human research because it acknowledges and takes account of the complexity of human situations (Zachariadis, Scott and Barrett, 2013). Pragmatism by all accounts is a naturalistic philosophy whose primary guiding principle is that the use of methods should seek to identify and utilise methods that are suitable in addressing a complex research question within minimally adjusted study settings. Importantly, pragmatism allows for the maximization of both qualitative and quantitative strengths while at the same time, it ensures the minimisation of negative impacts associated with the exclusive reliance on one paradigm. This characteristic is seen as one of the most important attributes of pragmatist methodologies in addition to the fact that, this philosophical stance allows for much more holistic engagement with the phenomena under study. Mertens, (2012) and

Mukurarinda, (2019) aptly capture the importance of the pragmatist paradigm and argue that one of its key benefits is this ability to identify the weaknesses of one methodology and to strengthen it by integrating different approaches. In such cases, it can be reasonably argued that the transferability of knowledge becomes of equal importance as its production. Creswell and Clark, (2007), in his role as the primary proponent of pragmatism, argues that this philosophical position offers several very specific tenets for research that include acknowledging that: -

1. Pragmatists or researchers that engage in mixed methodologies are not only dedicated to a single system of philosophical assumptions and therefore they accept multiple approaches to understanding reality.
2. Individual researchers have the scope in self-determining right to choose the methodology of research that they view as best allowing them to achieve their objectives and answer specified research questions.
3. Pragmatist researchers accept and utilise the importance of both quantitative and qualitative data in their pursuit of the most valid answers to their research questions.
4. Pragmatist researchers have an added bonus for establishing and providing scientific rationale for why the combination of both quantitative and qualitative data is necessitated in the first place.
5. Pragmatists hold a unified belief that research should always be conducted with reference to social, cultural, political, and other contexts.
6. Pragmatism's focus on the acceptance of multiple realities establishes it as the paradigm that wholly accepts the existence of different worldviews, assumptions

and multiple forms of data collection, analysis, and interpretation.

Even though the pragmatist research paradigm offered a wide range of exploratory possibilities for the study, the researcher concluded that it did not represent the most appropriate fit for the current study primarily because the phenomena under study is relatively new and exploration would be focusing on gaining depth of insight rather than extrapolating quantitative relational insights. In simple terms, constructivist and interpretivist research paradigms offered the most noteworthy road map for gaining the expected insights into the area under study. Given this determination, the constructivist and interpretivist paradigms were selected for the study and to that end, data collection was conducted via review of medical records and individual interviews.

#### **4.3 CONTEXT AND SETTING OF THE STUDY**

The study was conducted within both neuropsychological assessment and treatment centres and with court officials that presided on settlement claims related to MTBIs. In the first instance, data was collected from medical records of patients from three psychological assessment and treatment centres in the North of Johannesburg, Gauteng, South Africa. Similarly, clinicians and court officials working within North Johannesburg claims courts were recruited as participants of the study. The location of the study i.e., Northern Johannesburg covers one of the most affluent and most trafficked areas in South Africa and indeed in Africa and the high court in Pretoria handles many RAF related cases on a daily basis. The centres offer assessment and treatment services to the following suburbs i.e., Midrand, Randburg, Sandton (including Rivonia, Bryanston, Morningside); (Source: - [portfoliocollection.com](http://portfoliocollection.com), 2019).

North Johannesburg includes the area of Sandton which the Safety Report, (2019) has identified as one of the most trafficked urban centres in the whole of Africa and by that account it poses a significant risk of pre-existing conditions that increase the risk of drivers being involved in traffic accidents. Not only is Johannesburg an increased risk by virtue of the number of vehicles within its streets, South Africa has been identified by some including David, Ngulube and Dube, (2013) and Moyo, Patel and Ross, (2015) as having disproportionately high rates of drivers who lack the prerequisite preparedness to drive safely.

This has been attributed in part, to disproportionately high levels of corruption that have been identified with respect to driver testing combined with the fact that the country has the best car industry in Africa. As noted by Moyo, Patel and Ross, (2015), the existence of the two above cited factors means that it is more likely that individuals would have extraordinarily powerful cars also do not possess the expected levels of preparedness to be able to have such powerful vehicles under their control. Other factors such as the disproportionately high reported rates of driving under the influence cases, all add to the depiction of South Africa and by inference, Northern Johannesburg as locations of increased risk of road traffic accidents.

Further to the study being conducted in Northern Johannesburg, specific assessment and psychological treatment services were purposively identified as the venues where participants for the study would be drawn from. In terms of function, the identification of appropriate centres was premised on the fact that, for inclusion as a study centre, the unit needed to have psychological experts who worked with individuals affected by MTBI. The centres had also confirmed that they offered services to individuals whose injuries had

been dealt with by claims courts. To that end, three assessment and treatment centres across the Northern Johannesburg region were purposively selected.

#### **4.4 THE SAMPLING PROCESSES – THE POPULATION**

In meeting the specified study objectives, the researcher identified several participant groups who were seen as possessing valuable insights that could offer better understanding of the issues related to neuropsychological influences in the settlement of claims related to mild traumatic brain injuries. In ensuring a meaningful representation of each of these data sources, specific information had to be considered in relation to the populations. In sampling, the concept of population is seen as referring to the whole collection of units from which a sample may be drawn. Notably, a sample is seen as that proportion of the whole population that is representative and allows the researcher to draw insightful inferences about the way the group from which the individual units are drawn (Fink, 2010).

##### **4.4.1 Source population**

As noted by Kothari, (2012), the source population can be seen as the collection of individuals, measurements or items about which meaningful inferences about a phenomenon of interest are desired. Within the current study, the source populations represented all the individuals who had been involved in traffic accidents and had sustained Mild traumatic brain injuries. Similarly, the diverse groups of clinicians that participate in the identification and subsequent treatment of mild traumatic brain injuries and judiciary professionals involved in decision-making about the settlement of injury claims both constituted the source population.

#### **4.4.2 Study population**

Miles, (1994) defines the study population as those individuals who have relevant experience of the phenomena under study and are able to provide the range of answers to the specified research question. In this respect , the current enquiry's study population comprised a number of potential groups that included clinicians involved with mild traumatic brain injuries; selected participants who had been Involved in car accidents and sustained some mild brain injury and finally, individuals who worked within the judiciary and were involved in some way in decision-making processes about issues to do with the settlement of injury claims. The issue of participant inclusion relied heavily on several inclusion and exclusion criteria which specified much more definitively, the range of characteristics that made potential participants eligible or non-eligible to be participants. In this study the following inclusion and exclusion criteria we applied to individuals who were in the study population; -

##### **4.4.2.1 Study Population One- The patients / claimants**

For consideration and inclusion within the first participant group, i.e., the patients. Individuals had to: -

1. Be patients of the assessment and treatment centres.
2. age 18 years old up to 50 years old
3. adults who have had MTBI and had made a compensation claim to the courts.
4. Willing to take part in the study without monetary compensation beyond refunding of travel costs, if incurred.
5. Willing to take part in individual/group interviews conducted via online

methodologies because of the covid-19 restrictions.

#### **4.4.2.2 Study Population two – The Clinicians.**

The participant group of clinicians involved individuals who met the following criteria: -

1. Clinicians with formal psychological training and who were registered with the Health Professions Council of South Africa as verification of their ability to practice independently as specialists within the psychological field.
2. Clinicians registered with The Health Professions Council of South Africa who are involved within the assessment treatment centres as specialist practitioners that worked directly with individuals who had sustained MTBIs, i.e. Psychiatrists, Neurosurgeons, Neurologists.
3. Prior histories of providing specialist opinions to courts; authoring reports and engaging with the local courts in relation to the adjudication of MTBI settlement cases.
4. Willing to take part in the study without compensation.
5. Willing to take part in individual and group interviews conducted via online methodologies in line with COVID-19 restrictions

#### **4.4.2.3 Study Population three: - decision-making court officials**

This participant group involved professionals within the court who had direct involvement in dealing with and adjudicating over MTBI settlement cases. For inclusion as a participant within this group, individuals had to be:

1. practicing and active court officials who participated in the decision-making process as decision makers in relation to the settlement of MTBI claims made to the courts.
2. current employment as a decision-making court official with respect to the settlement of MTBI claims.
3. willing to take part in the study without compensation.
4. Willing to take part in individual and group interviews conducted via online methodologies in line with COVID-19 restrictions

#### **4.5 SAMPLE SIZE AND SAMPLING TECHNIQUES**

Some including Parahoo, (2006) assert the view that the sample size refers to the number of potential participants from whom you obtained the required information to provide the necessary insight into a phenomenon of interest. Traditionally, the concept of sample size determination has been seen largely as a mathematical process of deciding, before a study begins, how many subjects one would engage in order to gain the necessary insight. Faber, (2012) and Maguire and Delahunt, (2017) offer a much more holistic appreciation of this process which takes account of sampling within qualitative contexts and to this end, they view sampling as a process where probability or nonprobability principles are used to identify the specific subject that will provide insight into a predetermined phenomenon of interest. In the current study, samples were required to account for each of the anticipated phases of the study which included (i) a retrospective review of patient records and (ii) individual interviews of all the participant groups.

Phases one and two of the study involved qualitative processes that relied on non-probability, judgmental sampling principles, as described below.

For the individual interviews, multi-discipline clinicians; claimants and decision-making court officials were interviewed, and maximum variation purposive sampling was conducted to ensure the inclusion of the following neurosurgeons (n=7) neurologists(n=7), psychiatrists(max of n=7) and psychologists(n=7) and (ii) claimants (n=25) and (iii) decision-making court officials (n=7). Each of the above stated sample sizes were determined primarily via the principle of data saturation. According to Flick (2007), data saturation refers to the point in data collection where, no new information is expected to be added that will enhance or change the findings of a study. Please note: - all data collection within the interviews was developed to ensure maximum compliance with COVID-19 social distancing and infection control protocols as stipulated by UNISA and governmental guidance.

#### **4.6 DESCRIPTION OF THE PROCESS FOR OBTAINING PARTICIPANTS' INFORMED CONSENT**

The intended study's participants were aged between the ages of 18 years and 50 years old. Research ethics involves protecting the rights of the participants and the institutions in which the research is conducted and in maintaining professional integrity (Babbie 2013, p32).

As noted above, the study involved collecting data from participants over the age of 18 and only consent provisions were needed for integration into the study plan.

Informed consent was voluntary without pressure of any kind. The researcher avoided

bias and ensured that informed consent was obtained. The participants were also informed about the purpose of the study, the roles that they needed to play, and possible discomfort (if any) accruing from investigative process. Consent forms were designed, read to the participants, and signed prior to participation.

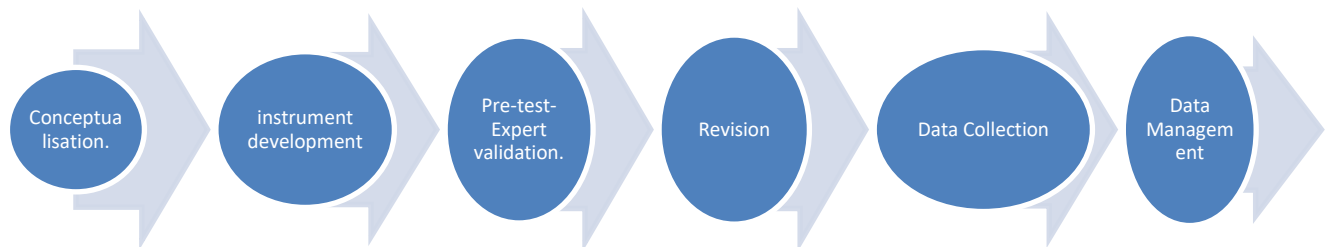
#### **4.7 DATA COLLECTION INSTRUMENTS AND TOOLS**

Carter *et al.*, (2014) and (Grösser, 2013) identify data collection as relating to the process of gathering information in ways that are both meaningful, reliable and may include a range of approaches such as retrospective review of records, individual interviews, physiological measurements and environmental measurements . With respect to the process of data collection, two categories of procedures exist, and these include primary and secondary data sources. The former i.e., primary data, involves the collection of data from the field of study, whilst secondary data refers to data which has previously been collected by someone else, and which may have already been statistically analysed and is now presented with interpretations from the primary individual who dealt with it.

Within the current study, the researcher relied on both primary and secondary data sources. For example, the individual interviews of all the participants represented examples of primary data sources. By contrast, the collection of data from the retrospective review of patient records represented an example of a secondary data source.

The identification of concepts that were pertinent to the primary issues of interest within the study was largely guided by contributions from the theoretical and conceptual frameworks that were adopted for use within the study. Similarly, emergent themes from

the literature review served as an important directive area of content which also highlighted areas that were relevant to the issues that were being explored within the study. In that respect, the development of each of the data collection tools followed the constructs and concepts that were highlighted by each of the theoretical, conceptual frameworks. Each of the instruments followed the data collection instrument development process as described by Brancato et al (2004). This process describes a six-step procedure in which the first step of developing a test instrument relates to the conceptualization of the phenomena under investigation. The diagrammatic summary below provides a useful synopsis of this instrument development process as was adopted and utilised within the current study: -



*Figure 7: A step-by-step process of data collection instrument development (Brancato et al, 2004)*

As depicted above in Figure 8, any data collection instrument development process begins with conceptualisation. In this instance, this meant the re-articulation of research interests in ways that could be specified as measurable questions. This preliminary phase identified several issues such as the definition of the different participants and the variables to be measured. As alluded to above, the variables of interest were deduced from the conceptual framework that was developed within the current study.

The second step in the instrument development process relates to the actual development in design of the specific data collection instrument which in the case of this study included a retrospective review template and individual interviews. Once each of the specified data collection instruments were developed, they were subjected to pre-test validation with appropriately qualified experts. As noted by Carter *et al.*, (2014), pretesting involves the assessment of the data collection instrument with respect to how well it is designed, how well it addresses the expected phenomena. Aspects such as the length of time it takes to complete, and how well participants appeared to understand the questions all represent aspects that would be included in pretesting. Beyond this systematic pretesting, each of the data collection instruments was shared with relevant experts in the field to elicit their thoughts and views about the extent to which the tools were indeed measuring the concepts that they aspired to. This validation process was minimalistic and involved two experts for each of the data collection instruments and within this, one of the experts used was the researcher's academic supervisor who possessed extensive experience in data collection instrument development.

The development of the retrospective review of document instrument and the individual interviews, and the survey instrument was subjected to a combination of quality enhancing processes. Validity and reliability constituted key quality assurance measures that were dealt with within the study.

These concepts refer to the soundness (validity) and replicability (reliability) of the data collection instrument. In this study, the data collection instrument was conceptualised and developed in line with the theoretical and conceptual frameworks that were deemed relevant to the study. This reference to proven theoretical concepts ensures that the focus of the data collection tool is conceptually aligned with the study topic and on that basis, assures instrument-validity. The proposed data collection instruments specify the questions and topic areas to be explored and are structured to ensure that the same concepts and experiences are explored by data collectors who use the instrument. This is associated with increased reliability of the data collection instrument.

Critically, it is important to note that, variables related to validity and reliability are best understood if they are exclusively applied to quantitative studies. By contrast, qualitative aspects of the study were subjected to a range of trustworthiness considerations.

#### **4.8 VALIDITY**

Validity and reliability were especially important when considered within the context of a brand-new study. As a measure for assuring that the data collection instruments were valid, specific assessments were made to determine the extent to which each of the data collection tools were measuring the concepts that they believed and intended to measure. More specifically, the assessment of the validity of the data collection instrument was

specifically targeted at looking at both internal and external validity. Putka and Sackett, (2010) believe that internal validity is the degree to which the findings are attributed to the independent variable and not to some other rival explanation. To that end, the development of the survey questionnaire was specifically well considered and insured that the range of variables that could challenge validity were addressed much more closely by the research leader. The second typology of validity was external validity. This type of validity refers to the extent to which the results of a particular study of research apply to the target population as specified either in a proposal or in a thesis development framework.

#### **4.9 RELIABILITY**

D. F. Polit and Beck, (2012) identify that reliability refers to the extent to which the findings of a particular study are consistent overtime and can justifiably be seen as representing an accurate representation of the total population. It is often associated with the data collection process and within this, it gives insights into the consistency of the data collectors in the gathering tools as a means by which the intended thesis could be understood. The reliability of the survey questionnaire was assured using several methodology arrangements. These included the identification and training of data collectors in such ways that they were able to identically assess the issues at hand.

## **4.10 MEASURES TO ENSURE TRUSTWORTHINESS IN THE QUALITATIVE DATA COLLECTION INSTRUMENTS**

The Qualitative data collection instruments were subjected to measures to ensure trustworthiness. Lincoln and Guba's model were used to ensure trustworthiness of the research findings (Polit & Beck 2008:539).

### **4.10.1 Credibility**

The truth value of this qualitative research related to the discovery of how different consequences on MBTI impact the actions of courts. The qualitative study is credible when it presents confidence in the truth of the findings (Polit & Beck 2008:539). The researcher enhanced credibility of the study by conducting repeated in-depth interviews until data saturation was reached. The participants were given enough time to share their experiences and their responses were recorded.

### **4.10.2 Dependability**

The researcher believes that the same findings should be found if the study was to be replicated with the same respondents in a similar context. The key to qualitative research is to learn from the participants rather than to control them. The researcher enhanced dependability of the study by keeping copies of the research methods, tape recorders, the transcribed data, and the reports containing coded data.

### **4.10.3 Confirmability**

The researcher took the following steps to enhance confirmability of the study and increased worth of the research findings; a relaxed atmosphere was created for the

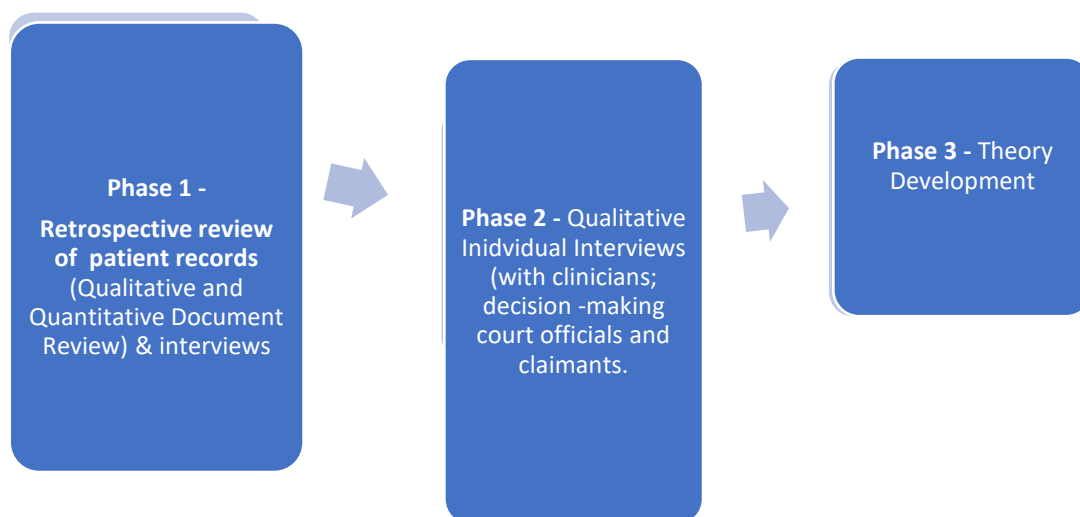
participants to feel free and share their experiences with the researcher; enough time was spent with each participant when the in-depth interviews were conducted. The participants were not rushed to answer and were also allowed to give their honest opinions; in-depth interviews were used to obtain data for the study.

#### **4.10.4 Transferability**

The transferability of this research was enhanced by conducting data collection until data saturation occurs and by providing dense description of the research data, including verbatim quotations. The findings of this study will not necessarily be applicable to other communities and settings.

### **4.11 DATA COLLECTION METHOD(S) AND PROCEDURE**

Data was collected via a Three-Phase empirical study, as diagrammatically represented below in Figure 9:



*Figure 8:Data Collect Phases*

This included an initial retrospective review of patient records (Phase 1) of different data claimants, to gain insights into pre-morbid presentations, assess relevant clinical histories and reported physiological and psychological outcomes. In addition, the review offered an opportunity to determine the documented status of MTBI, and the judicial processing of cases related to MTBI. This phase of data collection was followed by individual interviews (Phase 2) with strategic key informants that included neuropsychologists, psychiatrists, neurosurgeons, claimants and court officials about diagnosis and post-diagnosis challenges. Sample sizes for each these aspects were determined via purposive sampling and data saturation to a maximum of 7 interviewees per key informant group i.e., neuropsychologists (max 7), neurologists (max 7), neurosurgeons (max 7), and court officials (max 7). All data collection within the interviews was developed to ensure maximum compliance with covid-19 social distancing and infection control protocols as stipulated by UNISA and governmental guidance and to this end, online interview options and social-distance compliant environments ONLY, were used as interview sites.

For the interviews, data was collected from participants to explore (i) their own understandings of what MTBI is and how it relates to physiological and psychological presentations (ii) their attributions for what MTBIs can result in (iii) their insight into the effects of emotional problems on cognitive functioning (iv) the resulting effects of MTBIs on physical pain and (v) opinions of participants on current systems of settlement of claims.

In the case of court decision-makers, they were asked to give insights into the factors that they consider within their decision-making processes (See Annexure E for example of data collection instruments). Please note: - All data collection within the interviews was

developed to ensure maximum compliance with covid-19 by UNISA and governmental guidance.

#### **4.12 DATA ANALYSIS METHODS**

With the qualitative data, a combination of thematic and content analysis processes was used. Krippendorff's content analysis approach formed the basis of the content analysis aspect and thematic analysis, based on Colliazi's seven step analysis method, was used.

Content analysis involves reading qualitative data and seeking to quantify the extent and frequency with which certain terms/ words related to the phenomena appear within an interview transcript. This process was used as an initial assessment of how commonly expressed thematic areas were. With respect to the thematic analysis, Colliazzi's approach was used, and this involved seven distinct steps of managing the data as summarised below: -

- 1) Reading the transcribed data from the interviews several times. This first step allowed for an overall view of the content and for more in-depth insight into the content.
- 2) Extracting statements that appear noteworthy by virtue to their relevance to the phenomenon being studied and this involved the identification of relevant direct quotations from the participants.
- 3) Formulation of meanings from the data.
- 4) Organising the aggregate formalised meanings into themes and categories through coding.
- 5) Developing and articulating descriptions of the phenomenon.

- 6) Identifying the fundamental structure.
- 7) Validation of the description with study participants to ensure that the analysis is valid. Adapted from Colliazzi (1978)

This approach to data analysis was applied to all individual interview data. To give more depth through variation, computer assisted qualitative data analysis via NVivo© was used regarding some elements of the data.

#### **4.13 ETHICAL CONSIDERATIONS**

Ethical approval was sought and obtained via UNISA's Department of Psychology Ethics Committee (see Annexure A for copy of ethical clearance certificate) The study's participants were aged between the ages of 18 years and 50 years old and as such, adult participant consent provisions were taken account of discussing the ethical considerations. Research ethics involves protecting the rights of the participants and the institutions in which the research is conducted and in maintaining professional integrity (Babbie 2013:32 and Flick, 2017).

The researcher took several steps into consideration throughout the study to ensure that it complied with the principles of ethics.

For the prospective participants, informed consent was voluntarily obtained without pressure of any kind. The researcher avoided bias and ensured that informed consent was obtained and in doing this, care was taken to make sure that participants were informed about the purpose of the study, the roles that they would play, and possible discomfort (if any) accruing from the participation in the investigative process. Consent

forms were designed, read to the participants, and signed prior to participation. Considering the risks that might have arisen in relation to COVID-19 risks of infection, all data collection was done via online meeting platforms to maximise adherence to the social distancing guidance

- The following steps were followed in obtaining informed consent:

**-Disclosure of information:** The researcher provided all participants with sufficient and understandable information regarding their participation in the study (See Annexure B, participant information sheet). Essential information was presented in the written and verbal form to the participants.

**- Voluntary decision-making:** The researcher provided all essential information about the study and gave participants a chance to decide whether to take part in the study or not without coercion or any undue influence. Taking part in the study was wholly voluntary, and all individuals were reminded of their right to withdraw their involvement at any stage of the project without any negative repercussions and/or fear of being prejudiced against. All the data collection activities were conducted in locations where social distancing could be practiced or via online modes, as in the case of focus group discussions.

There were no monetary benefits for participation in the project. Confidentiality and anonymity were ensured and where appropriate, coded/disguised names of respondents/institutions were used. Participant's right for self-determination was always carefully considered, and it was reemphasised clearly that participants had a right to decline participation or to withdraw or collectively explore alternative ways of participation, should they have felt uneasy about any aspect of the study.

- **Confidentiality:** The researcher protected all data gathered during the study from being divulged or shared with other people without authorization of the participant. This means that the research data was kept closed and inaccessible to outsiders.

- **Anonymity:** All participants were kept nameless in relation to their participation in the study and were only identifiable by numbers, so that their identity could not be linked, even by the researcher, with their individual responses (Burns & Grove 2009:196-205).

- **The principle of justice:** Parahoo (2006:112) affirms that justice entails being fair to participants by not giving preferential treatment to some and depriving others of the care and attention they deserve. As such, the researcher treated all participants equally. The researcher ensured justice by selecting participants based on research requirements. All agreements entered were honoured and more importantly, study participants were assured that their involvement in the study would not be used against them in any way.

The researcher also ensured that the researcher-participant relationship did not create room for the participants to be exploited, coerced, or manipulated. The ethical principles basically require that participants in the research must be able to give informed consent to being part of the research, the identity of informants must be protected unless they give written permission to be identified in stored data and research reports, the researcher must not coerce participants into participating or divulging information, and must keep data for five years to protect themselves against charges of 'forging' data (Polit & Beck 2008:176-177). All these requirements were adhered to in their completeness.

In healthcare practice, non-maleficence is defined as the principle of avoiding harm or doing little harm as possible (Parahoo, 2003). Every participant has a right not to be harmed. The study was therefore conducted taking consideration to minimize any harm to the participants. The protection of research participants has become a high priority among members of the scientific and health care communities (Polit & Hungler 2006:87-91). As such, it is crucial that their rights be protected. This principle stipulates that care must be taken to prevent harm which can be emotional, physical, social, or psychological.

#### **4.14 SCIENTIFIC INTEGRITY OF THE RESEARCH**

As a measure to ensure the scientific integrity of the study, all sources that were consulted are acknowledged via adherence to referencing requirements. In addition to respecting the rights of the participants, the researcher-maintained respect for the scientific community by protecting the integrity of knowledge and in so doing, ensured that the following activities were avoided as guided by Van der Walt & Van Rensburg 2010:40-41.

- Fabrication, falsification, or forging
- Manipulation of design and methods
- Selective retainment and or manipulation of data
- Plagiarism

#### **4.15 SUMMARY**

This chapter discussed offered a detailed methodology of the study and in so doing, presented a discussion of the study's epistemological basis, the chosen research design and the data gathering and analysis processes that were followed. Ethical considerations were also presented to demonstrate adherence to best principles.

The presentation of methodological aspects serves as a critical foray into the consideration of the study's findings and interpretations thereof. As such, the current chapter precedes chapter 5 whose focus will be the presentation of the study's findings interpretations and data analysis aspect.

## CHAPTER 5

### DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

#### 5.1. INTRODUCTION

The previous chapter gave an in-depth account of the methodological aspects of the current study. This chapter extends the study by giving an account of the data that the researcher collected presenting, analyzing, and interpreting it. The researcher collected the data over a 3-month period between May to July 2021. The approaches used to collect data within the study included a retrospective review of patient records, and qualitative interviews. The triangulation approach was preferred to improve the quality, the depth and variability of the results and findings of the study. According to Wilcox et al (2018) a sound methodology is required and relies predominantly on the technique used to collect and analyze the data. The study was carried out in English, and all the participants were proficient in the language. The researcher refers to the interviewees in this study as respondents or participants interchangeably. In the qualitative study where respondents were asked to comment on an aspect of the study, the verbatim quotations that will be expressed in this study will not be edited for grammatical errors to maintain the originality and the full understanding of the comments (Thorne, 2020). This allows the reader to interpret the quotations on their own.

In this study the researcher combined both phase 1 and phase 2 into one chapter and chronologically presented the data analysis and treated the study as a multi-approach qualitative study.

The opening chapters of the thesis demonstrated that South Africa has an alarmingly high rate of road traffic accidents with more than half of all drivers being at risk of being in a road traffic accident within a year of driving. Up to half of the causes of mild traumatic brain injury (MTBI) are as a result of road traffic accidents (RTA). The South African government through the Road accident Fund (RAF) compensates victims of Road traffic accidents for what it considers serious injuries. Brain injuries (particularly, Mild Traumatic Brain Injuries or concussions) are amongst the highly contested RAF related matters in the South African courts. There are concerns that there's disproportionate and inconsistent settlement outcomes and most notably, rejection rates of injury compensation for those with MTBIs which contradicts what is the norm for comparable mental and physical injuries. Neuropsychologists are called upon to assist the judiciary through their assessments to determine the extent to which the head injury has affected the affected victims in attempts to facilitate the settlement of these matters.

The proposed study primarily aimed to critically explore the contributory influence of neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of Road Accident Claims among victims of mild brain injury in the South African Courts. The study sought to respond to 8 key research questions:

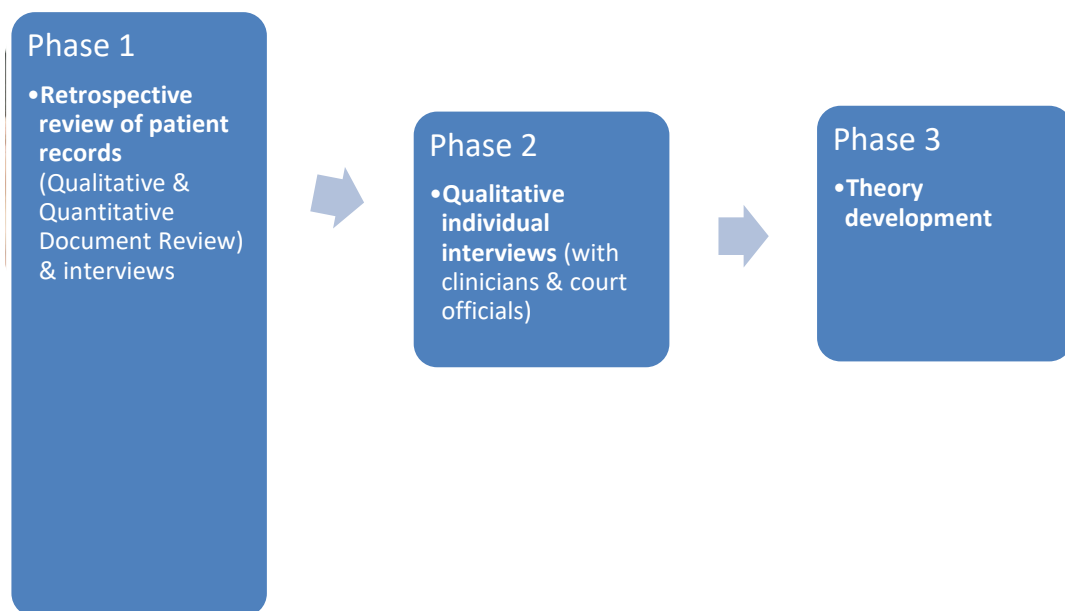
- What is the nature and scale of problems related to the identification of and responses to MTBI within the South African Judiciary specifically in the of settlement of Road Accident Claims in the South African Courts?
- What are the range of health and judiciary responses described within literature on the identification of and responses to MTBI within the South African Judiciary specially in the of settlement of Road Accident Claims in the South African Courts?

- What are the range of symptoms and presentations that represent the global diagnostic characteristics of mild traumatic brain injury from national, and global literature.?
- What is the role played by neuropsychology as an influence related to diagnostic and post diagnostic medical and legal responses?
- What is the range and nature of decision-making strategies used by court officials in their role(s) as judges of settlement claims within the judiciary?
- What are the multi-stakeholder views and perceptions about the best-fit role of neuropsychology with regard to the identification of and responses to MTBI within the South African Judiciary specially in the of settlement of Road Accident Claims in the South African Courts?
- What are the range and impact of the neuropsychological effects of MTBI on global health presentations and functioning among injury victims and how are each of the effects evaluated by the judiciary and compensators?
- What are the key elements of the modification framework and recommendations that support the development of effective health and legal responses and service options that can promote the effective identification and management of MTBI within the South African Judiciary specially in the of settlement of Road Accident Claims in the South African Courts?

The researcher prepared this chapter to accurately present an in-depth analysis and interpretation of the empirical data sourced through the multiple phases of data collection as per the study. Data transformation and interrogation was performed initially to ensure

that the data collected is as accurate as possible. The data was then converted into something understandable for the reader.

Using multiple-data collection processes, the proposed study primarily aimed to critically explore the contributory influence of neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of Road Accident Claims among victims of Mild traumatic brain injury (MTBI) in the South African Courts. To achieve this, the researcher followed the study phases as presented below:



*Figure 9: Study Phases*

As per Figure 10 above, Phase 1 of the empirical study included a Retrospective review of patient records which gave an insight into the views of the individuals who were injured in MVA's or PVA's and sustained MTBI. The sample size for phase 1 was determined through purposive sampling and data saturation which was then achieved at 44 individuals.

Phase 2 of the empirical study comprised of qualitative individual interviews with a range of stakeholder participants who included clinicians and decision-making court officials (DMCOs). These included neuropsychologists and clinical psychologists, psychiatrists, neurologists and neurosurgeons, while the DMCOs included advocates and attorneys. The sample sizes were determined through purposive sampling and data saturation; therefore, in this study the following number of participants were interviewed for each category: **(i)** Psychologists – (n=11), **(ii)** Psychiatrists (n=6) **iii** Neurosurgeons/Neurologists – (n=5), **(iv)** Court Officials – (n=6).

The researcher utilized a combination of thematic and content analysis in processing and analyzing the qualitative data. The content analysis was based on Krippendorff's approach while thematic analysis was based on Coliazi's seven step method.

The researcher spent a few hours analyzing the qualitative data to get an idea of the nature of the data provided, thereafter coding the qualitative data. Data coding included reading the transcripts several times to establish what the code patterns; trends and themes were within the data provided in the transcripts. The researcher conducted a thematic analysis of qualitative data using the coded data. All personal information and any other possible identifiers were removed from the data to preserve the anonymity of the participants as per the ethics principles of research.

Once the data was collected the researcher initially transcribed the data onto excel spreadsheets, thereafter, exported the data from the spreadsheets onto SPSS version 25 to begin his descriptive and inferential statistical analysis. The descriptive statistical analysis presented the data in tables, charts, frequencies, and percentages.

## **5.2. SAMPLE**

Through purposive sampling and data saturation methods the researcher reached saturation at 44 records. The 44 records were comprised of individuals that had been patients and been diagnosed with a traumatic brain injury and had been involved in a road accident before diagnosis. Socio-demographic information was included in the data collection instruments that included age, gender, ethnicity, living arrangement, education level, employment status, premorbid cognitive/Intellectual functioning and highest qualification attained.

## **5.3. PHASE ONE DATA-COLLECTION FINDINGS FROM THE RETROSPECTIVE REVIEW OF PATIENT RECORDS.**

Phase 1 of the study was a retrospective review of patient records of individuals who had been involved in vehicle accidents and were victims of MTBI. This review was done to aid in understanding and determining the profiles of the victims in terms of their common symptomatology. The researcher used a pragmatic approach using multiple methodologies to ensure that the study was meaningful. The retrospective review was followed by a series of qualitative interviews.

The initial data collection phase, which was the retrospective review of patient records, involved the review of 44 records which were selected through purposive sampling and data saturation methods. The demographic profile of the 44 individuals from the retrospective study were as follows:

### 5.3.1. Profile of Retrospective Review Patients

The retrospective review consisted of 44 records which were profiled as per below:

#### Age

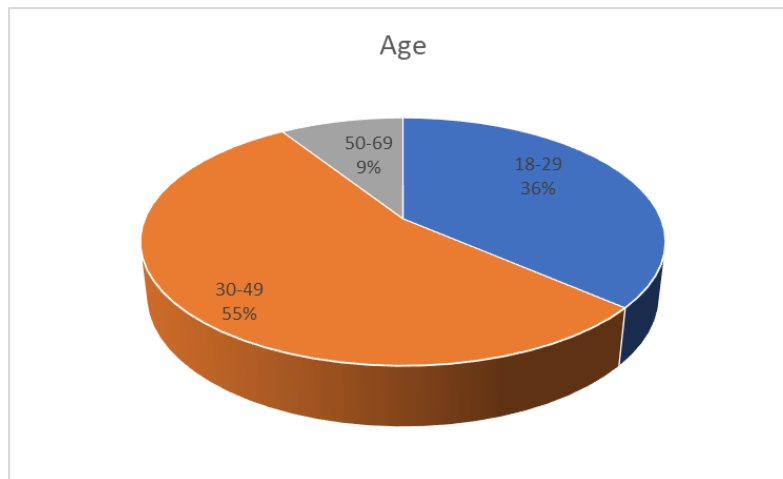


Table 4: Age Demographics

| Age   |       |           |         |               |                    |
|-------|-------|-----------|---------|---------------|--------------------|
|       |       | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 18-29 | 16        | 36.4    | 36.4          | 36.4               |
|       | 30-49 | 24        | 54.5    | 54.5          | 90.9               |
|       | 50-69 | 4         | 9.1     | 9.1           | 100.0              |
|       | Total | 44        | 100.0   | 100.0         |                    |

The sample consisted of 44 retrospective review records. The sample consisted of 54.5% (n=24) individuals who were between the ages of 30-49. There were 36.4% (n=16) That were between the ages of 18-29. There were no patients that were reviewed that were below the age of 18 or above the age of 69.

## Gender

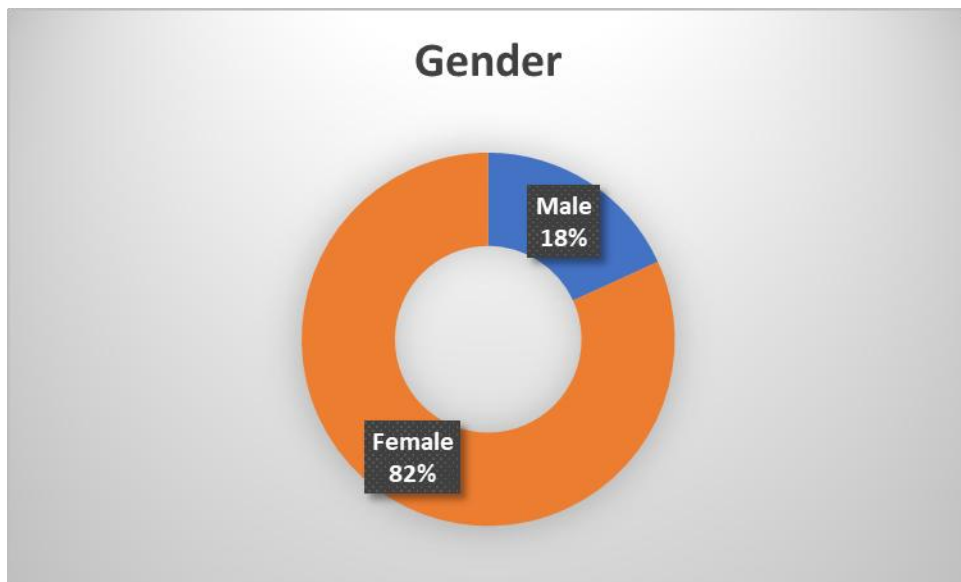


Table 5: Gender Demographics

| Gender |        |           |         |               |                    |
|--------|--------|-----------|---------|---------------|--------------------|
|        |        | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid  | Male   | 8         | 18.2    | 18.2          | 18.2               |
|        | Female | 36        | 81.8    | 81.8          | 100.0              |
|        | Total  | 44        | 100.0   | 100.0         |                    |

The sample predominantly consisted of female participants who made up 81.8% (n=36) of the sample. Only 8 (18.2%) male records were reviewed.

## Ethnicity

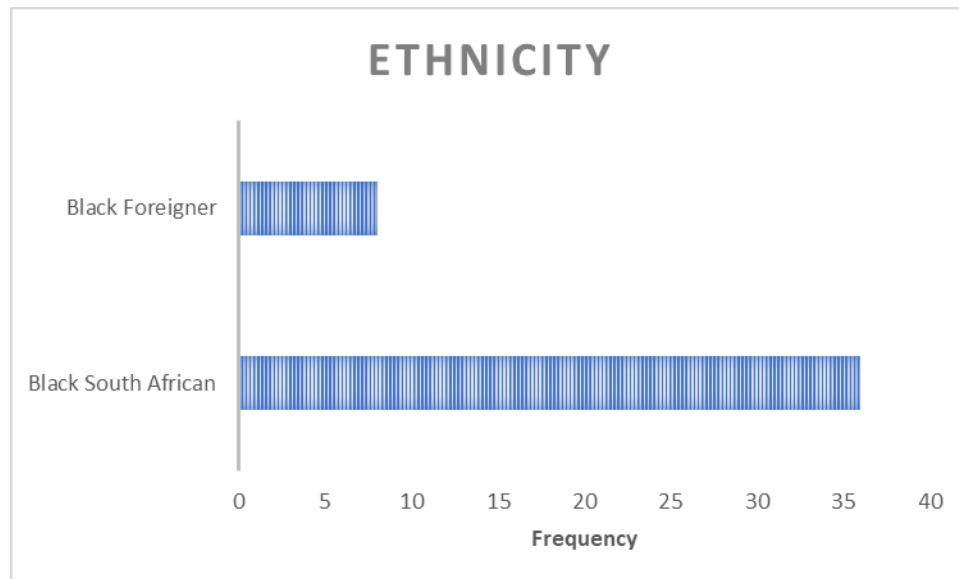


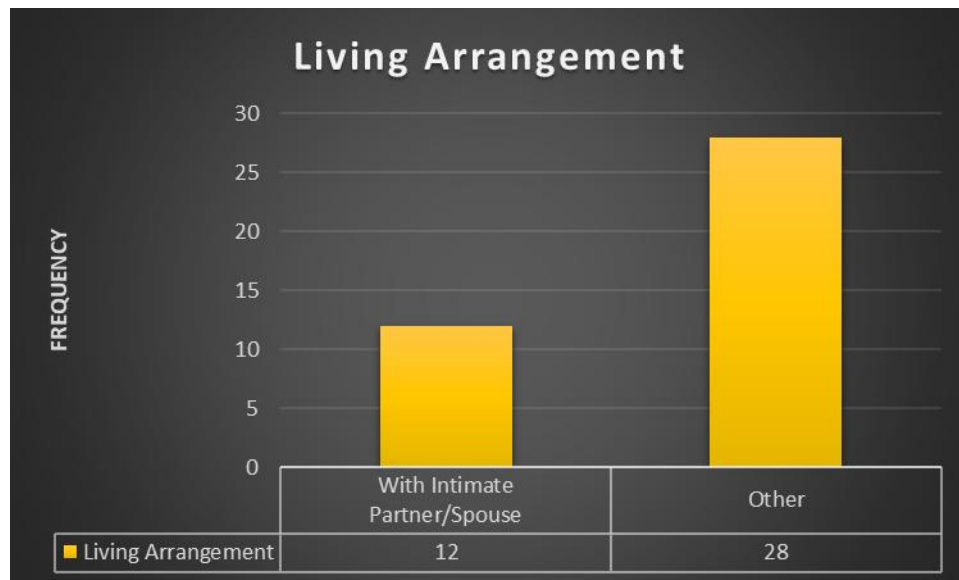
Table 6: Ethnicity Demographics

| Ethnicity |                     |           |         |               |                    |
|-----------|---------------------|-----------|---------|---------------|--------------------|
|           |                     | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid     | Black South African | 36        | 81.8    | 81.8          | 81.8               |
|           | Black Foreigner     | 8         | 18.2    | 18.2          | 100.0              |
|           | Total               | 44        | 100.0   | 100.0         |                    |

Out of the sample of 44 individual records 81.8% (n=36) were Black South African's. The balance of the sample was made up of Black Foreigners who consisted of 8 (18.2%) individuals. It is important to note that only black people were represented in the sample.

The other races did not participate in the study. The selection of black people was not intentional but was a rather a random sampling exercise.

### **Living Arrangement**

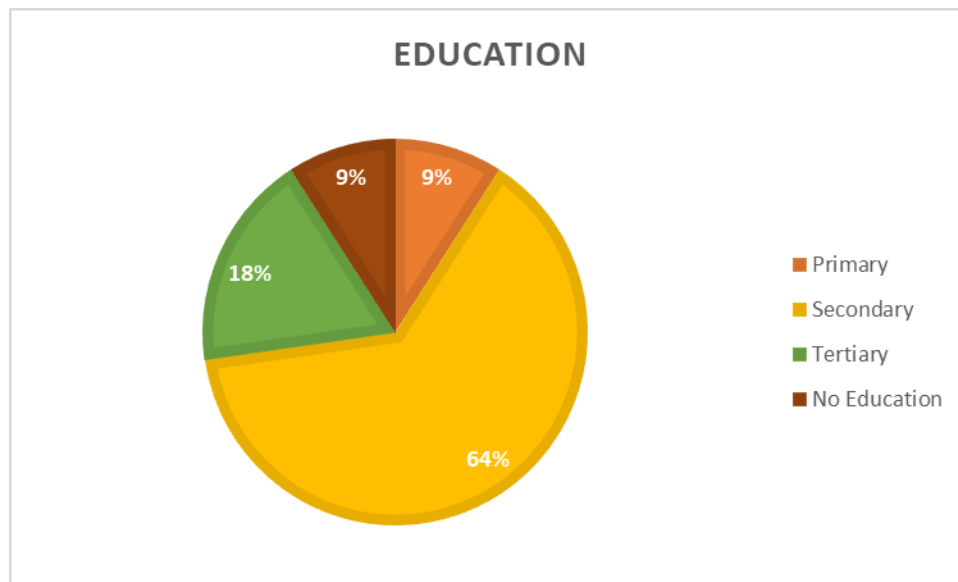


*Table 7: Living Arrangement Demographics*

| Living Arrangement |                              |           |         |               |                    |
|--------------------|------------------------------|-----------|---------|---------------|--------------------|
|                    |                              | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid              | With Intimate Partner/Spouse | 12        | 27.3    | 30.0          | 30.0               |
|                    | Other                        | 28        | 63.6    | 70.0          | 100.0              |
|                    | Total                        | 40        | 90.9    | 100.0         |                    |
| Missing            | System                       | 4         | 9.1     |               |                    |
| Total              |                              | 44        | 100.0   |               |                    |

From the sample there were no participants that lived alone. 63.6% (n=28) of the participants neither lived alone nor lived with a spouse. They all lived with either parents, other family members or friends. Only 27.3% (n=12) lived with intimate partners or spouses.

## **Education**

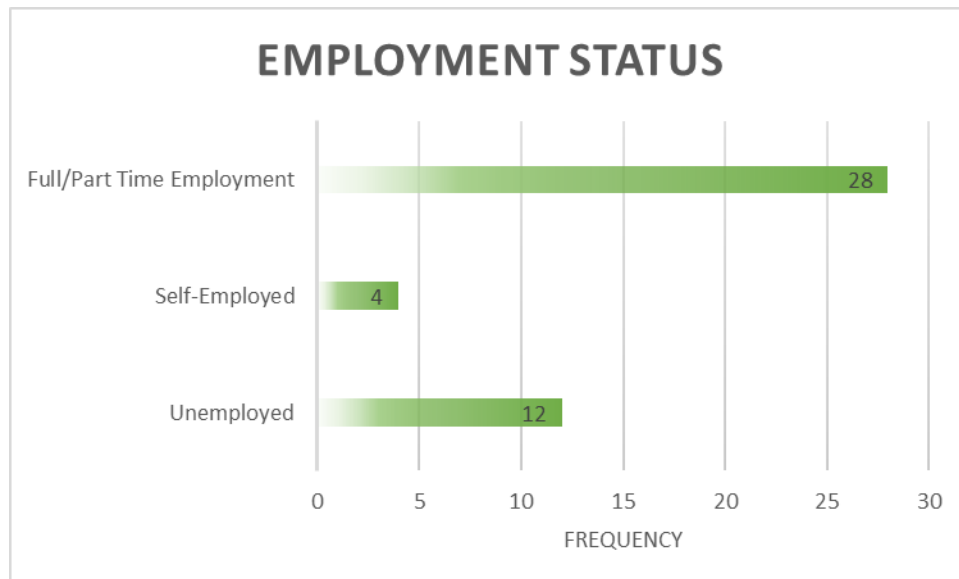


*Table 8: Education Demographics*

| Education |           |           |         |               |                    |
|-----------|-----------|-----------|---------|---------------|--------------------|
|           |           | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid     | Primary   | 4         | 9.1     | 9.1           | 9.1                |
|           | Secondary | 28        | 63.6    | 63.6          | 72.7               |
|           | Tertiary  | 8         | 18.2    | 18.2          | 90.9               |
|           | No School | 4         | 9.1     | 9.1           | 100.0              |
|           | Total     | 44        | 100.0   | 100.0         |                    |

63.6% (n=28) have achieved secondary level education however they all finished at different grades. Very few of these individuals completed Grade 12. 18.2% (n=8) went onto tertiary level. Only 4 (9.1%) had no schooling at all.

### **Employment Status**



*Table 9: Employment Status Demographics*

| Employment Status |                           |           |         |               |                    |
|-------------------|---------------------------|-----------|---------|---------------|--------------------|
|                   |                           | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid             | Unemployed                | 12        | 27.3    | 27.3          | 27.3               |
|                   | Self-Employed             | 4         | 9.1     | 9.1           | 36.4               |
|                   | Full/Part Time Employment | 28        | 63.6    | 63.6          | 100.0              |
|                   | Total                     | 44        | 100.0   | 100.0         |                    |

28 (63.6%) of the retrospective review samples are either in full or part time employment. 27.3% (n=12) are unemployed. The remaining participants are all self-employed.

### **Estimated Premorbid Cognitive/Intellectual Functioning**

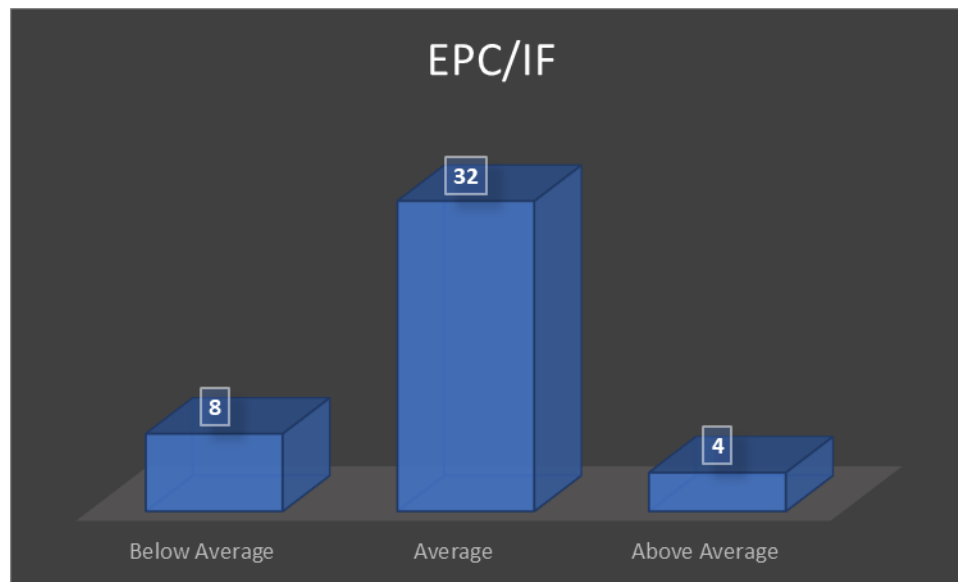


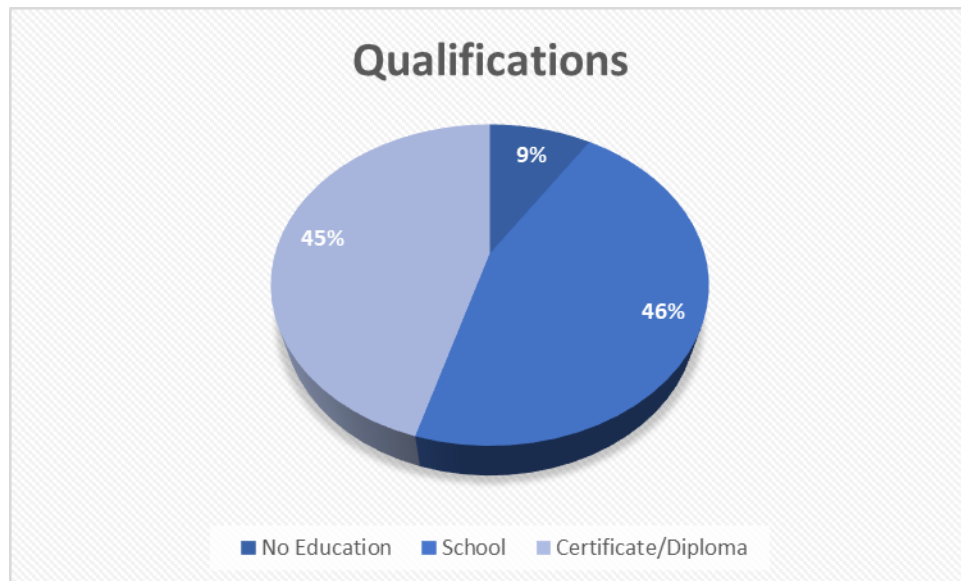
Table 10: EPC/IF Demographics

| EPC/IF |               |           |         |               |                    |
|--------|---------------|-----------|---------|---------------|--------------------|
|        |               | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid  | Below Average | 8         | 18.2    | 18.2          | 18.2               |
|        | Average       | 32        | 72.7    | 72.7          | 90.9               |
|        | Above Average | 4         | 9.1     | 9.1           | 100.0              |
|        | Total         | 44        | 100.0   | 100.0         |                    |

The sample frequencies and percentages above represent Estimated Premorbid Cognitive/Intellectual Functioning of the sample participants. They are no individuals that

are mentally handicapped, however 18.2% (n=8) have below average intellect. Most of the participants are of average intellect, which is represented by 32 (72.7%) of the participants.

### **Qualifications**



*Table 11: Qualifications Demographics*

| Qualifications |                     |           |         |               |                    |
|----------------|---------------------|-----------|---------|---------------|--------------------|
|                |                     | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid          | 0                   | 4         | 9.1     | 9.1           | 9.1                |
|                | School              | 20        | 45.5    | 45.5          | 54.5               |
|                | Certificate/Diploma | 20        | 45.5    | 45.5          | 100.0              |
|                | Total               | 44        | 100.0   | 100.0         |                    |

The sample participants attained different levels of education as per Table 8 above. Table 11 above represents the attainment of a qualification. The education level only shows the level at which a participant may have reached but not necessarily completed successfully. Table 11 shows that an equal number of participants (n=20) representing 45.5% of the participants attained either a certificate/diploma or had some sort of previous schooling without attaining any a certificate/diploma or any other further education. Only 4 (9.1%) of the participants did not attend school at all.

In summary it is evident that the participants were all black and either South African or Foreigners. Most of the participants were aged between of 30-49 and predominantly women, living with either their parents, friends, or relatives. Most of the participants either attained a certificate/diploma or attended school but never progressed beyond Grade 12. They were mostly of average intellect with no participants that were mentally handicapped.

### **5.3.2. Retrospective Review of Patient Records - Findings**

The initial phase of the study was a retrospective review of patient records of several data claimants, to gain insights into pre-morbid presentations, assess relevant clinical histories and report physiological and psychological outcomes. In addition, the review will enable an ability to determine the documented status of MTBI, and the judicial processing of causes related to MTBI. The data from the retrospective reviews was qualitative in nature and therefore was more about the depth and nature of the insights as opposed to being about the number of responses.

The researcher has presented the results in line with the questions to ensure that the reader can easily comprehend the responses. This approach highlights the emerging themes that were discussed in Chapter 2.

As an initial point of enquiry, the 44 records were reviewed, and the following questions were populated for each record, and the outcomes were presented below in line with the questions:

#### **5.3.2.1 Pre-existing Medical/Psychiatric Problems**

In the feedback the participants predominantly had not been historically diagnosed with any medical or psychiatric problems. From the sample of 44 respondents 32 (72.7%) of them did not have any pre-existing medical or psychiatric problems. The remaining 27,3% (n=12) were all either diagnosed with a pre-morbid psychiatric history, were Diabetic or RVD reactive. 4 (9%) of the respondents appeared to have pre-existing premorbid emotional vulnerabilities for several reasons; however, the most common reason was due to an abusive up-bringing.

#### **5.3.2.2 Current Chronic Illnesses**

From the sample of 44 participants 24 (54.5%) reported that they did not have any current chronic illnesses. The remaining 20 (45.5%) had pre-existing chronic illnesses that included anxiety disorders, body pain, RVD, TB, Diabetes and HIV. All the respondents that had existing chronic illnesses all attested to the fact that they were religiously taking all the medication that they had been prescribed by their doctors.

### **5.3.2.3 Family History of Psychiatric Problems**

As determinant for possible genetic or generational occurrence of illnesses the researcher explored the possibility of some patients being later affected psychologically due to historic genetic illnesses. From the sample of 44 respondents 40 (90%) were not faced with any historic family psychiatric problems. This was also evident with the patients that were diagnosed with pre-existing psychiatric problems. Only 10% (n=4) of the respondents confirmed that they were historic cases within their families of some form of mental disorder.

### **5.3.2.4 Past Traumatic Experiences**

All 44 respondents confirmed that before the current occurrence none of them had been faced with any significant traumatic experience. The accidents they had been involved in were the first traumatic experience they had faced in their lives. This was an indication that any trauma-related symptoms would have been due to the current accident that the patient was involved in.

### **5.3.2.5 Substance Abuse**

All 44 respondents confirmed that they were not abusing any substance that may be detrimental to their physical or mental health. This confirmed that any psychiatric problems they presented with could not be associated with any form of substance abuse.

### **5.3.2.6 Details relating to the index Traumatic brain injury**

The researcher compiled details relating to the occurrence or diagnostics of patient MTBI in comparison to the time the traumatic event or accident occurred. The researcher found it imperative to identify when the road accident occurred, how long it had been between the accident and the assessment, and what the state of alertness was of the patient after the accident.

#### **Period between the date of the accident and the assessment**

To ascertain the period between the assessment date and the date of the accident the researcher recorded the dates when the accident occurred and took note of when these assessments were done. This information would serve as an indication as to whether the MTBI diagnosed with a particular patient was actually due to the accident or perhaps other events that may have occurred thereafter. The records confirmed that 45.5% (n=20) of the respondents had a 3-year period between the date of the accident and the date when they were assessed. 18.2% (n=8) had a 4-year gap between the accident and the assessment. The respondents who were assessed 1 year or 2 years after the accident represented 18.2% (n=8) of the sample and were distributed equitably between 1 year and 2 years. 4 (9.1%) respondents did not indicate the date when their accidents occurred.

#### **State of Alertness after Accident**

The state of alertness was determined through the use of variables that included knowledge of whether the patient lost consciousness or was confused after the accident,

the estimated duration in minutes of the loss of consciousness/confusion (LOC), post traumatic amnesia and in some instances the Glasgow Coma Score if the patient had undergone those tests. From the 44 respondents 40 (90.9%) of these individuals experienced loss of consciousness or confusion after the accident occurred. The remaining 4 (9.1%) of the respondents were not affected by loss of consciousness/confusion. Of the 40 individuals that were affected by loss of consciousness/confusion 20 (45.5%) experienced LOC for between 20 to 30 minutes. 8 (18.2%) experienced LOC for less than 10 minutes. 12 (27.3%) of the respondents either opted not to respond to this question or were unsure how long the LOC lasted for. 32 (72.7%) of the respondents experienced Post Traumatic Amnesia whereas only 8 (18.2%) had no symptoms of Post Traumatic Amnesia. 4 (9.1%) did not respond to this question. A Glasgow Coma test was performed on 24 (54.5%) of the 44 respondents. The ones tested all came out with scores that either predicted that the patient had a minor or no disruption to their consciousness. All the respondents scored above 13/15 on the Glasgow Coma Scale.

**5.3.2.7 Primary presenting symptoms / neurocognitive impairment and behavioral changes reported by the patient since their involvement in the accident under review**

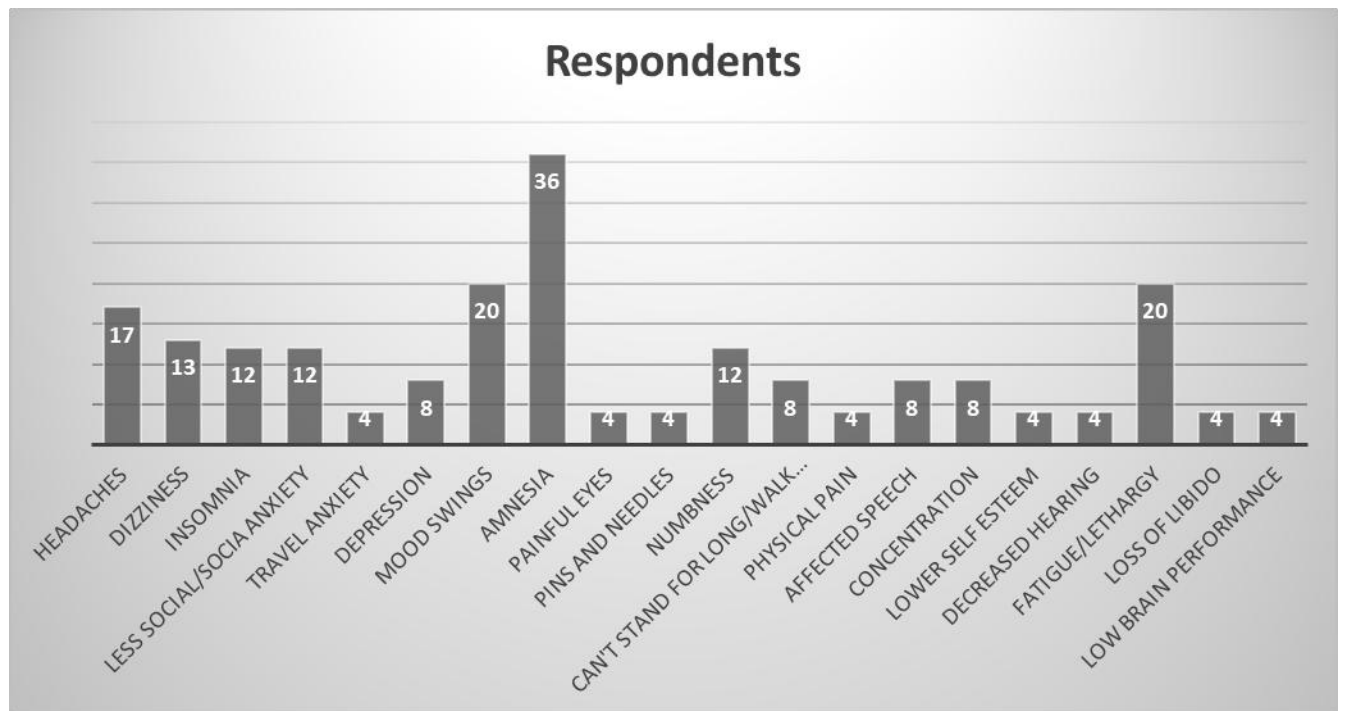


Figure 10: Symptoms/Neurocognitive impairment and Behavioural Changes

Figure 11 above is a graphical depiction of the symptoms/neurocognitive impairment and behavioral changes that the 44 respondents were affected by. It was evident that Amnesia was the most prevalent symptom with 81.8% (n=36) respondents being affected. The second most common symptom was erratic mood swings (n=20; 45.5%) and excessive fatigue or lethargy (n=20; 45.5%) closely followed by prolonged headaches (n=17; 68.6%). Some of the symptoms did not link directly to a case of MTBI, however, may have been a secondary result of the main symptom. Dizziness, Insomnia, Social anxiety, and numbness on the body had very high occurrences and therefore need to be considered to be significant symptoms.

### 5.3.2.8 Recorded description of likely influences of MTBI on health status

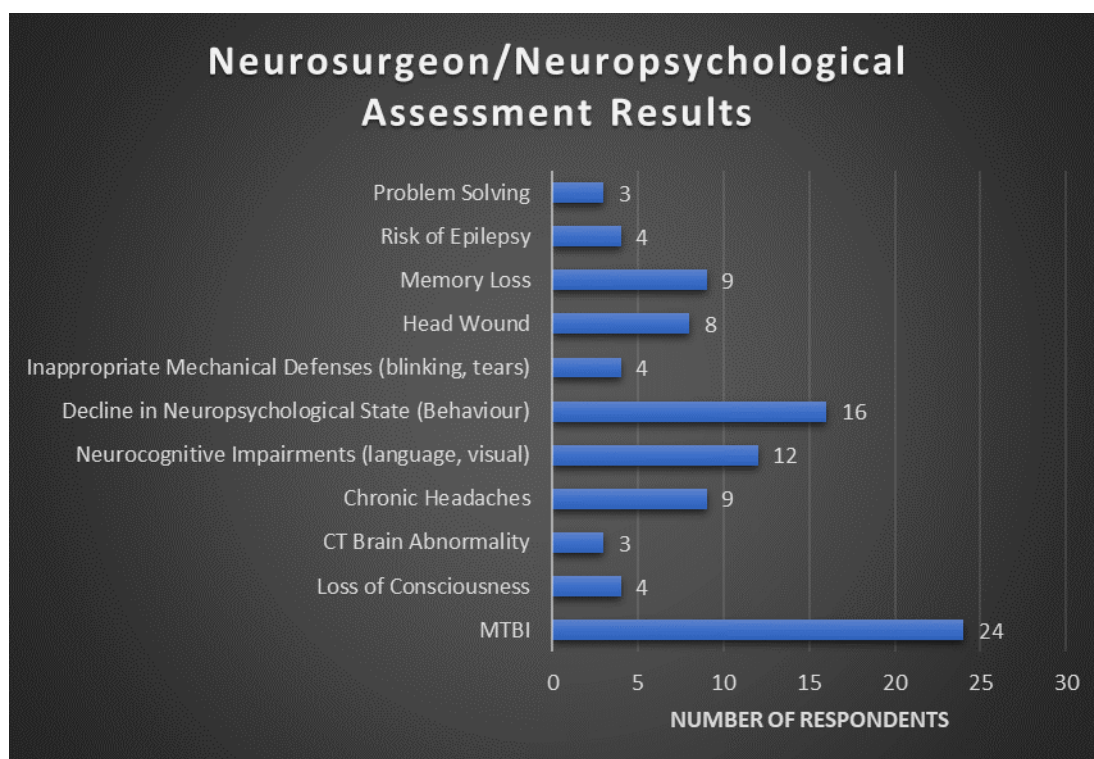


Figure 11: Influences of MTBI on Health Status

The information related to influences of the MTBI on a patient's health status was based on examinations done by Neurosurgeons/Neurologists, Psychiatrists and/or Clinical and Neuropsychologists. The graph above depicts the number of patients/respondents that were diagnosed with each of these symptoms of brain injury. From the sample of 44 respondents 24 of them underwent these examinations/assessments. 24 respondents were reported to have had some form of Mild Traumatic Brain Injury however with differing symptoms. 16 (66.7%) of the 24 respondents displayed a decline in their neuropsychological state which was an indication of behavioral changes. The behavioral changes assessed amongst these patients/respondents included subtle increase in

aggression, significant impulsivity, changes in personality and inappropriate emotional regulation. 12 (50%) of the respondents were diagnosed with neurocognitive challenges which included challenges like language and visual impairment. Chronic headaches and memory loss each had 9 (37.5%) affected respondents.

### 5.3.2.9 What was the immediate medical attention / intervention provided immediately after the accident?

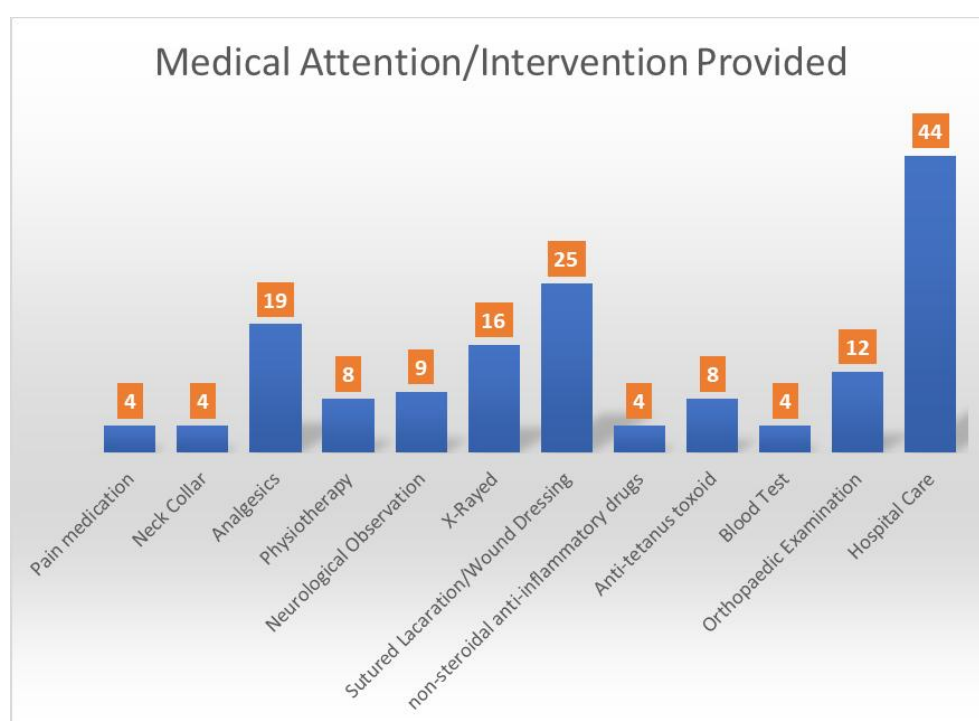
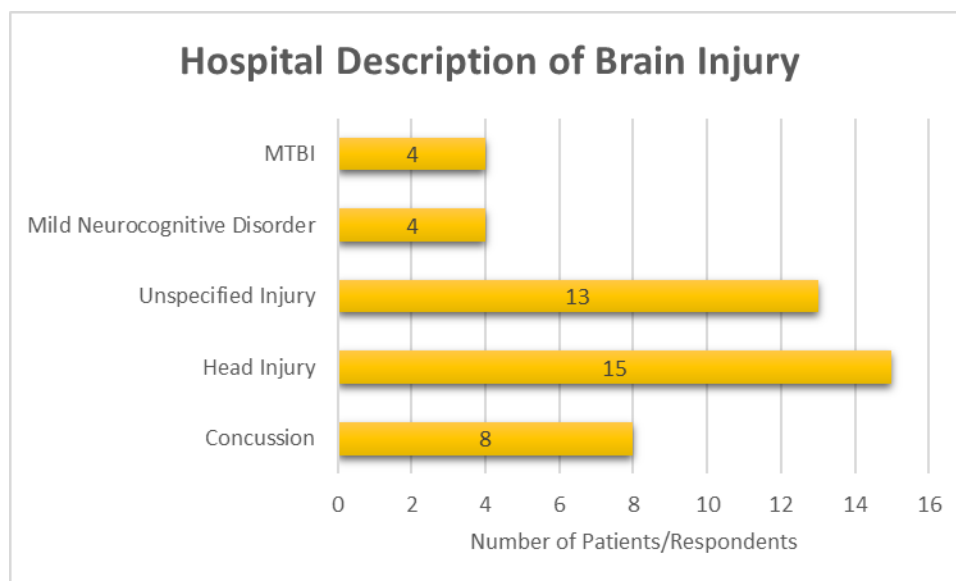


Figure 12: Medical Attention/Intervention Provided

Figure 13 above is a graphical depiction of the actions taken right after the respondent/patient was involved in a car accident. 44 respondents were able to receive some form of hospital care just after the accident. The respondents received different treatments as depicted above. 25 (56.8%) of the respondents had their lacerations

sutured or their wounds dressed after the accident. 19 (43.2%) of the respondents had analgesics administered. 16 (36.4%) had head x-rays done after the accident and only 9 (20.5%) had neurological observations done. From the above statistics it appears that very few respondents were checked for possible brain injuries through neurologists.

**5.3.2.10 What was the diagnosis and description given in the hospital records in relation to the brain injury? (Description should include determination of whether injury was identified as a concussion, contusion, penetration, diffuse axonal, or coup-contrecoup)**



*Figure 13: Hospital Description of Brain Injury*

Figure 14 above shows how the hospital records described the brain injury on the patient records. 13 (29.5%) of the records did not specify any injury relating to the brain or head. There were 15 (34.1%) head injuries recorded. These head injuries included scalp hematoma and face and head lacerations. 8 (18.2%) concussions were recorded. 4 of the concussions recorded were said to be Grade 3 concussions and the other 4 were said

to be mild concussions. 4 (9.1%) of the respondents were diagnosed with a Mild neurocognitive disorder, while another 4 (9.1%) were recorded as having MTBI.

### 5.3.2.11 What is the recorded etiology / causal explanation offered for the diagnosis?

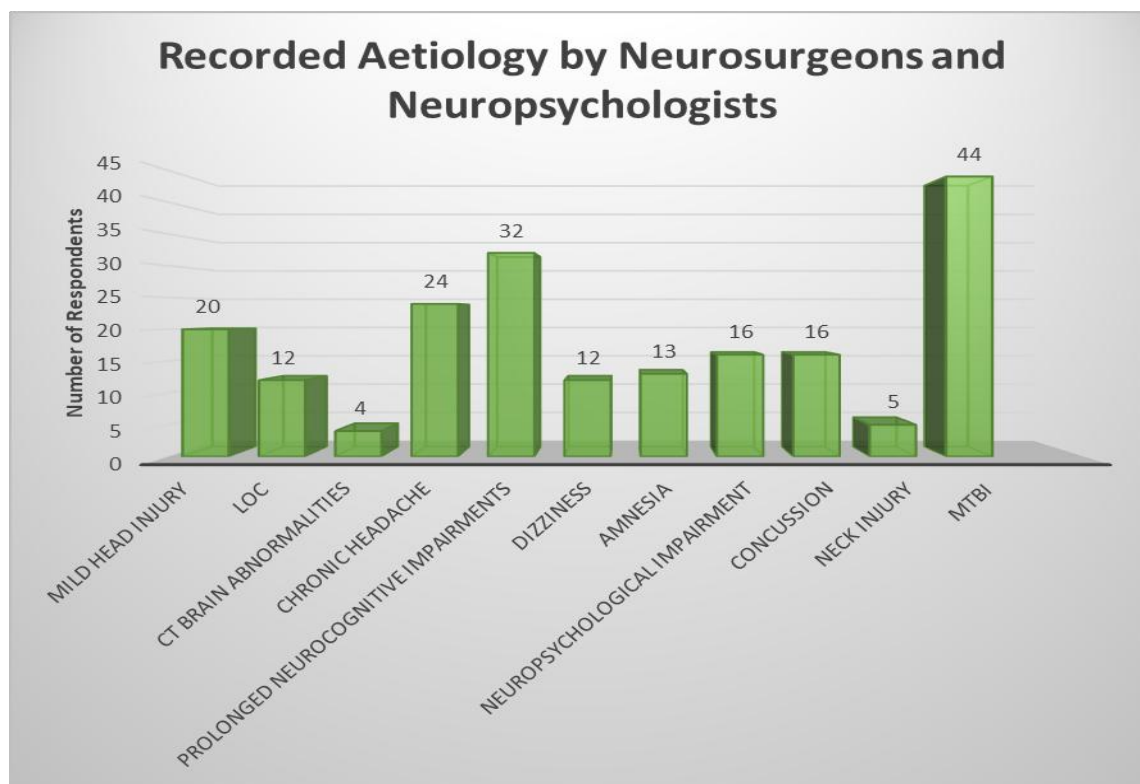


Figure 14: Recorded Aetiology/Causal Explanation

Figure 15 above is a depiction of the symptoms that were assessed by either a Neurosurgeon or a Neuropsychologist on the 44 respondents. From the sample 24 (54.5%) respondents were assessed by a Neurosurgeon and 16 (36.4%) by a Neuropsychologist. Only 4 (9.1%) records did not specify the designation of the clinician. MTBI's include symptoms such as headaches, fatigue, anxiety and irritability, mood

disturbances as well as impaired cognitive function. Symptom resolution is usually expected to occur within 3 months post-injury, except for a percentage of individuals who are said to experience persistent post-concussion syndrome, with long term and persisting neuropsychological sequelae. All 44 respondents were diagnosed with MTBI however they had varying symptoms as per Figure 5.3.2.8. The most prevalent symptom was Prolonged Neurocognitive impairments where 32 (72.7%) of the respondents were affected. The most common symptom of Neurocognitive impairment within the group was mainly visual disturbance and sometimes language. Chronic headaches were also very common with 24 (54.5%) of the respondents being affected. Mild Head Injuries were also very common with 20 (45.5%) of the respondents having lacerations on their faces.

#### 5.3.2.12 Overall Assessment of Cognitive Impairment

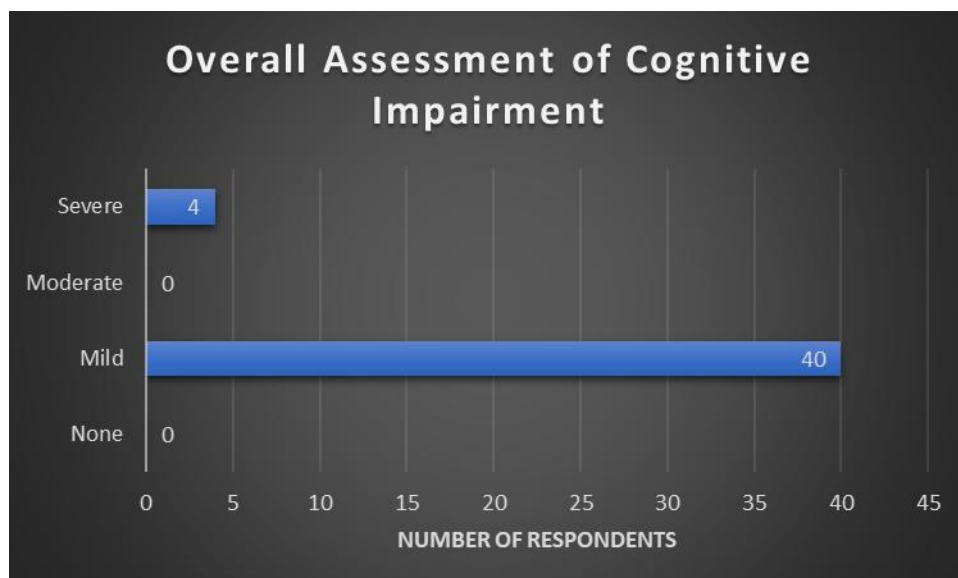


Figure 15: Overall Assessment of Cognitive Impairment

The 44 respondents were all assessed for any possible cognitive impairment which relates to the deficiency or impairment of a mental action or process of acquiring knowledge and understanding through thought, experience, and senses. The most affected cognitive skills are speech, visual, learning and listening abilities. From the sample of 44 respondents 40 (90.9%) were diagnosed with Mild Cognitive Impairment while 4 (9.1%) were diagnosed with Severe Cognitive Impairment.

### 5.3.2.13 Possible DSM-5 Diagnosis

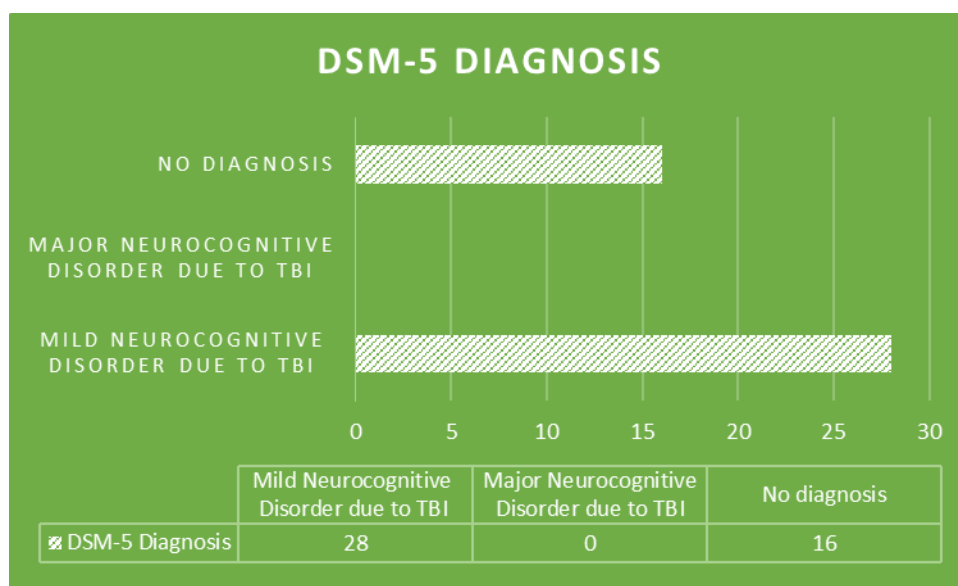


Figure 16: DSM-5 Diagnosis

Further to the Cognitive Impairment Assessment done as per Figure 5.16 a DSM-5 diagnosis was done on the sample group to try and ascertain if the Cognitive Impairment was in fact due to a brain injury. Of the sample of 44 only 28 (63.6%) respondents were assessed as per Figure 5.16 above. All 28 respondents that were diagnosed fell into the category of Mild Neurocognitive disorder. 16 (36.4%) of the sample did not have a DSM-5 diagnosis.

#### 5.3.2.14 Possible influence/role of other factors on the performance on the psychometric tests i.e., depression, anxiety, and pain

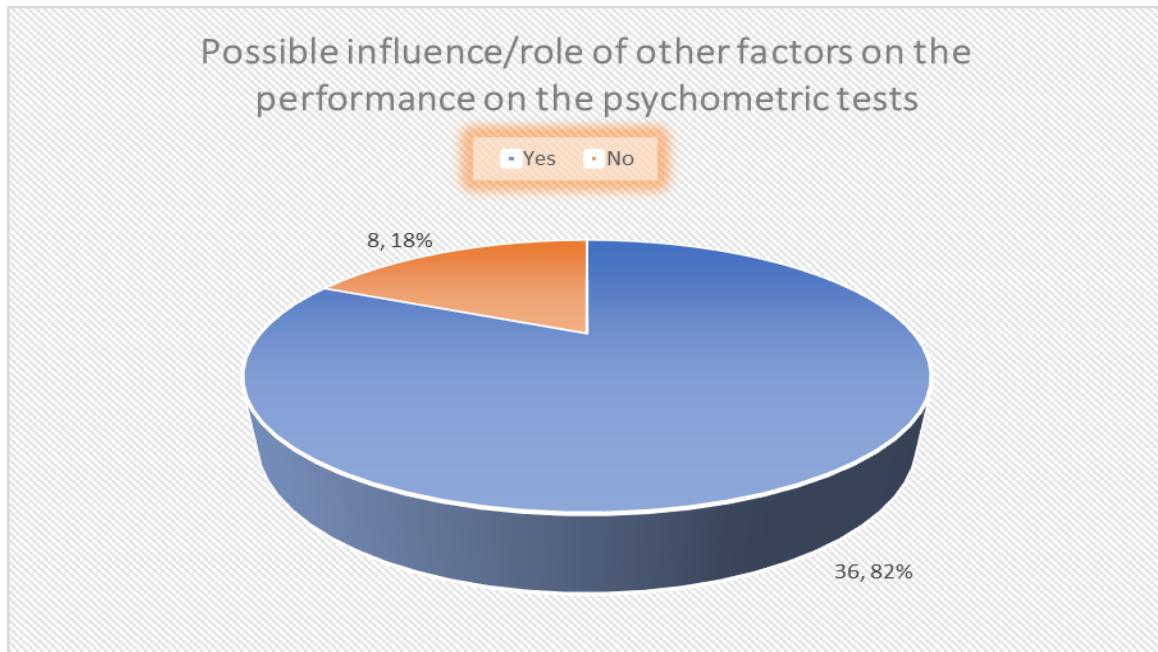
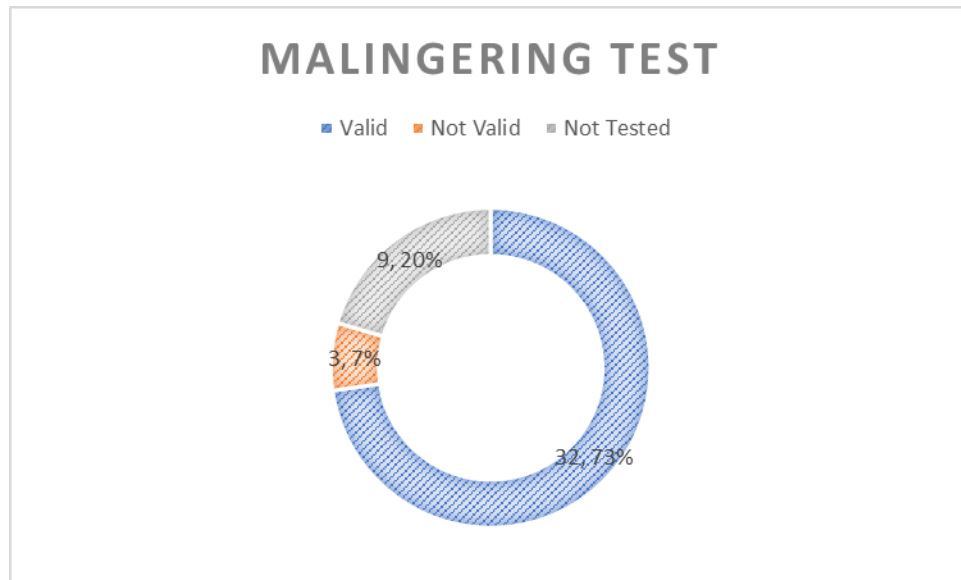


Figure 17: Possible Influence/Role of other Factors on the Performance on the Psychometric Tests

The respondents undertook a psychometric test which was designed to test their cognitive ability and emotional state. Figure 18 above is a graphical representation showing the number of respondents that had psychometric results that may have been influenced by other factors such as depression, low self-esteem, anxiety, and pain. 36 (82%) of the respondents say they were affected by these factors during their psychometric test.

### 5.3.2.15 Malingering Test



*Figure 18: Malingering Test*

Rey's 15 Item Memory Test was used to test for Malingering which is assessing if the respondent feigned his/her memory or purposefully performed below his/her ability level in order to misrepresent their status. 32 (73%) of the respondents' results were valid, which implied the absence of malingering. 3 (7%) had results that were not valid and therefore were suspected of malingering. It was also noted that 2 of the 3 respondents were uneducated, which likely rendered them vulnerable individuals given that the tasks presented, including the Rey's 15 item memory test, require some level of educational exposure and foundational learning abilities. The scores however were retained as not valid in order to exercise caution.

#### **5.4. PHASE TWO DATA-COLLECTION FINDINGS FROM THE QUALITATIVE INDIVIDUAL INTERVIEWS WITH CLINICIANS AND COURT OFFICIALS.**

Phase 2 of the study was qualitative interviews with clinicians and court officials who had previously dealt with MTBI cases. These interviews were done to critically explore the contributory influence of neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of Road Accident Claims among victims of mild brain injury in the South African Courts. As part of the multiple methodologies to ensure the study was meaningful, the researcher included a series of qualitative interviews as a second method.

Phase 2 of data collection included 30 qualitative interviews with court officials that included Advocates and Attorneys. The second group of qualitative interviews were with clinicians that included Clinical Psychologists that specialized in neuropsychology, Neurosurgeons, Psychiatrists, and Clinical Neurophysiologists. The demographic profiles of the two groups which include court officials and clinicians were as follows:

### 5.4.1. Profile of Qualitative Interview Court Officials

The profile of the court officials consisted of 6 individuals who were profiled as below:

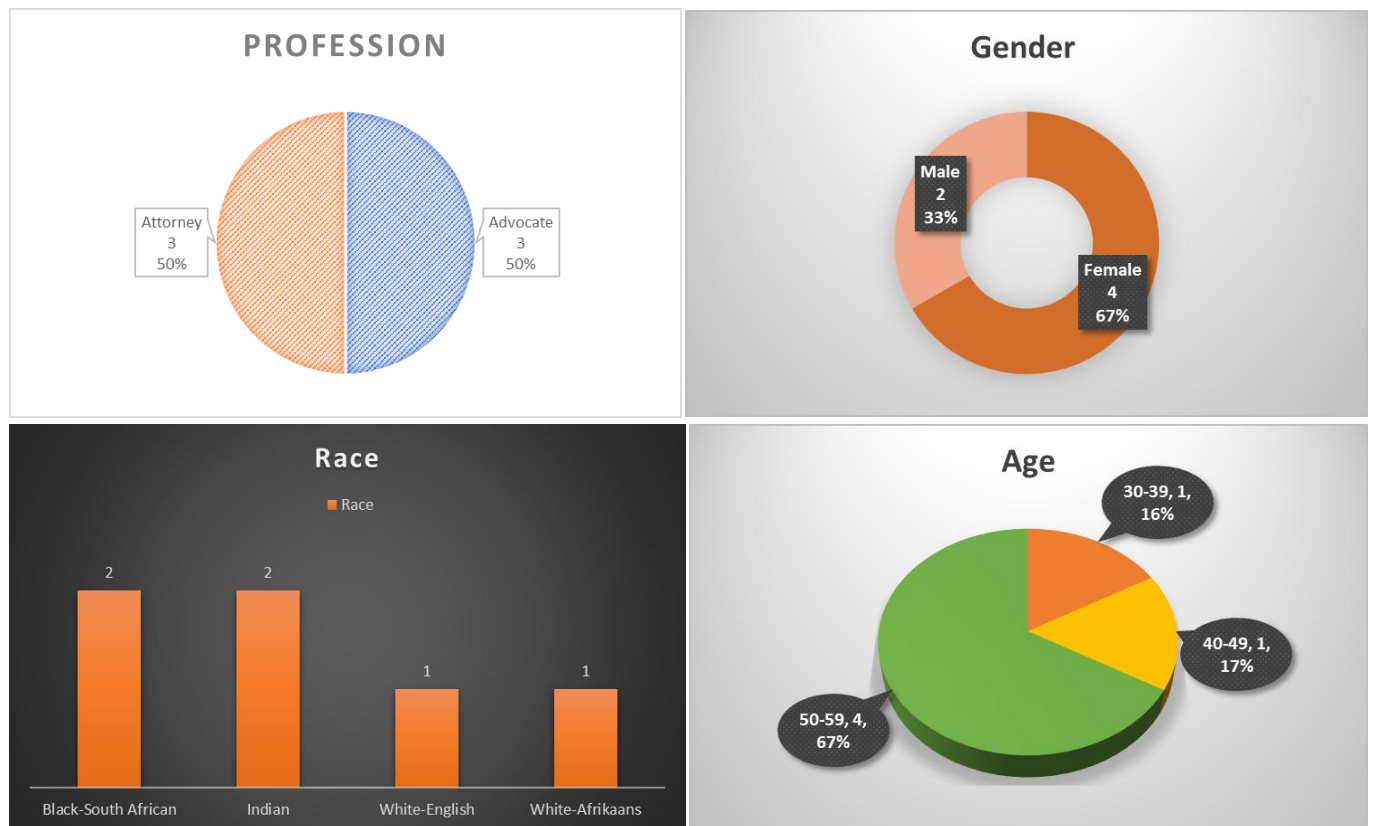


Figure 19: Profile of Qualitative Interview Court Officials

Court official consisted of 3 (50%) Attorneys and 3 (50%) Advocates who all had a Postgraduate-LLB. These two groups had a distribution of 2 (33%) males and 4 (67%) females. The racial distribution included 2 (33%) Black-South Africans, 2 (33%) Indians, 1 (16.7%) White-English and 1 (16.7%) White- Afrikaans. 67% (n=4) were aged between 50-59 and evenly distributed between the ages of 30-39 and 40-49 years with 16.5% (n=1) individual for each age group.

#### 5.4.2. Qualitative Individual Interviews with Court Officials Findings

**Would you please describe to me what you understand to be a sign of MTBI, and response can offer descriptions on how you would describe it and how it would be diagnosed.**

The responses from the Advocates and the Attorneys highlighted several thematic areas and one of these themes was the need to determine what these court officials understood as being a MTBI and how it could be diagnosed. The participants highlighted several views relating to their understanding of MTBI. As an example, one of the Advocates expressed the following in relation to their understanding of MTBI:

*“Usually, we follow the guidelines that have been set by the neurosurgeons, and the neuropsychologists.”* (Advocate 01)

The court officials expressed that their understanding of MTBI and diagnostic thereof were guided by reports that they would have received from the Neurosurgeons or Neuropsychologists in relation to the patient. Other Advocates supported this view by saying:

*“You have to basically know when you go through the reports by the experts, what they generally pick up about the patient”* (Advocate 03)

*“So, the judge wouldn’t decide on the technicalities in an instance such as this, on a brain injured child or adult or for that matter, anyone, anything to do with sort of medical expertise would be required. They would rely on the experts.”* (Advocate 2)

It was therefore very clear that the Advocates relied on diagnostics received from the reports that were presented by the experts in the field. Other comments relating to the understanding of MTBI and how to diagnose it were as follows:

*“We are looking at the GCS- yoh I didn’t look at everything recently but okay- I think if the GCS is between 13 and 10 it’s mild.”* (Advocate 03)

*“From my understanding, a mild traumatic brain injury would be usually where there is not Loss of consciousness at the time of the accident, or a brief Loss of consciousness and GCS is most likely 15 15 with mild sequela.”* (Attorney 03)

From the above comments it is evident that both the Advocates and the Attorneys agree that they will use the Glasgow Coma Score (GCS) as a diagnostic measure for MTBI and therefore make assessments based on these results. The court officials go on to speak about the Loss of Consciousness as a measure of MTBI and the comments expressed were as follows:

*“It depends on the circumstances, it depends on the LOC immediately after the impact, and then obviously we consider the contribution by the family members.”* (Advocate 01)

*“If the person is unconscious after the accident for a long time, chances are high that he may have suffered a brain injury.”* (Attorney 03)

These comments give an indication that the court officials take Loss of Consciousness right after the accident as a measure of a possible brain injury. This view was expressed by three of the respondents and therefore is significant. Some of the other comments relating to the diagnosis of MTBI were as follows:

*“It is usually diagnosed by the neuropsychologist or the clinical psychologist by way of conducting an interview with the affected person and gathering the symptoms or seculi.”*

(Attorney 01)

*“And I will generally, if I'm not sure, I'll start with a neuropsychologist and I'll get the neuropsychologist to do the psychometrics, do a thorough interview and we'll take a look from there.”* (Attorney 03)

This indicates that the court officials consider the psychological assessments done by a clinical or neuropsychologist. These assessments are done by means of interviews with the patients or psychometric testing.

**And can a person be diagnosed with a brain injury even if there was no direct blow to the head?**

The researcher was trying to establish the relationship between a head injury and a brain injury and whether a brain injury diagnosis was only possible had there been a direct blow to the head. Some of the comments made by the court officials included the following:

*“Yes. You know what, it depends on the type of injury. It is possible to have, for instance, a lack of oxygen, it might be an injury to the [indistinct] the blood did not go to the brain, and then there might be a brain injury.”* (Advocate 01)

*” I guess so yes. Even if there was no direct blow to the head. In a way, remember the spine, we have got the cervical, the thoracic and lumbar spine. If the spine is in a way affected that might lead to a traumatic mild brain injury.”* (Attorney 01)

From the comments above the researcher could establish that some legal practitioners do understand different mechanisms of head injury, for example in a concussion. In conclusion, the researcher established that legal practitioners by virtue of having been in the medicolegal field understand that brain injury can exist in the absence of a physical head injury.

### **How easy is it to miss a MTBI?**

The researcher wanted to establish the point of view of the court officials in relation to the ease of missing or wrongly diagnosing a MTBI case. The responses from the court officials included the following comments:

*“I think it is easy, simply because people will simply say there is no head injury. Why would you say that there is a brain injury, because the person did not get a blow to the head.”* (Advocate 01)

The above response gives evidence to the fact that some court officials do not have a clear understanding of what can potentially cause a traumatic brain injury. They do not believe that a brain injury can exist without a physical head injury. There is evidence from the study participants as well that there is a possibility of wrongly diagnosing a brain injury. This is evidenced by the comments below:

*“And what I do know is that mild encephalopathy is very difficult to identify and pick up, especially even with clinicians. So based on that experience, I would say it's very hard to identify.”* (Advocate 02)

*“And for example, if the person is not unconscious, they would just assume that the head has not been affected.” (Attorney 01)*

The court officials were all in agreement that an MTBI could easily be diagnosed with for several reasons and therefore could be missing. Some of the reasons mentioned included the assumption usually made by medical staff that if the patient is not unconscious the head has not been affected, or if there are no lacerations on the head it is also assumed that there is no head injury.

### **What are the different sub-types of MTBI?**

The researcher was trying to establish whether the court officials had knowledge around what different types of MTBI existed. Some of the comments were as follows:

*“Uh I can’t remember everything, but it depends on where the injury is and whether it is a result of a blow to the head and which side. But ya I do know that we do have different impacts, and different kinds of MTBIs.” (Advocate 01)*

*Well, I only know the MTBI, I am not so sure about the categories of MTBI.” (Attorney 01)*

The above comment indicated that the court officials have a very limited knowledge of the types of MTBI that exist; however, they are aware that there are different types of MTBIs.

*“I don’t have a medical background and I’m not sure, so I would say for me, the main classification I see in the medicolegal reports would be a difference between focal and diffuse.” (Attorney 03)*

From the above comments it was clear that the respondents were uncertain or did not know what the sub-categories of MTBI were. There was however mention of focal and

diffuse categories, but the official was unsure. This indicates to us that court officials need to rely on the expertise of clinicians to correctly decide on a patient's claim.

### **What is the difference between a traumatic brain injury and a traumatic head injury?**

The researcher wanted to distinguish between traumatic brain injury and a traumatic head injury as these two terms are usually confused or interchangeably used. The comments relating to this distinction from the court officials were as follows:

*“It’s very difficult to say but the main difference is that it is possible to suffer a mild brain injury without a head injury. As we have discussed earlier it is possible due to other factors, loss of oxygen, it is possible. But usually, if you have a head injury it is accepted that there is a brain injury. But you do not need a head injury to have a brain injury.”*

(Advocate 01)

The court officials were all aware that there was a distinction between a traumatic brain injury and a traumatic head injury. As previously discussed, there was usually a perception that when an accident victim has a head injury there are possibilities that he or she may have a brain injury as well, while a brain injury can still occur without a head injury. This distinction was widely understood by most of the court officials while very few of them believed that a brain injury only exists in the presence of a physical head injury.

### **Is a concussion considered another form of traumatic brain injury?**

The following comments were drawn from the court officials as to whether a concussion is considered to be a form of traumatic brain injury:

*“Yes, it depends on the impact, but usually if a person suffers a concussion there will be an injury. It might be mild, it might be moderate, it might be very slightly with no consequences, but yes.” (Advocate 01)*

*“Yes, they usually say what a mild concussion is.” (Attorney 02)*

The court officials do agree that a concussion can lead to a traumatic brain injury, however it is dependent on the impact and severity of the concussion. The comments all suggested that it was not always the case that a concussion would be considered a traumatic brain injury but in most cases this was so.

**And what are your thoughts about MTBI and whether such an injury should receive compensation by the RAF?**

The researcher wanted to determine if the court officials believed that an MTBI case should receive compensation from the Road Accident Fund of South Africa (RAF). The comments below express their opinion regarding this issue:

*“Yes, I do believe that it should, depending on the seriousness thereof. Obviously, each case should be evaluated, but I would agree that it is necessary, and maybe to add an additional possibility.” (Advocate 01)*

Based on the comments the study participants expressed their agreement that MTBI should be compensated, and the compensation value must be based on the severity of the injury. The following view expressed below is the perception of most of the participants in determining the size or value of the compensation that should be awarded:

*“A case where it may even go to a point of affecting his or her earnings in the future, surely courts would want to compensate the victims accordingly. There’s no doubt about that.” (Advocate 03)*

The opinion expressed was that the size of the compensation should be determined by the size of the loss of earnings that may be faced by the victim should they become incapacitated and not able to work or earn a living. Further to this the participants were of the opinion that compensation is right, however, because of the limited funding that the RAF has it would be advisable to compensate based on severity as expressed in the comment below:

*“So, in the ideal world, you want you'd want a no-fault liability scheme, and you'd want everybody to be compensated. But at this point in time, with a mild brain injury that may have limited, if any, consequences to demand that that be compensated, I think could put a huge strain on the ROAD ACCIDENT FUND and our health care system, for that matter. (Advocate 02)*

While the study participants expressed their opinion on compensation and lack of funds from the RAF, the opinion was that if compensation was based on severity, you would have many cases where patients exaggerate their symptoms in order to qualify for more favorable compensation. This was expressed by one of the participants below and was supported by several other participants:

*“From the fund's point of view, it's just that clients tend to exaggerate their symptoms to get compensation right on the one hand. So, we can't just compensate for every Mild Traumatic Brain Injury, especially for adults. And considering their age pre-existing*

*conditions as I said before, headache's is something we all experience at some point in our lives.” (Attorney 02)*

Given the comments above and the general consensus from the respondents was that accident victims need to be compensated by the Road Accident Fund; however, some of the court officials felt that compensation should be targeted and younger people and not so much the older people as they already have underlying brain deficiencies or pre-existing conditions. The other concern raised was the fact that the RAF fund is very limited and therefore careful selection is required as to who should be compensated and who should not. There was also concern that some clients tend to exaggerate their symptoms in order to qualify for compensation and therefore RAF needs to act with caution when compensating individuals.

**So, is the collateral evidence very critical there?**

The researcher in this question was trying to determine the importance of evidence in these MTBI cases and their relevance thereof. Some of the comments relating to this issue were as follows:

*“Ya. Especially regarding younger people, for specifically the educational psychologist. Even to say, ‘Ya, this person suffered a brain injury, he or she obtained distinctions in all their subjects and now after the accident school performance is not up to standard’. That is important, but we need to have the before and the after to be able to compare.”*  
(Advocate 01)

The evidence expressed by some of the court officials was that in many cases MTBI cannot be determined over the short-term, but however, can only be properly diagnosed

over a medium to long-term period in many instances. There must be evidence of what the victim was like before the accident and this should be assessed in the future to see if there are any variations or symptoms suggesting that there was a brain injury. The comment below expresses the opinion of most of the participants with regards to evidence collection and relying on the opinions and expressions from those that know the victim:

*“You would obviously rely on hearsay evidence, you would obviously have to interview the witnesses, the families, the colleagues, whoever is close to the claimant. And gather collateral information from other sources. It would be based on hearsay evidence, and hearsay evidence is ah- the court is reluctant to make a ruling based on hearsay. So, as long as there is no medical evidence it would be very difficult for the court to believe that this person indeed sustained a head injury and made a ruling to that effect. So, in most cases the court would dismiss this kind of claim.” (Attorney 01)*

There is strong agreement that the courts generally do not rely on third party information about the victim but instead rely on medical evidence provided by a clinician. As much as this may be the opinion expressed by the participants, in a few cases the courts base their decisions on compelling third-party evidence in relation to the victim’s condition before and after the accident. Some of the court officials do take witness statements into consideration, however, they have expressed that witness statements without medical records to back the position is not adequate. This was expressed in the following comment:

*“I will get collateral information in relation to that as well. Once I've got that. I'm not the doctor. I'm not an expert. You know, we will get medical legal assessments.” (Attorney 02)*

Based on the above comments it is evident that collateral evidence is critical for MTBI cases. The judges avoid ruling for compensation if the evidence is purely based on witness statements and not collateral evidence like medical reports.

**What factors do you believe have an influence on the judge or court official's decision about whether to give a positive judgement on a head injury settlement claim?**

The researcher wanted to determine what factors influence the judge or court official's decision as to whether a positive or negative judgment on a head injury settlement should be given. The court officials had differing remarks in relation to this:

*“Usually, the judges will rely on the expert's reports. If the reports are comprehensive and dealing with what is necessary, as I indicated. To say, okay is there a proper comparison'. Do we have an indication about GCS? Do we have medical records to say, 'this is what the person's behavior or memory was in hospital'?” (Advocate 01)*

The opinion expressed by the study participants was that judges rely on medical records and therefore the medical reports need to be comprehensive to ensure that the judge makes the correct decision. Further to this, the study participants also expressed their opinion that the success of a medical opinion is not merely on the content expressed in the report but also a matter of how eloquent and how well the medical witness is able to support the victim's case. An Advocate and an Attorney expressed this opinion by saying:

*“I would say almost always the competence of your expert witness. You know, the way you expect witness comes across in the manner in which they deliver their testimony has got such a huge influence.” (Advocate 02)*

Any attorney further supported the advocates’ opinion by saying:

*“The judiciary is obviously guided by the medical evidence, produced in court by the medical experts. So, depending on how the medical expert prepared or managed to positively diagnose this person from the outset would have an influence on the judicial decision. So, the duty lies with the expert to convince the court that this person did indeed suffer from MTBI. Because the judges don’t really have the skills to diagnose, they can only rely on what the experts are saying. (Attorney 01)*

From the perceptions of the court officials, it is evident that there is clear consensus that court officials are not experts in diagnosing MTBI and therefore their decisions are influenced by the expert witness’s report. It is therefore crucial and lies in the hands of the expert to convince the court official that the patient is in fact an MTBI victim. It appears from the comments made that an assessment without an expert opinion will always be dismissed in court. Other forms of evidence are merely there as supporting information to the expert’s report.

**In making decisions about whether to award settlement to a claim what are the principles that contribute to decision making processes? We are specifically looking at the role played by legal pragmatism, vs attitudinalism vs strategic approaches.**

The researcher wanted to ascertain what the principles followed are that contribute to the decision-making process. The expert comments were as follows:

*“I’m very sorry you might feel exposed’. It’s almost like an auction. I would say, you know what I think this injury is 400 000’ and the next one says, no I think it’s 200 000’. And then we will be deliberating about what we think its worth. We do take into consideration the impact on the person’s life.” (Advocate 01)*

Some of the opinions expressed by the study participants were that the decision to compensate and the size of the compensation was not a standardized process but instead was based on individual perceptions. Even in cases where the decision is shared amongst several court officials the more vocal and more persuasive officials would more likely influence the compensation decision. On the other hand, some of the study participants believed that the decision was standardized and procedural. This was expressed in the below comment:

*“Yes, they do, remember the courts would obviously rely on experts’ reports, then they rely on decided cases with similar facts. And based on that the court would be in a position to make a ruling.” (Attorney 01)*

There was some form of agreement that in certain instances certain principles are practiced in order to come up with a decision, and some form of strategic approach is followed. Another opinion presented is that there is no specific approach followed, meaning a different method is used for different cases.

**What would you consider the social factors that have an influence on the settlement decision maker?**

The researcher posed this question to ascertain whether social factors had an influence on the decision of the court officials. The comments below expressed their opinion in relation to this issue:

*“So, if it is an ordinary guy with an injury on his arm, and he has scarring, it’s fine. But, if he is a model, obviously it will have a different impact, and the courts will take that into consideration. Although we want to say everybody is equal before the law, they do take into consideration the social standing and social circumstances of every client.”* (Advocate 01)

There was agreement that social factors have an influence on the decision made by a court official. The social factors that have an impact usually relate to the victim’s profession, their social status, their financial position, and several other social factors. The other opinion expressed was that court officials also consider the age of the victim as expressed in the following comment:

*“I think the courts are very lenient towards minor children. To some extent, the indigent. So, I think, yeah, those would be those would be factors that influence a court.”* (Advocate 02)

From the comments of the respondents, it appears that social factors relating to the patient’s situation and not specifically those of the court official have an influence on the court decision. The comments indicate that court officials generally are more lenient to

minor children and perhaps those patients that are struggling financially. It is however a situational consideration as opposed to following a standardized compensation rule.

**Are there any other factors that you believe have an influence on a court official's decisions?**

The researcher with this question was trying to determine if there are any other factors other than social factors that may have an influence on the decision that the court officials would make with regards to compensation for accident victims who are most likely affected by MTBI. Some of the comments from the court officials were as follows:

*“Well, again, like I said, a strong lobby for something will always get the attention of the court officials.”* (Advocate 02)

The opinion expressed above was that compensation size can also be influenced by how well the person representing the patient is able to convince the court official that their client must be compensated more. Furthermore, the study participants agree that the intrinsic loss of income is taken into consideration when a decision is made on the value of the compensation. An attorney expressed this view by saying:

*“: Obviously if the person was working, if the person was working, able to generate income before the accident, and after the accident is no longer working and there is no income. Things like that will obviously play a role.”* (Attorney 01)

Some of the other factors that were mentioned that play a role in the decision of compensation include factors like determining if the affected was previously earning an income and due to the injury can no longer earn that income, what their personality are

in comparison to what they were before and factors including how well the witnesses lobby for the patient.

**How helpful are assessments and reports compiled by neuropsychologists, particularly related to MTBI in the settlement of claims?**

With this question the researcher was trying to determine the importance of the reports prepared and/or presented by the expert clinicians with regards to MTBI cases that were heard in court. Some of the comments relating to this were:

*“Very helpful if it is properly conducted. The important thing that any expert in his report should know is the conclusion drawn must be supported by information. And preferably independent information.”* (Advocate 01)

*“Yeah, for me, I can assure you of that if it was not for neuropsychological assessment. I can assure you there's going to be difficult for courts to deal with those cases. It is not going to be easy.”* (Advocate 03)

The court officials strongly agreed that reports prepared by neuropsychologists were very helpful in assessing a patient as to whether they have MTBI or not. There was a strong reliance on these reports in making an informed assessment. Some of the respondents however believed most of the reports they received were not from neuropsychologists but were in fact prepared by industrial and educational psychologists as suggested by the following comment:

*“In my experience and I must confess, though, it's probably more limited than other advocates, I have not seen a single report by a neuropsychologist. I've seen many reports*

*from industrial psychologists and educational psychologists, but not clinical psychologists, and neuropsychologists.” (Advocate 02)*

Furthermore, there is strong belief from some of the court officials that reports are prepared with a bias towards the benefit of the patient. It is believed that it is merely a mindset that court officials have but it is not substantiated by any evidence. The comment below speaks to this mindset:

*“OK, as I said, in my opinion, it's important because they are the experts and we as attorneys are supposed, in the fund, are supposed to be guided by what the experts say as they are experts in that field relating to head injuries, but the fund doesn't treat it as that, you know, unless it's their own reports. But what the plaintiff report says doesn't really matter. We're trying to prove our case, and we ask the experts to write a favorable report, which is not the case, so that these are just the beliefs, it's this mindset of the fund. (Attorney 02)*

All the court officials agreed that the reports from the expert clinicians were very important for decision-making for MTBI cases. One of the advocates, however, mentioned that he had only worked with reports that were prepared by industrial psychologists and educational psychologists and never by neuropsychologists. There was also concern raised that The Road Accident Fund sometimes assumes the reports prepared by their clinicians were sometimes influenced by attorneys and advocates to get a favorable result during the court cases. The RAF tended to prefer making decisions based on their own reports to avoid this.

**What are your thoughts on the different ways in which neuropsychological assessments and judicial decision making could be improved?**

The researcher wanted to gather information on ways to improve neuropsychological assessments and judicial decision-making. This information could inform the researcher when drafting a framework. The comments made by the court officials in relation to this included:

*“Actually, experts should not even know who appoints them. Whether they are for a plaintiff or a defendant. They should just say, ‘I’ve got this patient, I need to draft a report based on all the information and to the best of my ability.’” (Advocate 01)*

The respondents agreed that it was imperative that patient details are not disclosed to the experts when they write the reports to ensure that the report remains impartial and not influenced by the relations between the expert and the patient.

*“And I’m thinking there are organizations like Samila who are very instrumental in giving recognition to subdisciplines and superficialities. And I think you’d have to influence those bodies as well in terms of, you know, the importance or the value of a neuropsychologist’s report in determining a claim.” (Advocate 02)*

The court officials expressed varying ways in which to improve neuropsychological assessments and judicial decision-making. It was expressed that the fund must ensure that they appoint well experienced experts who are able to qualify their opinion about a patient. Another view was to ensure that an expert is unaware as to whether they were appointed by the plaintiff or the defendant so that they remain neutral and state the facts relating to the patient’s condition without prejudice or bias. It is also important for judicial

decision-makers to appreciate the importance of a neuropsychologist's report in the decision-making process. One of the Advocates expressed concern on the matter in that any information to try and improve the current system was irrelevant as there was no commitment or desire to make changes to the current system in the courts.

### **Appointed by the court vs being appointed by either the defendant or plaintiff?**

The researcher was interested in knowing the difference between being appointed by the court vs being appointed by either the defendant or the plaintiff. The compelling arguments that surfaced amongst the court officials were:

*“Ya, unfortunately still, it is a whole mind-shift. If you have been a plaintiff expert for the last 15 years even if now the court appoints you, you will still lean towards the plaintiff.”*

(Advocate 01)

There is opinion that when an expert has been appointed by a specific party whether it is the defendant or plaintiff, they generally write reports that are biased in favour of their clients and do not remain objective. In cases where they have been appointed by the court, they generally favour the party that they were used to defending in the past as expressed in the quotation above by (Advocate 01).

**Many cases of Mild Traumatic Brain Injuries lodged with the Road Accident Fund end up in court with clinicians (neuropsychologists) and their respective attorneys find it difficult to find common ground. What do you think is the reason for this?**

The researcher has included the above question to understand why there are usually conflicting conclusions about the state of the client between clinicians and their respective attorneys. The following comment was reflective of the study participants' opinions:

*“My view is that we do not have a collective understanding of Mild TBI. The other probable reason is that we do not interpret our psychometric results correctly, or we rely too much on the psychometric results without looking at all the other variables. It is common knowledge that MTBI does not usually produce long term cognitive impairment and that symptoms are resolved spontaneously within a few months. Some neuropsychologists go against what is documented in the literature. It is for this reason that we find ourselves in the courts arguing these facts.”* (Advocate 03)

The study participants agreed that the conflicting opinions on whether an accident victim has or has not got MTBI between clinicians and court officials is predominantly because clinicians on the basis that they are experts, form independent opinions or conclusions that are not guided by the literature relating to MTBI. Court officials place reliance on literature surrounding MTBI. The other reason why they are conflicting opinions is demonstrated in the comment below:

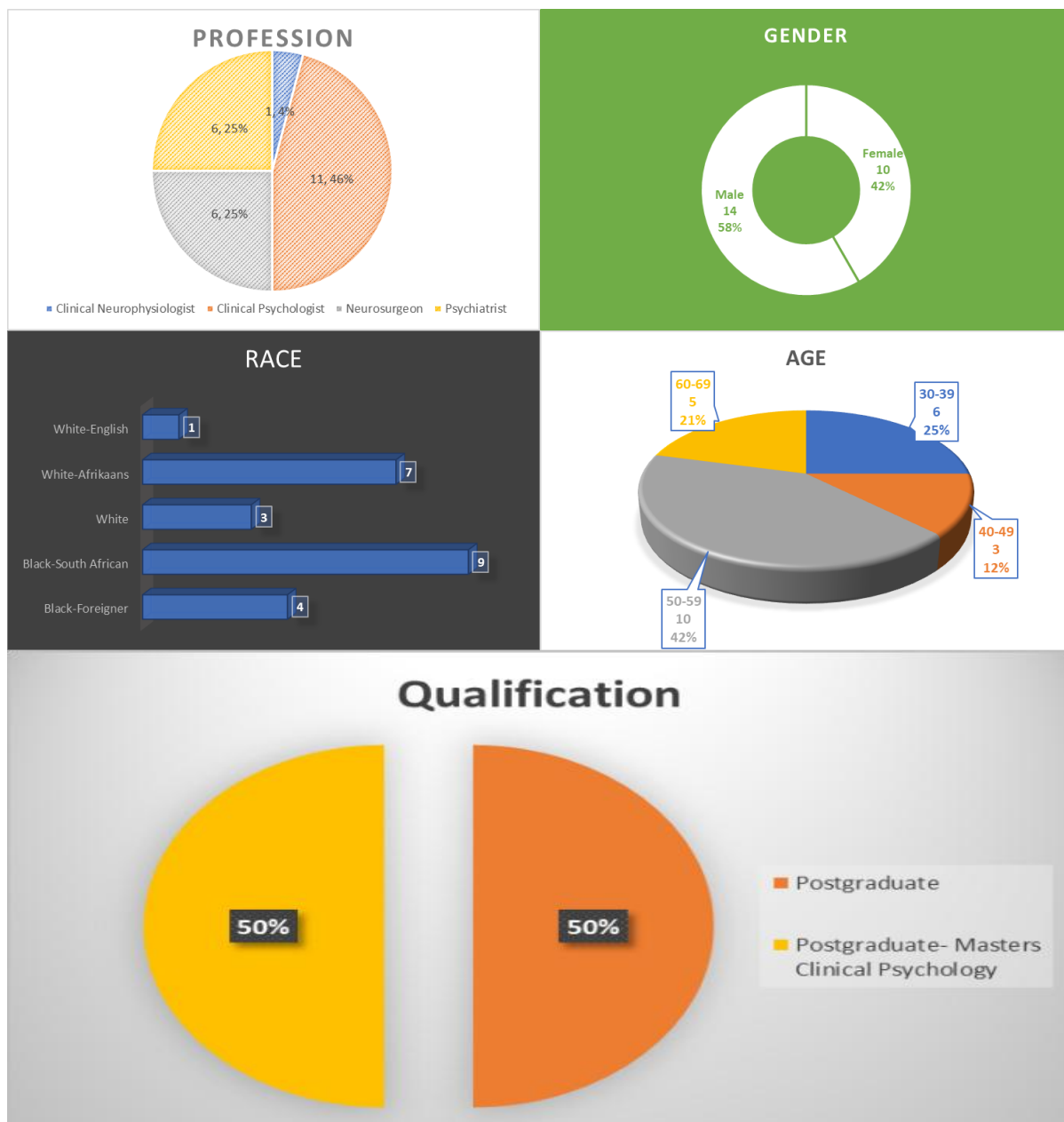
*“The reason for this is possibly because some neuropsychologists compile reports to appease the person that pays them. There is no objectivity when they write their conclusions and recommendations because they want to please their master.”* (Attorney 02)

The comments from the participants suggest that clinicians that wrote these reports were usually biased towards the interests of their clients, who were the ones paying them. This

meant that it was in the best interests of the clinicians to diagnose their patient with MTBI even in cases when it was not apparent. Furthermore, the comments also suggested that MTBI was not fully understood and therefore there was a lot of room for speculation and disagreement.

### 5.4.3. Profile of Qualitative Interview Clinicians

The profile of the clinicians consisted of 24 individuals who were profiled as per below:



## **FIGURE 5.19 – PROFILE OF QUALITATIVE INTERVIEW CLINICIANS**

The clinicians consisted of 11 (46%) Clinical psychologists, 1 (4%) Clinical Neuropsychologist, 6 (25%) Neurosurgeons and 6 (25%) Psychiatrists. 42% (n=10) ranged between the ages of 50-59 years, 6 (25%) ranged between the ages of 30-39 years. The Neurosurgeons and Psychiatrists were mainly all above the age of 50, while the middle-aged group between the ages of 30-39 were mainly Clinical Psychologists. These clinicians were predominantly either Black South Africans (n=9; 37.5%) or White-Afrikaners (n=7; 29.2%). 58% (n=14) were male while 42% (n=10) were females. The females were all either Clinical Psychologists or Psychiatrists. All Neurosurgeons and the Clinical Neuropsychologist were male. All the Clinical Psychologists and the Clinical Neuropsychologist all had a postgraduate qualification of a master's in clinical psychology while the Neurosurgeons and Psychiatrists had Postgraduate qualifications in their area of practice.

### **5.4.4. Qualitative Individual Interviews with Clinicians Findings**

**Would you mind describing to me that you would consider a sign of MTBI. Your response can offer descriptions on how you would describe MTBI and how it is diagnosed?**

In order to determine consensus from the clinicians in terms of their understanding of what to consider as signs of MTBI the researcher did a quantitative analysis of the responses as an overview to establish what the common signs of MTBI were. Figure 5.20 below is a graphical presentation of the responses from the clinicians:

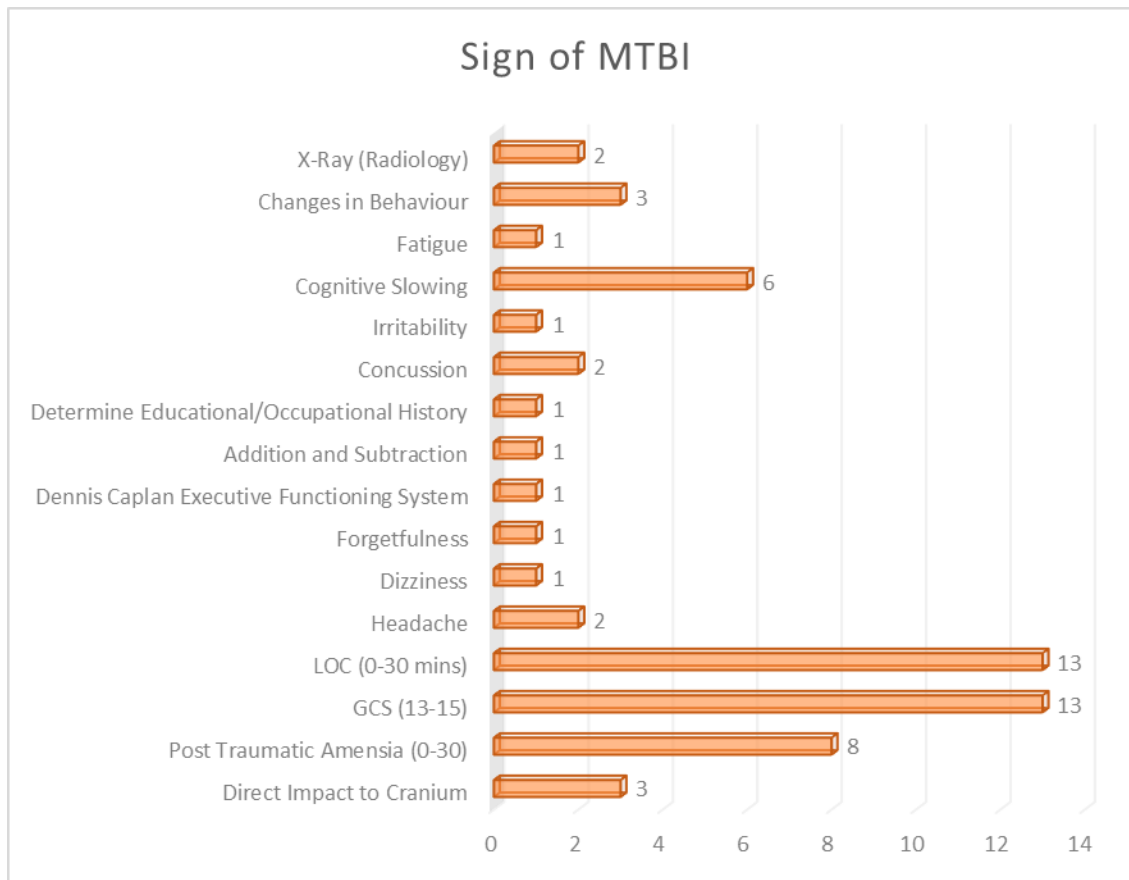


Figure 21: Sign of MTBI

13 (54.2%) of the clinicians all agreed that Loss of Consciousness (LOC) was a major factor to consider when determining whether a patient had MTBI. The Glasgow Coma Score (GCS) was also a significant factor with 13 (54.2%) of the clinicians agreeing that it was very important. There was some agreement that a GCS score of between 13-15 is a measure of Mild Traumatic Brain Injury. Any score below that would be considered a severe injury. Post Traumatic Amnesia was also a significant measure to consider with 8 (33.3%) of the clinicians declaring its importance in establishing if the patient had been affected by a MTBI. Cognitive slowing with 6 (25%) of the clinicians mentioning its measurement as being important was also a significant factor for consideration. There

were other factors that were mentioned as per the Figure above. Some of the comments with regards to establishing what the common signs of MTBI are as follows:

*“So, in my practice, what I use is I use a combination of the three, but I rely most heavily on the post-traumatic amnesia because that's what the literature says is the most accurate description of severity of brain injury.” (NP02)*

It was evident that PTA was one of the three most commonly used measures of MTBI. The two most used and assumed to be the most accurate measures are GCS and LOC as reflected in the following comment:

*“We use the Glasgow Coma Scale that determines the level of consciousness, that it measures three parameters, the best motor response, eye opening response and verbal response.” (NS05)*

Further to this, there was strong agreement with regards to the most reliable measures, however, measure of severity was still a conscientious issue where the clinicians in the study could not agree about. One of clinicians stated that:

*“Now, what determines whether it's mild or moderate or severe? I think it's just a matter of consensus. And that's why the criteria would evolve over time and be different from. One context to the other, it would also be different from subject to subject.” (PS03)*

Some of the comments established that the measure of MTBI has always evolved and the measures have sometimes been adjusted. The three most important measures were said to be the GCS, LOC, and Post Traumatic Amnesia. (PTA). Some of the clinicians relied mostly on the PTA measure while others considered the GCS score to be the most

important measure. Furthermore, the severity of the brain injury was an opinion-based decision.

### **How easy is it to miss an MTBI or Mild Head Injury?**

The researcher with this question wanted to establish from the clinicians if an MTBI patient can be wrongly diagnosed while they have MTBI and how easily that can happen. The comments from the clinicians included the following:

*“Ya, I think – that’s a good question – I think we do miss it a lot, and it’s not the role of a psychologist to diagnose the severity of the brain injury. So, either a neurologist or preferably a neurosurgeon would diagnose the severity of a brain injury.” (NP01)*

The concern was that in most cases an MTBI is diagnosed by a psychologist who in most instances is not adequately qualified to properly diagnose the severity of the brain injury. There was therefore consensus that severity needs to be diagnosed by either a neurologist or neurosurgeon. The issue of the severity of brain injury and classification thereof was also a problem as per the following comment:

*“Very easy. Very easy, but then again, it also depends on how you define a Mild Traumatic Brain Injury, because if you go with the post-traumatic amnesia descriptions, then a mild traumatic brain injury is really a mild traumatic brain injury. And you’re not going to expect neuropsychological consequences. If you use the Loss of consciousness or the Glasgow Coma Scale as your indicator of a mild traumatic brain injury, then a mild traumatic brain injury could probably be a moderate traumatic brain injury if you compare it with post-traumatic amnesia, and then you would have neuropsychological consequences of it.” (NP02)*

Not only is it important to be able to define the severity of the brain injury, but it is also important that the assessment is done by a highly skilled clinician as shown in the comment below:

*“All. Easy or difficult is perhaps a measure of them. Professional acumen of the clinician, isn't it, if you have the requisite skills, things may look easy and if you don't, they may look difficult.” (PS03)*

From the comments received from the clinicians there is consensus that an MTBI can be easily missed, however one group of clinicians believe that it is the level of skill that the clinician has that determines whether they will miss it or not. Another perspective is that it is difficult to miss a traumatic brain injury altogether, however measuring the severity of it is the difficult part. The way one clinician measures MTBI versus how another one does it may come out with differing assessments on the basis of the type of measurement tool used and differing assessments on the result of the measure.

**So how would that feed into your practice, then, knowing those difficulties in the moment?**

In this question the researcher wanted to understand what the clinicians would do in situations where they are unsure of their assessment and need a second opinion. The comments from the clinicians were as follows:

*“I defer to a neurosurgeon. So, I will give my opinion- I'll say, look in the absence of any objective information, my final comment is deferred to the neurosurgeon'. It protects me as a clinician. If I were to go on the stand the court would ask me, 'how can you diagnose a MTBI, you're a psychologist'.” (NP01)*

In situations where the diagnostics are uncertain the case is referred to a neurosurgeon who is most qualified to diagnose issues relating to brain injuries. The neurosurgeon is considered the last point of call for neurological assessments.

**A number of victims complain of a plethora of symptoms often referred to as Post-Concussive Syndrome. Can you briefly explain and comment on whether it can develop from MTBI?**

The researcher wanted to understand if Post-Traumatic Concussive Syndrome can develop from MTBI. The following comments relate to this question:

*“So, what the American association has come along and said is that the post-concussive syndrome does not exist, as far as they are concerned. These symptoms are so strange and transient and atypical that we can’t actually cluster it as a syndrome. So, my understanding is that in two years of a MTBI you can still experience the symptoms. Following that two-year period there is a good chance that you are fully recovered- so you return to a base-line level of cognitive function, or neuropsychological functioning. So, my opinion is that it does not really exist.” (NP01)*

*“Sure, it’s a win when a person presents with post-concussive syndrome. In other words, persistent symptoms three months after the head injury. It may be due to a number of different factors. It may have appeared to be a mild traumatic brain injury in the beginning, but actually it wasn’t because it became complicated by who contracted contusion. (NS04)*

The American Association believe a Post-Concussive Syndrome is not correctly classified and therefore does not exist. The symptoms experienced should not be considered to be

syndrome. Another perspective is that a brain injury sometimes needs time to manifest and therefore eventually becomes a Post-Concussive Syndrome that may have been previously diagnosed as MTBI but at this stage may now be considered severe. These may work in favor of the patient in claiming compensation from the RAF.

**A number of patients with MTBI present with emotional problems, do you believe that this is from psychological trauma from the accident, or a possible chemical imbalance in the brain that occurred during the trauma?**

The researcher knows what to ascertain if patients with MTBI got it from the psychological trauma from the accident or a possible chemical imbalance in the brain that occurred during the trauma. Some of the comments from the clinicians were:

*“So, in my view, if it's a true Mild Traumatic Brain Injury, it's not a function of the brain injury, it's a function of the psychological trauma.” (NP02)*

*“It could be a chemical imbalance or structural violence. We may not identify exactly the lesions in the brain, but because of the sheer size of the brain, they could affect areas like the limbic system, for example, where there is structural imbalance □□. (NS05)*

A great number of clinicians agreed that MTBI was most likely due to psychological trauma in most cases and not a function of the brain injury and any chemical imbalances thereof. There was however consensus that the MTBI could be caused by either a chemical imbalance in the brain or psychological trauma. The argument was more on which of the two were most likely in most cases.

**What are your views and beliefs regarding MTBI and their role in relation to health?**

**A secondary question, does it have any influence in terms of health status, and if so, in what way?**

In this question the researcher wanted to understand the severity MTBI has on a patient's health, and to understand what the symptoms are of MTBI. The responses to this question were as follows:

*"Ya so within 2 years of the accident you can expect memory difficulties, executive functioning difficulties, the person might have difficulty planning certain things, or adapting to novel tasks at work, but only on a mild level. So that would be the functional outcome after, or within 2 years. After that there is a typical decline in those post-concussive symptoms. So long term we would not expect a MTBI to have any lasting complications on a person's functioning."* (NP01)

Several symptoms were considered as being signs of MTBI and most importantly it was identified that MTBI usually occurs within a short period after the accident but gradually there is a decline in the post-concussive symptoms. This point of view was supported by other respondents who strongly agreed as per the comment below:

*"Well, you see, again, like I said, MBI is a benign process which stops. It's got a finite end. So, the answer to the question is it doesn't have any risks for future health except in those cases who are psychologically compromised even before, because those patients, in a funny kind of way, in inverted commas, 'never comes out of the brain injury'."* (NS03)

The respondents all had consensus on the fact that symptoms of a mild traumatic brain injury will eventually cease if the injury was diagnosed correctly, therefore the health

complications are finite and will eventually come to an end. Those patients that have long lasting complications would be patients that were psychologically compromised even before the accident.

**What are your thoughts on whether such an injury should receive compensation from the road accident fund?**

The researcher posed the above question to understand if clinicians believed that MTBI victims should be compensated by RAF.

*“So, if I can figure out in the report that the accident has cause the major depressive disorder and the PTSD -if I can prove that in the report- then the person should get compensated.” (NP01)*

The study participants strongly agreed that if a patient is correctly diagnosed with a MTBI they should be compensated. It was further agreed that compensation should only be awarded to patients that at the time of their claim were still being affected by MTBI.

*“Yeah, so if at the time of assessment for compensation but finds that it has either recovered completely or this permanently insignificant impairment, then I believe there should be no compensation, irrespective of the label that was originally attached or the label that any other expert attaches to the brain injury. If it is found that this brain injury had an acute post-traumatic onset of serious neurological function, which has failed to recover and has resulted in permanent, significant but manageable impairment. And in the whole rest of this, I define exactly what I mean by significant but manageable impairment. Then it should be considered a Mild Traumatic Brain Injury and then it should be compensated. (NS04)*

For those patients that have been diagnosed with MTBI at the time of their claim should be compensated, however there needs to be a standardized decision-making matrix that can be used to determine the value of the compensation. Comments regarding these issues were as follows:

*“So, a person, like I said earlier on, who is an executive in a large company having an identical injury and identical symptoms with someone who works as a trolley handler at the local supermarket, compensation would differ because of just how different the lives would be impacted and the ability to actually make a living.” (PS01)*

The one perspective is that if the patient has a higher depressive disorder and post-traumatic stress disorder, they should be compensated. The other view is that a patient that may have been diagnosed with MTBI right after the accident but has now recovered from it at the time of the assessment for compensation should not qualify for compensation from RAF, however those patients with long lasting acute post-traumatic on the onset of serious neurological function and have not recovered should be compensated. Another perspective mentioned was that those affected by MTBI need to be compensated, however the compensation should be determined by the level of loss of income of everyone independently.

**And in your experience, in court cases, and being involved in them, what is your opinion on what factors have an influence on a judge or a court official’s decision about whether to make a positive judgement on a claim?**

The researcher posed this question to the court officials to determine and understand what factors are most likely the ones that influence the decision of a judge in the court with regards to MTBI cases. The opinion was:

*“It is up to, in my view, the medical examiners to now represent the case properly. And I think if we have a lot more Competent medical examiners who represent cases adequately, the judicial system will make better decisions.”* (PS03)

*“So, what’s important to the judge...I guess what is said by the expert. If there is consensus among the experts, then the judge will listen to the experts.”* (NP01)

The consensus from the clinicians is that the judge or court officials’ decisions are completely determined by what the experts say and how convincing their assessments are. The judge or court official can only make decisions outside of the experts if the injury shows physical lacerations or scars. Without physical injury the judge or court official must rely on the opinion of the experts on all decisions.

**What are the social factors that you believe have an influence on a court official’s decision?**

The researcher was of the opinion that decisions may be affected by social factors as well. The above question was posed to uncover what these factors may be if any.

*“Look I mean, would a judge say, ‘this guy can’t even put food on the table and therefore we should give him a higher pay-out’, I’m sure they would take that into account. Vs say you are an actuarial scientist and you’re earning R200 000 a month and you have a mild*

*head injury, and you have no psychological problems; would that influence the settlement amount- I'm not sure.” (NP01)*

The study participants agree that the economic status of the patient played an important role in determining the compensation that he or she must receive. This response considered the social factors affecting the patient and not the court officials. Other participants did not agree with this notion but instead believed that economic status had no impact on the compensation value as alluded to in the following comment:

*“- I have never experienced a situation where I thought the person is white or black and they got a better settlement. Or they are from a rich background or a poor background therefore they got a better settlement. I've never had that experience. So, no, I can't answer that. But what I can say is that richer people get better tests done like the Dennis Kaplan or the Ray and therefore the assessment will be better done and effectively might lead to higher compensation. (NP04)*

Further to the notion relating to economic status, the researcher established those cultural beliefs also had an impact on decision making as eluded from the following comment:

*“Mental illness is still an enigma and taboo in certain cultures. So, if you have a judge who is of the school of thought that there's no mental illness, it's just the sign of a weak person, the decision making is going to be biased.” (PS01)*

The one perspective is that social factors relating to the patient are considered in compensation to ensure that the loss of income they have experienced is compensated for. The other perspective is that social factors are not considered in the decision however richer individuals can afford to undergo better tests which may lead to them receiving

better compensation. The other perspective on social factors is in relation to the judge or court official and perhaps their cultural background that may influence their perspective in relation to mental illnesses. In some cultures, mental illness is seen as a sign of a weak person and therefore is taboo in that culture. These judges or court officials would then make culturally biased decisions.

**How helpful are assessments and reports compiled by Neuropsychologists, particularly relating to MTBI and the settlement of these claims?**

The researcher wanted to assess the value of the assessments and reports from the perspective of clinicians in relation to MTBI and the settlement of claims. Their opinion was as follows:

*“So, I've got about 70, 80, maybe that I know in my 30 years of experience. There are probably about five or six that are reliable. That is what they say is trustworthy. They never embellish. They never exaggerate. They perfectly honestly, and straight down the line. The vast majority are very unhelpful. They are working literally as hired guns. They even if they did not hire guns, they do not apply practical commonsense.” (NS03)*

The clinicians agreed that assessments and reports are very beneficial, however, the quality of these reports is strongly dependent on the clinician that prepared the report. Further to this there is the opinion that many of the clinicians' reports are influenced by the patients and their representatives and therefore are not impartial. The clinicians also agree that the best quality reports come from neuro psychologists who have better training in assessing cognitive functioning as described in the following comment:

*“It's just similar to psychiatrists. They know the brain physical structure, but they also know the brain and mental functioning structure. So, it's very important, but even more value within a neuro psychologist because they are trained even more to be able to assess cognition functioning.” (PS01)*

One perspective by a neurosurgeon indicated that the reliability of a neuropsychologist report may be compromised because they usually act in the best interest of the patient to receive some form of compensation from them, and therefore a lot of them exaggerate the circumstances in their reporting. Another view is that the report from the neuropsychologists is important because neurologists generally do not have the time to compile their reports due to time constraints and very busy schedules. Another perspective is that a neuropsychologist is as good as a psychiatrist as they know both the physical and mental make-up of the brain, which means their reports can be relied on.

**Which discipline do you believe is better positioned to give a thorough explanation and clarity of an accident and the health status of the client?**

The researcher wanted to establish which discipline was best positioned to give clarity on the status of an accident victim and the health status of that victim. The clinicians are summarized in their comments below:

*“You know, it's like saying which part of the body is the better part? We have two eyes, two ears for one reason, you know. So, I think all the disciplines complement each other. So, where there are a neuropsychologist assessment and report, personally, I believe there needs to be a psychiatrist report and assessment. OK, I believe the two have to coexist.” (PS01)*

*“A neurosurgeon would diagnose the injury, a neurologist will comment on any, I always see them as the one doing the extraneous variables, say if there are symptoms -your seizures, your black-outs, and your déjà vu, all of those kinds of things- a neurologist would comment on that. In terms of the functional impact. The psychologist is the only one who is geared up from a psychometric point to answer that question.” (NP01)*

All the clinicians agree that there is no one discipline that is better positioned to give a thorough explanation and clarity of an accident and the health status of a patient. Each discipline looks at different aspects of the brain functionality and each of these aspects are important for assessing the condition of the brain.

**What are your thoughts on the ways neuropsychological assessment could be improved, and the second part would be your thoughts on judicial decision making and how those could be improved to ensure fair and appropriate outcomes for claimants?**

The researcher posed this question to determine how neuropsychological assessments and judicial decision-making can be improved from the clinician’s perspective. The comments in relation to these two aspects were as follows:

*“We need more South African tests with South African norms. A lot of the time the tests are developed in a UK or American context, so the samples that they have taken, the population that they have taken to base the norms off are not South African people. So, there is a debate now about whether we cannot take those norms and apply them in a South African context- and we can’t. We’ve developed our own norms to an extent, but they are very limited.” (NP01)*

The clinicians strongly agreed that a South African influenced assessment tool needs to be developed in order to make better decisions with relation to MTBI. The foreign assessment tools are not entirely transferrable to the South African environment and therefore not very efficient in determining issues surrounding MTBI. Furthermore, there is strong agreement that workshops and training are essential to improve decision-making and understanding of MTBI for both clinicians and court officials as alluded to in the below comment:

*“The loadable practices and procedures of sacro must be strengthened and entrenched and may be expanded. And I think Cecchina does that again, conferences and workshops that are trying to expand their knowledge. (NS04)*

Some of the comments alluded to the fact that the tests used to determine if a patient is suffering from MTBI are foreign tests with foreign norms. It is important to establish South African tests that use South African norms to measure MTBI severity. Another aspect mentioned in improving neuropsychological assessments is the advent of workshops and conferences that have been developed to keep clinicians abreast with the norms and changes in the world with regards to MTBI and any improvements that could be used in the South African context including new assessment tools. Further to this it is important to ensure that the neuropsychologists that do these assessments are well qualified and have many years of experience. These should be the only neuropsychologist reports that court officials should accept. It was further alluded to that a standard guide should be developed for judges and court officials with regards to decision making with respect to brain injuries. This guide would streamline the decision-making process and standardize the outcomes.

**What are the key factors and/or symptoms that you consider in your decision making about whether a patient / claimant you are assessing meets the diagnostic requirements for mild traumatic brain injury/concussion?**

The researcher posed the above question to determine what the diagnostics requirements are for a patient to be considered to have a Mild Traumatic Brain Injury or Concussion. Comments relating to this from the Clinicians were as follows:

*“A neuropsychologist reads the medical records and listens to what the client tells them about what happened at the scene of the accident. The duration of the levels of loss of consciousness (LOC) and the GCS (Glasgow Coma Scale) will give you a sense of the severity of the head injury. I still leave a final opinion on the severity to the neurosurgeon.”*  
(NP02)

The participants agreed that the final opinion with regards to the severity of the brain injury was always best left to a neurosurgeon. The symptoms for TBI would include Loss of Consciousness, Focal Neurological Deficit and Alteration in Mental State. The severity would then be assessed by a neurosurgeon. There is however agreement that a GCS score does give a sense of the severity of the head injury.

**Do you think our psychometric tools are well developed and adequate to assist us in our conclusions? What are the observed limitations with current tools in use? What revisions do you think are necessary to improve the efficacy of tools?**

The researcher posed the above question to ascertain if the current tools being utilized to assess MTBI are adequate and whether the measurement tools can be improved. The following comments you observed from the study participants:

*“We rely on American tests which are not standardized for our population. We do not have proper norms for the South African population which might distort our results. They do help to a degree, but I think they do not give accurate results. It is for this reason that a clinician should not only rely on psychometric tests but take all the other clinical factors into consideration. We need to develop our own instruments or standardize the current ones at least.” (NP03)*

*“These tests are not culture fair and if you carefully analyse the results, you will notice that rural Black people perform poorly because of their lack of exposure to education and not necessarily because there is something wrong with their brains. Similar differences/patterns are noticed between people of different racial groups.” (PS01)*

The above comments suggest that the tools being utilized in South Africa are not adequate. The participants generally felt that the tools were not standardized for the South African population. Many of the tools were designed for use in the American population. It was also evident that exposure to education had a considerable influence on the results of the assessments. It was found that the less educated who were not proficient in the English language generally got more adverse results than those that were educated. There was also evidence of bias between different racial groupings in relation to the results. The clinicians that were interviewed also strongly agreed that psychometric results alone were inadequate. It was important to combine the psychometric results together with the clinical observations to have a more accurate assessment of the patient.

## **5.5. SUMMATIVE OBSERVATIONS**

The study sought to respond to eight key research questions. In South Africa, there is a huge number of non-fatal injuries that were caused by road traffic injuries. Population research studies have found that the most common cause of TBI in South Africa is road accidents. MTBI is the most common form of TBI and has been linked to potentially causing adverse effects in the long-term performance and health of the victims. The GCS score of 15 or lower is widely considered as the reliable basis for diagnosing a patient with Mild TBI, and as basis of consideration of receiving compensation in the case of a claim. Claiming through the RAF requires a complex legal process, takes long periods of time, and can result in a very high cost in legal expenses. The RAF bases compensation on medical assessments and classification that are internationally accepted by well-trained medical professionals with relevant accreditations.

The exploration and the range of health and judiciary responses broadly showed that minor traumatic brain injuries are overlooked. The literature showed that measurement scales such as the Glasgow Coma Scale are widely used globally to assess brain trauma injuries. It has been found that the GCS can be unreliable and inconsistent in the classification of TBI. The problem that has always arisen is that the instrument generally fails to accurately measure the intensity of the brain trauma and therefore makes it difficult to establish if a case was minor or severe. The results show that the GCS is commonly used as a measure for brain injuries in South Africa. All the respondents/patients were assessed with the GCS, and the scores were all between 13-15 on the scale which indicated a mild trauma as per guidelines, however many of the clinicians had a different

perspective in terms of the scale and what should be considered mild or severe. The literature identified an expanded scale developed by the World Health Organisation the GCS-E quantitative measure which takes into consideration critical behavior in the period of post-traumatic amnesia. This new measure was tested in two large hospitals in the UK and two large hospitals in South Africa. The study found that this measure accurately identified mild concussions and confusion that persist for periods over 15 minutes. The results show no mention from the clinicians that the GCS-E was being used as a measure in South Africa. For that reason, as identified in the literature MTBI in South Africa is usually wrongly diagnosed and is not usually considered to have long lasting effects. The results show us that because the diagnosis is usually vague and inconclusive the claimants within the judiciary system are not always in a position to adequately convince decision-making court officials that their clients qualify for compensation from the RAF.

As part of the study the researcher also explored the range of symptoms and presentations and found that the most common symptoms included headaches, dizziness, problems maintaining balance, depression, exhaustion, anxiety, irritation, and memory loss. The short-term symptoms included loss of consciousness, Post Traumatic Amnesia, and visual defects. The long-term symptoms included loss of memory, fatigue, headaches, and dementia. The long-term symptoms often go unnoticed as they only occur after a long period of time. Our results show that the most common symptoms reported by the patients are Post-Traumatic Amnesia with 81.8% (n=36) of the participants being diagnosed with Emotional Imbalance or Mood Swings (n=20; 45.5%), Fatigue or Lethargy (n=20; 45.5%), and headaches (n=17; 68.6%). The assessment from neuropsychologists and neurosurgeons indicated that most of their patients suffered from

a decline in neuropsychological state (n=16; 66.7%) which led to an increase in aggression, significant impulsivity, changes in personality and inappropriate emotional regulation and neurocognitive impairments (n=12; 50%).

The research explored the role that neuropsychologists and surgeons could play, and the literature globally shows that if there was better diagnosis of MTBI it would increase the chances of correctly diagnosing MTBI and if that was the case it would increase the chances of the judiciary system making better decisions. The research findings also demonstrated that decision-making court officials relied largely on neuropsychological assessments and report findings to make their decision in cases of Mild TBI. This made it very important that clinicians produce reports of good quality to assist the court officials in making the right decision. The findings further substantiated the need for well qualified and experienced clinicians to be used in the assessments and court proceedings. Further to this the findings also allude to the fact that there is no guideline available for decision-making court officials with regards to compensation decisions related to MTBI. This then has made decision-making within the judiciary system inconsistent both in determining if the claimant should be compensated by RAF and the degree of compensation.

## **5.6. CONCLUSION**

The preceding chapter provided a summative overview of data collected from two distinct phases which included a retrospective review of patient records from a sample of 44 participants and a second phase which were qualitative interviews with clinicians and court officials from a sample of 24 participants. The data enabled the researcher to then

develop a theoretical understanding of the study. The following chapter will offer insights into the process of developing theory that emerged from the data collection.

## CHAPTER 6

### THEORY DEVELOPMENT

#### **6.1. INTRODUCTION**

The preceding chapter presented, interpreted, and analysed the results from the study, as per the aim and objectives of the study. Multiple qualitative data collection tools and methods were used to collect and analyse the data. The findings presented in chapter five will be used as a blueprint to develop a framework for the enquiry of neuropsychological assessments and their utilisation in the facilitation of settlement of Road Accident Claims in the South African Courts specifically for those with Mild Traumatic Brain Injury. The proposed framework represents the researcher's synthesis of literature and findings from the data collection process. It maps out the actions required in the course of the study given his previous knowledge of other researcher's point of view and his observations on the subject being researched (Tomas, et al., 2011). This chapter addresses one of the key objectives of this study, that is, developing a modification framework and recommendations that support the development of effective health and legal responses and service options that can promote the effective identification, management of MTBI within the South African Judiciary specifically in the area related to the settlement of Road Accident Claims in the South African Courts.

### **6.1.1 Empirical Evidence to Theory Development: A Foundational Clarification.**

Lewin (1946) was clear in his findings and literature that, adequate development of the theoretical aspect of a study is fundamentally important for one to understand scientific or practical results from research. He further attested that innovation management is incomplete without a combination of general information and hard and fast evidence in the development of principles and theories. His theory goes on to emphasise on the importance of carefully diagnosing information within a study while at the same time accepting that there is a degree of uncertainty in any study in the world. This then brings the importance of philosophy when conducting a study while at the same time avoiding bias in the work produced. These observations are particularly important to note when developing a theory. With this mind, the chapter focuses primarily on knowledge production with the use of empirical evidence in developing a Framework. The framework developed in this study will broaden the current knowledge base within the area of neuropsychological assessments of MTBI in road accidents and claims within the Road Accident Fund of South Africa.

In contextualising the framework that will be introduced later in the study, the current chapter on theory development utilises existing theoretical tenets as central principles driving the development of the conceptual theory, model, and framework. As such, the introductory aspect of the chapter will focus on the meaning and nature of the identified theories, the observed relationship between the identified theories and the current research, as a precursor to developing the conceptual framework in the area of neuropsychological assessments and judicial responses to MTBI.

## **6.2. SCIENCE, SCIENTIFIC RESEARCH, AND THE SCIENTIFIC METHOD**

### **6.2.1 Basic and Applied Science**

As defined by Bud (2012), basic sciences which are sometimes referred to as pure sciences: - those that describe the fundamental powers and objects, how they interact with each other and what laws regulate those interactions. In Basic Science, a researcher is able to create a hypothesis purely based on a theory whereas in Applied Science this is not possible. In Basic Science the hypothesis is developed with the sole purpose of producing data that can be directly applied to real-world situations.

### **6.2.2 Research Strategies to Theory Development**

According to Thomas (2003), the purpose of using an inductive approach for data analysis is to condense extensive raw text data into a brief and understandable format, to establish a clear relationship between the objectives of the research and the summary findings from the text data and lastly to develop a model or theory informed by raw text data. He further says that hypotheses should be formed using factual information from natural, dispassionate, and pure observations rather than from preconceptions derived from Inductive research.



Figure 22: The Inductive approach to research (Source: Pierce, 2010)

Generalization refers to a general statement or concept obtained by inference from specific cases. In this research, this specifically refers to making an inference on a given population through observing a selected sample. Feiler (2010) refers to this as logical reasoning in humanitarian analysis. In theory this definition implies that if a specific trait is observed in a given sample, it is assumed that the entire population observes the same trait.

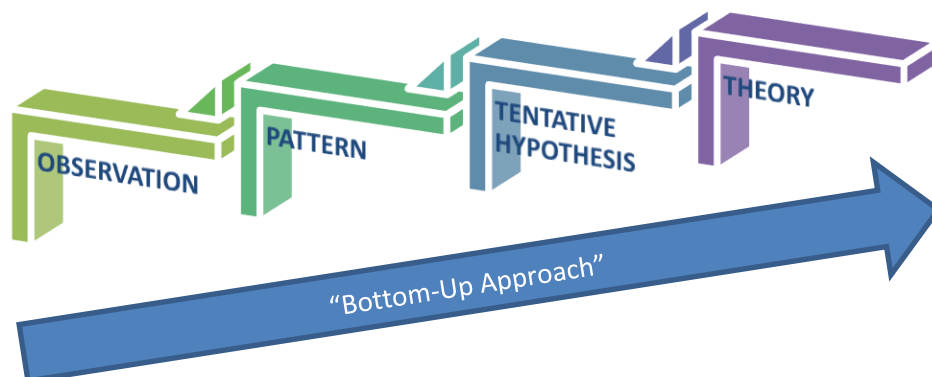


Figure 23: The Inductive Approach to Research (Bottom Up) Source: (Pierce, 2010)

The Inductive approach is sometimes referred to as the “bottom-up” methodology. According to Carlisle and Christensen, (2005) the bottom-up methodology always magnifies the statement on which it was based and therefore amplifies real-world experiences.

Fig 25 illustrates the Inductive (Bottom-Up) process.

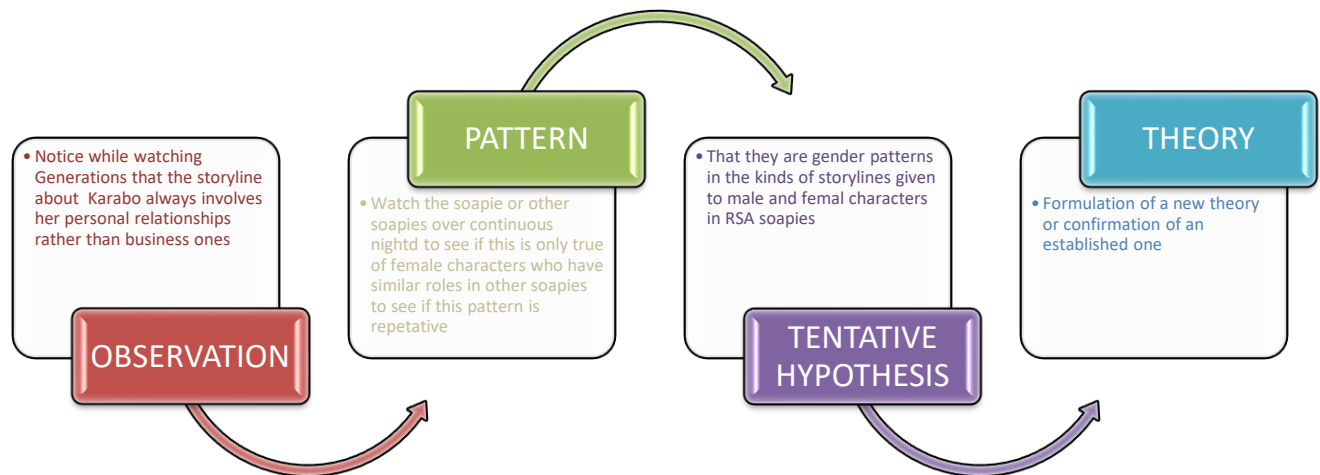


Figure 24: Inductive Approach to Research (Hill Climbing) (Source: (Burr, 2014))

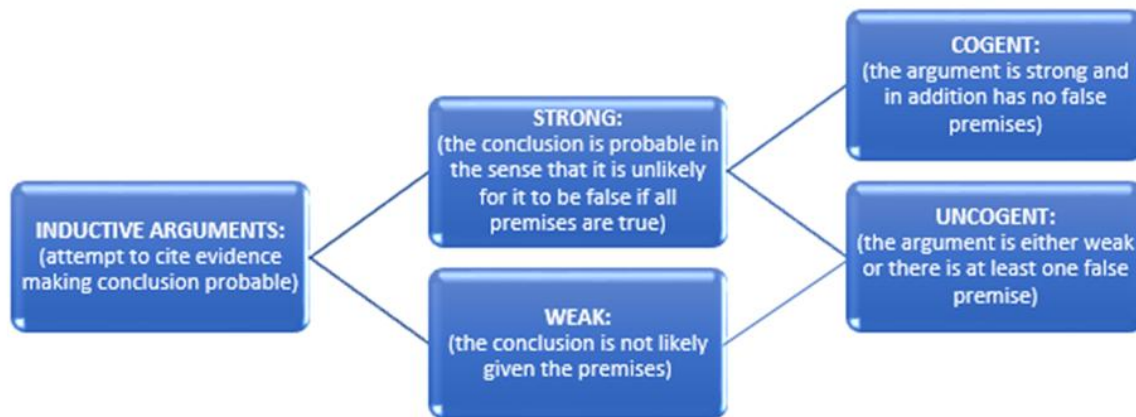


Figure 25: Inductive approach to research (Source: (Van der Leeuw, 2004))

The Inductive approach to research as defined by Dufour and Richard (2019) as relating to observations which are made and later utilised to inform the development of a theory. The Deductive approach however begins with the argument or the conclusion which is then evaluated and validated (Dufour & Richard , 2019).

As purported by Reyes (2004), Deductive analysis is simply described as a tool used to find a solution to a problem.

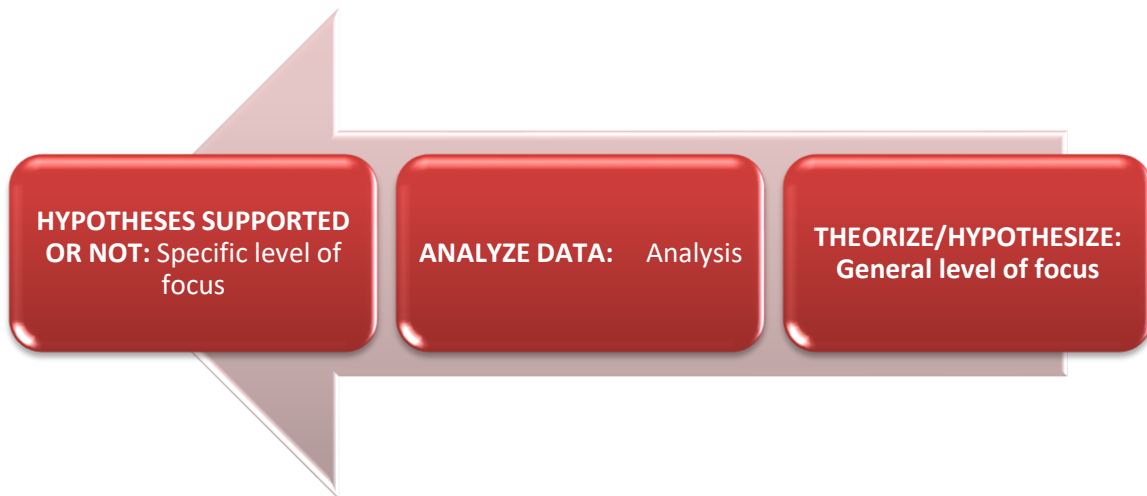


Figure 26: The Deductive approach to research (Source: Anmol Bhattacharjee)

The deductive approach looks at all the assumptions and finally ends with an assertion as defined by Malhotra (2012). The hierarchy moves from a theoretical abstract to realisation i.e., from a theory to the actual observation. This approach is also referred to a “Top-Down” approach in other academic literature.

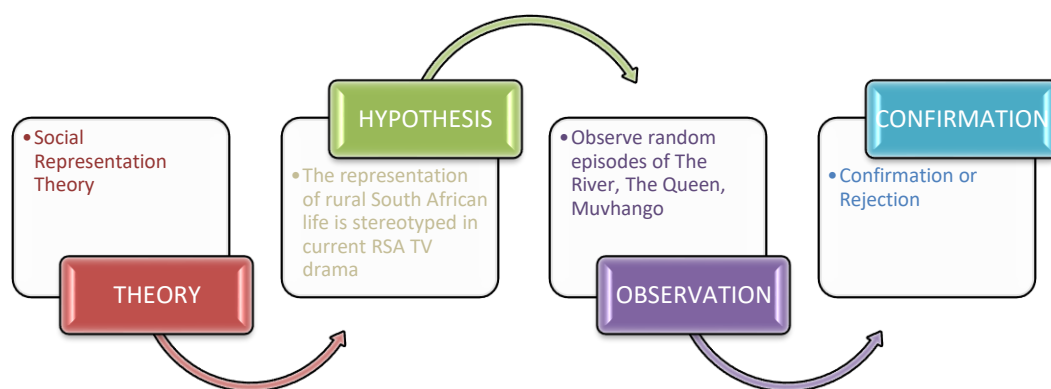


Figure 27: The Deductive approach to research (Source: (Carlisle and Christensen, 2005))

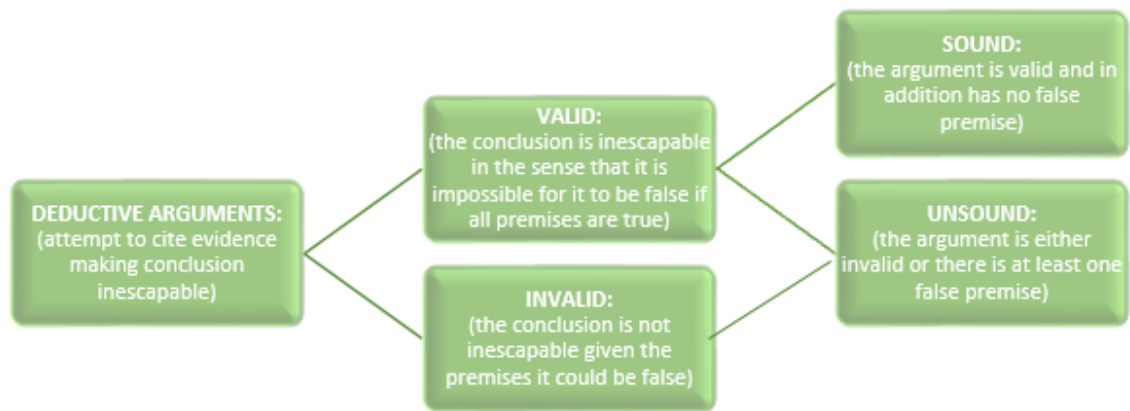


Figure 28: The Deductive approach to research (Source: Amy Blackstone)

### 6.2.3 Introductory insights into Ontology, Epistemology and Philosophical perspectives

Ontology refers to how researchers approach reality and how it exists in the universe as a whole and is also referred to as the study of the “Concept of Life,” (Treagust & Duit, 2008). The definition of Epistemology simply put is the study of knowledge. It is concerned with the source and essence of a piece of knowledge in bringing clarity to epistemological philosophy (Galbin, 2014). Epistemological assumptions are concerned with how information can be produced, how it can be obtained, and lastly communicated in accordance with the presentation.

Table 12 below is a diagrammatic presentation of the paradigms addressed above:

*Table 12: Five Research Philosophies (Source: (Saunders, et al., 2016))*

| Ontology<br>(nature of reality or being)                                                                                                                         | Epistemology<br>(what constitutes acceptable knowledge)                                                                                                        | Axiology<br>(role of values)                                                                                                                                                                      | Typical methods                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Positivism</b>                                                                                                                                                |                                                                                                                                                                |                                                                                                                                                                                                   |                                                                                                                                                             |
| Real, external, Independent<br>One true reality (universalism)<br>Granular (things)<br>Ordered                                                                   | Scientific method<br>Observable and measurable facts<br>Law-like generalisations<br>Numbers<br>Causal explanation and prediction as contribution               | Value-free research<br>Researcher is detached, neutral and independent of what is researched<br>Researcher maintains objective stance                                                             | Typically deductive, highly structured, large samples, measurement, typically quantitative methods of analysis, but a range of data can be analysed         |
| <b>Critical realism</b>                                                                                                                                          |                                                                                                                                                                |                                                                                                                                                                                                   |                                                                                                                                                             |
| Stratified/layered (the empirical, the actual and the real)<br>External, Independent<br>Intransient<br>Objective structures<br>Causal mechanisms                 | Epistemological relativism<br>Knowledge historically situated and transient<br>Facts are social constructions<br>Historical causal explanation as contribution | Value-laden research<br>Researcher acknowledges bias by world views, cultural experience and upbringing<br>Researcher tries to minimise bias and errors<br>Researcher is as objective as possible | Retroductive, in-depth historically situated analysis of pre-existing structures and emerging agency. Range of methods and data types to fit subject matter |
| <b>Interpretivism</b>                                                                                                                                            |                                                                                                                                                                |                                                                                                                                                                                                   |                                                                                                                                                             |
| Complex, rich<br>Socially constructed through culture and language<br>Multiple meanings, Interpretations, realities<br>Flux of processes, experiences, practices | Theories and concepts too simplistic<br>Focus on narratives, stories, perceptions and Interpretations<br>New understandings and worldviews as contribution     | Value-bound research<br>Researchers are part of what is researched, subjective<br>Researcher Interpretations key to contribution<br>Researcher reflexive                                          | Typically Inductive. Small samples, in-depth investigations, qualitative methods of analysis, but a range of data can be interpreted                        |

| Postmodernism                                                                  |                                                                                           |                                                                              |                                                                               |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Nominal                                                                        | What counts as 'truth' and 'knowledge' is decided by dominant Ideologies                  | Value-constituted research                                                   | Typically deconstructive – reading texts and realities against themselves     |
| Complex, rich                                                                  | Focus on absences, silences and oppressed/ repressed meanings, Interpretations and voices | Researcher and research embedded in power relations                          | In-depth investigations of anomalies, silences and absences                   |
| Socially constructed through power relations                                   | Exposure of power relations and challenge of dominant views as contribution               | Some research narratives are repressed and silenced at the expense of others | Range of data types, typically qualitative methods of analysis                |
| Some meanings, Interpretations, realities are dominated and silenced by others |                                                                                           | Researcher radically reflexive                                               |                                                                               |
| Flux of processes, experiences, practices                                      |                                                                                           |                                                                              |                                                                               |
| Pragmatism                                                                     |                                                                                           |                                                                              |                                                                               |
| Complex, rich, external                                                        | Practical meaning of knowledge in specific contexts                                       | Value-driven research                                                        | Following research problem and research question                              |
| 'Reality' is the practical consequences of Ideas                               | 'True' theories and knowledge are those that enable successful action                     | Research initiated and sustained by researcher's doubts and beliefs          | Range of methods: mixed, multiple, qualitative, quantitative, action research |
| Flux of processes, experiences and practices                                   | Focus on problems, practices and relevance                                                | Researcher reflexive                                                         | Emphasis on practical solutions and outcomes                                  |
|                                                                                | Problem solving and Informed future practice as contribution                              |                                                                              |                                                                               |

Generalized views of the world are used for decision making and opinions are drawn from these generalised view-points that are said to emerge from Ontology which is defined as “what exists for people to know about” and Epistemology which is defined as “ the production of information and what can possibly be known from that information” (Goertz & Mahoney, 2012).

Goertz and Mahoney (2012) further say when there is clarity on a conceptual viewpoint the researchers conclusions will be much clearer. This ultimately leads to better informed decisions about the intent, architecture, methodology, research methods, data analysis, and interpretation of the study.

#### **6.2.4 The Definition and Nature of Theory (An Epistemological view)**

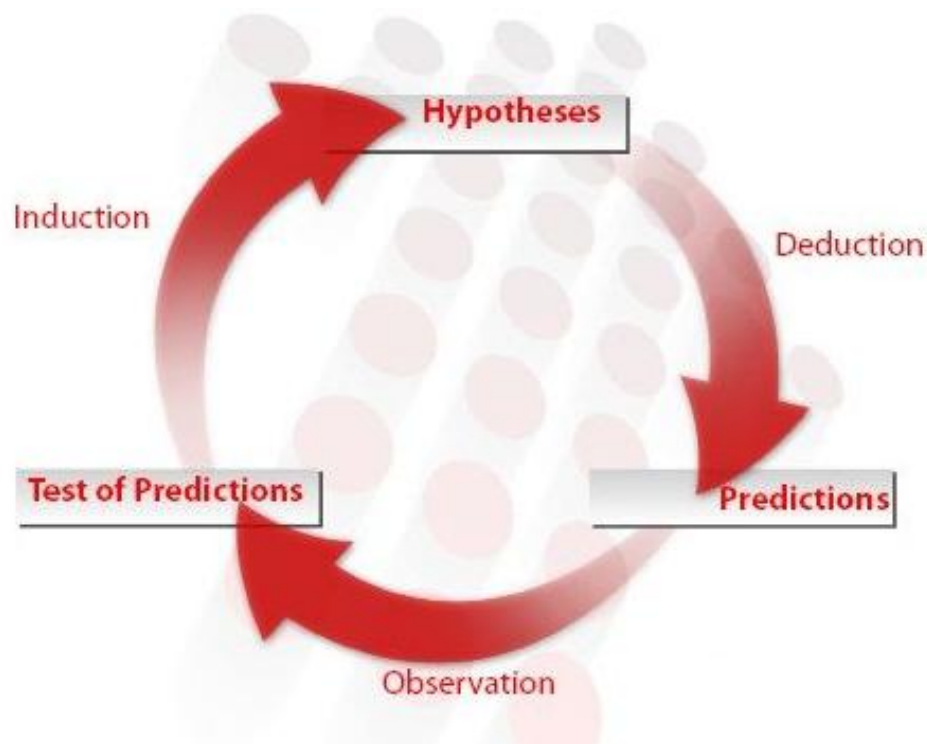
Problems can best be explained through the use of theory which is systematic by nature. A theory defines a phenomenon and its revolutionary features and is used as the basis for making future predictions on that phenomenon. It is therefore imperative that a study must be based on a theory and research is therefore used to provide evidence of the correctness of the theory.

Typologies and classification schemes are used in scholarly literature in classifying theory. The two are used relative to the objectives, boundaries, roles, and intent of the study as purported by Goertz and Mahoney (2012). Theory is defined by different authors in several diverse ways; however, the meaning remains quite standard.

#### **6.2.5 Relationship between Theory and Research**

Theory has several definitions in the scholarly realm. Fawcett and Downs (1986) define theory as the currency of our scholarly realm. Theory can be understood in several ways and furthermore to this day there is no solid agreement on what research contributes to theory or how it can inform theory. The only agreement is that there is definitely some form of contribution to the body of information. However, what constitutes “contribution” remains a point of debate.

According to Corley and Gioia (2011), the literature suggests that study leads to theory bifurcation. (Corley & Gioia, 2011)



*Figure 29: The Research Circle (Source Adapted from: Gay and Weaver)*

As many authors have attested including Carr (1980), theory should be considered useless if the gap between science and practice cannot be filled. If theory is not applicable in the real world it is useless. A good example is Albert Einstein's theory of General Relativity which in the first instance had not been evaluated eventually lead to several practical applications in particle and quantum physics. It is therefore imperative for theory formulation to be linked to practical experience and utility (Carr, 1980).

#### **6.2.6 Building Blocks of Theory**

Development of theory is considered to be a central activity in research. Traditionally, Authors build new theory using observations from previous literature, common sense,

from a combination of existing theory and experience. Busse et al (2016) established that there are four building blocks of theory. These four blocks include Constructs, Propositions, Logic, and Boundary conditions/assumptions. Busse et al (2016) describe the Constructs as the “what” of the theory; the Propositions are the “how”, “who”, and “where” of the theory. The Boundary conditions are said to define the “who,” “why” and “where” of the theory.

### **6.2.7 Attributes of a Good Theory**

In the world of academia, we find that theory has always been overly simplified for ease of use and for that reason may leave out particularly important and relevant concepts. It is therefore important to understand what the characteristics of a good theory are before attempting to build theory. It is especially important that theory needs to have “Explanatory Power.” Explanatory Power refers to the extent which a given theory can predict and/or explain a real-world phenomenon. It is also necessary for a good theory to be falsifiable. Below are some of the attributes of a good theory:

### **6.2.8 Evidential Accuracy**

Evidential virtues are represented in a theory when it fits the empirical evidence very well regardless of causal claim. A theory is said to have causal adequacy when causal factors are explicitly specified that with reasonable certainty produce the effects in need of explanation. Longino (1996) further argued that causal adequacy must occur where there is a web of mutual interactions of varied factors and not just a one-to-one cause and effect relationship. A third factor of evidential virtues was described by Keas, (2018) namely the

Explanatory depth. He says that explanatory depth is present in a theory when it excels in causal history depth or in other depth measures as the range of counterfactual questions. While causal adequacy is mainly for causal-explanatory satisfaction, causal history depth goes back much further than just effect back to immediate putative causes.

### **6.2.9 Coherently Virtues**

Coherential virtues involve Internal Consistency, Internal Coherence and Universal Coherence. Internal consistency is displayed in theory when the components of that theory are not contradictory to each other. While the theory attests that internal consistency is restricted to logical coherence within the theory itself, internal coherence and universal coherence have a much broader meaning. Internal coherence which is the second coherential virtue is said to be present in a theory whose different components are harmonized into an innate whole. The third coherential virtue is Universal coherence which is said to be present in a theory when it is not contrary to, other warranted beliefs. If the theory is contradictory to other well-established pieces of knowledge the value of that theory will be negatively affected.

### **6.2.10 Aesthetic virtues**

Aesthetic virtues include beauty, simplicity, and unification. They possess an aesthetic shape (fittingness) which is qualitatively different from the logical-conceptual fit of the coherential virtues. The theory implies that a beautiful theory evokes aesthetic pleasure in a person who is properly functioning and is sufficiently informed. This theory implies

that similar facts are discussed as the competitor however with little theoretical material. With the same amount of theoretical material more types of facts are generated than that of the competitor. This is referred to as the simplicity inherent in the theory. Unification of the theory refers to the several types of data that are explained due to increased informativeness.

### **6.2.11 Diachronic virtues**

Diachronic theoretical virtues include Durability, Fruitfulness and Applicability. Durability is exhibited in a theory when the theory has been evaluated, and the prediction is correct and/or by a plausible accommodation of new unanticipated data. Testability is therefore a prerequisite for a theory to pass the durability virtues. Fruitfulness of a theory relates to the ability that a theory has in generating new knowledge in the future that had not been previously discovered by means of a successful novel prediction, unification, and non-ad hoc theoretical elaboration. Fruitfulness is therefore said to be about innovation while durability is about conservation. Lastly a theory is said to be Applicable if the theory is used to guide successful action or enhance technological control. The theory is said to be applicable when the outcomes are more likely when using the theory than in the absence of the theory.

In summary, we have identified that they are twelve major theoretical virtues that are encapsulated into four categories: namely evidential, coherential, aesthetic and diachronic. Evidential Virtues are about how well theoretical components correspond to real world events. Cohorential Virtues are about how well these components fit well together, Aesthetic Virtues refers to the fittingness that is different from the logical-

conceptual fit of the cohorential virtues and lastly Diachronic which only applies when the initial theory has been tested and thereafter measured for durability, fruitfulness and applicability (Keas, 2018).

#### **6.2.12 Criteria of Evaluation**

Fawcett (2005) identified six different assessment parameters for the Evaluation Criteria. These six parameters include significance, internal consistency, parsimony, testability, empirical adequacy, and pragmatic adequacy. Fawcett's criteria are appropriate for critical appraisal of all theories and frameworks regardless of the level of abstraction (Fawcett, 2005).

**Internal Consistency** – This is displayed in theory when the components of that theory are not contradictory to each other.

**Parsimony** – Is the belief or philosophy that an easier theory is more likely to be right in its interpretation than a more difficult and complicated theory.

**Testability** – This refers to the fact that a good theory would need to be built on a foundation of clear meaning, should be easily measurable by simple hypothesis, and must exhibit strong interconnection.

**Empirical Adequacy** – This is when the claims of a theory in relation to empirical phenomena are correct or at least partially correct where some distinction of empirical and theoretical phenomena is present.

**Pragmatic Adequacy** – This implies that a theory or research finding needs to be useful in order to enhance practice or solve any issues arising from that practice (Udod & Racine, 2017)

### **6.2.13 Strengths and Limitations of Theory Building**

#### **Limitations**

Theories can be remarkably effective however some of the limitations of many theories is their inability to provide adequate clarity on the phenomenon being researched due to simplistic explanations provided by the theory. Another perspective as provided by Longino (1996), is that the intensive use of empirical evidence may at times yield a theory which may be extremely complicated. This is usually because there is overwhelming data relating to the phenomenon and researchers are usually tempted to build theory that captures everything. According to Busse et al (2016) theories may be overly simplistic and there leave out a spectrum of available perspectives leading to omission of relevant and important concepts.

#### **Strengths**

According to Dufour and Richard (2019) deductive theories are formed through observations and for that reason they can be used as instruments for real world situations. They are considered to be assertions of real-world phenomenon. Other authors such as Grant and Osanloo (2014) agree that academic studies cannot be done in the absence of theory. Theory is considered to be the currency of scholarly research.

The process of developing the proposed framework took account of the above asserted strengths and limitations, to ensure an output that was appropriately detailed so as to offer potential utility for real-world situations.

### 6.3. THE PROPOSED FRAMEWORK FOR THE CURRENT STUDY

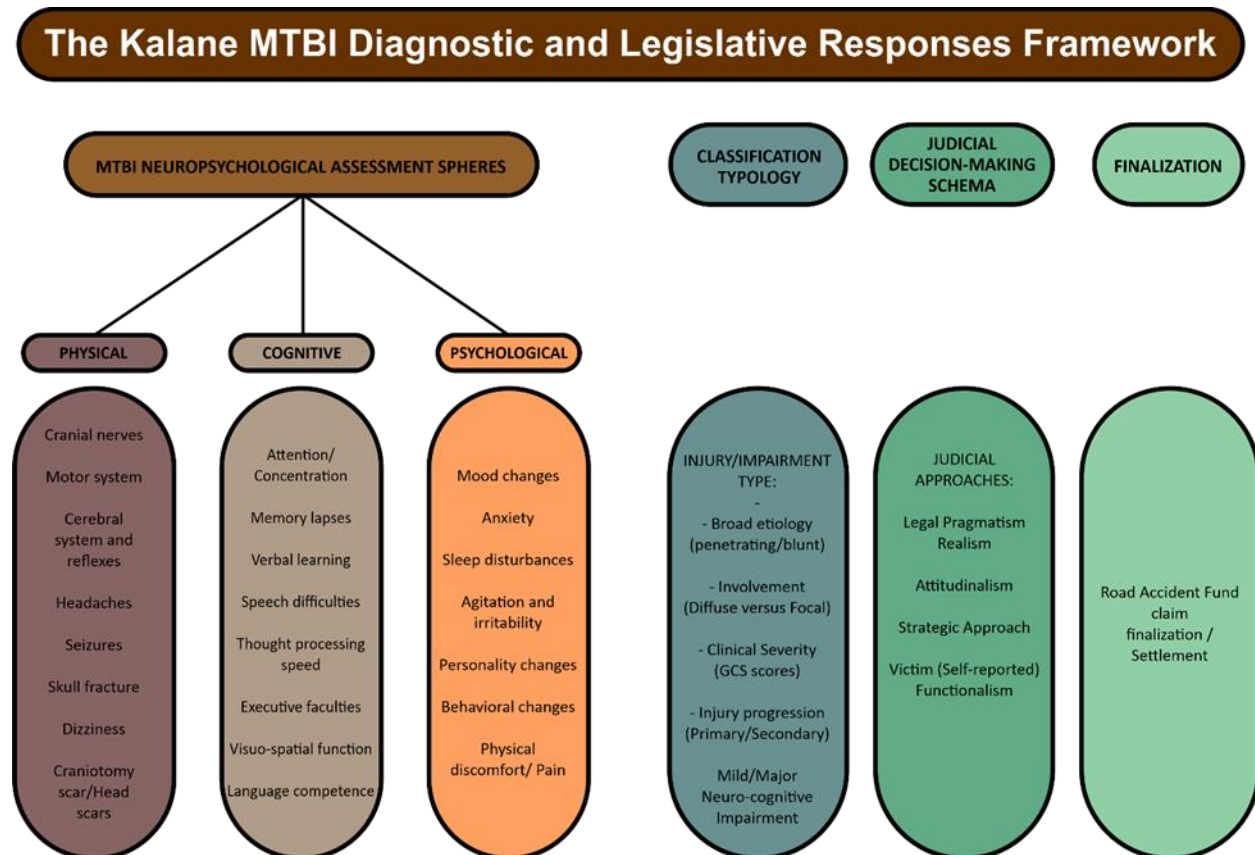


Figure 30: The Kalane MTBI Diagnostic and Legislative Responses Framework

## **6.4. DESCRIPTION OF MODEL APPLICATION**

### **THE KALANE MTBI DIAGNOSTIC AND LEGISLATIVE RESPONSES FRAMEWORK**

Through the utilisation of multiple data collection processes, the study sought to critically explore the contributory influence of neuropsychological assessments in judicial decision-making with regard to the facilitation of settlements of Road Accident Fund (RAF) claims among victims of mild traumatic brain injury (MTBI) in South African courts. The study was conducted across three psychological assessment and treatment centres in the northern region of Johannesburg, Gauteng, South Africa, and included a participant group comprising clinicians, patient claimants, and court officials. This multi-source design ensured that the findings, and ultimately the framework, were grounded in both empirical evidence and real-world medico-legal practice.

The Kalane MTBI Diagnostic and Legislative Responses Framework, depicted in Figure 30 above, was developed through the integration of findings derived from both the literature review and the empirical data collected during the study. The framework provides an integrative model that explains how clinical assessment processes interact with judicial reasoning and legislative structures to influence medico-legal outcomes in MTBI cases.

As illustrated in Figure 30, the framework is organised into four interrelated dimensions, each of which addresses key objectives of the study. These include: (i) MTBI Neuropsychological Assessment Spheres, (ii) Classification Typology, (iii) Judicial Decision-Making Schema, and (iv) Finalisation of Claims. Collectively, these dimensions

represent a sequential and interconnected process through which MTBI is assessed, interpreted, and adjudicated.

### **MTBI Neuropsychological Assessment Spheres**

The first dimension of the framework conceptualises MTBI as a multidimensional condition requiring assessment across three primary domains: physical, cognitive, and psychological functioning. This dimension directs clinicians and other practitioners to consider the full spectrum of symptomatic presentation when confirming a diagnosis of MTBI.

The **physical domain** includes observable neurological and medical indicators such as cranial nerve dysfunction, motor system abnormalities, headaches, seizures, dizziness, and structural injury. While these indicators are often prioritised in acute clinical settings, they may not fully capture the functional consequences of MTBI.

The **cognitive domain** includes impairments in attention, concentration, memory, verbal learning, speech, processing speed, executive functioning, visuospatial ability, and language competence. These deficits are often subtle but may significantly impact daily functioning.

The **psychological domain** includes mood disturbances, anxiety, sleep disruption, irritability, agitation, personality changes, and behavioural alterations. These symptoms are particularly important in MTBI, where emotional and behavioural changes may persist even in the absence of clear structural injury.

In this regard, the MTBI Neuropsychological Assessment Spheres may be utilised as a structured clinical guide or checklist to ensure that all relevant domains of functioning are systematically evaluated. This is particularly important in reducing the risk of under-diagnosis, especially in cases where symptoms are subtle, delayed, or not immediately apparent.

### **Classification Typology**

The second dimension of the framework focuses on the classification of MTBI based on injury typology. This dimension assists users in defining and specifying the nature and extent of injury through a structured and multidimensional approach.

Classification incorporates several factors, including:

- **Aetiology of injury** (e.g., blunt versus penetrating trauma)
- **Extent of involvement** (e.g., diffuse versus focal injury)
- **Clinical severity**, typically measured using the Glasgow Coma Scale (GCS)
- **Injury progression** (primary versus secondary injury processes)
- **Functional outcome**, including the extent of neurocognitive impairment.

This approach enables a more nuanced classification of MTBI beyond single indicators such as GCS scores. It also provides a structured basis for linking clinical findings with medico-legal interpretation. Importantly, the classification typology allows for differentiation between mild and more significant neurocognitive impairment as identified through neuropsychological assessment.

## Judicial Decision-Making Schema

The third dimension of the framework provides an illustrative representation of the judicial reasoning processes applied in the adjudication of MTBI-related claims. It recognises that legal outcomes are not determined solely by clinical evidence but are shaped by interpretive frameworks used by decision-makers.

The framework identifies several key judicial approaches, including:

- **Legal Pragmatism Realism**, which emphasises practical reasoning and context-based interpretation.
- **Attitudinalism**, which highlights the influence of personal beliefs, values, and perspectives on judicial decision-making.
- **Strategic Approaches**, which incorporate broader institutional, economic, and policy considerations.
- **Victim Functionalism**, which considers the claimant's self-reported functional impairment and lived experience.

This dimension highlights the interpretive nature of judicial decision-making, particularly in cases involving MTBI, where clinical evidence may be complex, subjective, or contested. It demonstrates that variability in outcomes may arise not only from differences in clinical presentation, but also from differences in how evidence is interpreted and applied.

## **Finalisation of Claims**

The fourth and final dimension of the framework reflects the finalisation of claims within the Road Accident Fund system. At this stage, the cumulative influence of clinical assessment, classification processes, judicial reasoning, and legislative constraints converges to produce a legal outcome.

The framework illustrates that claims may ultimately be either approved or declined, depending on how the preceding dimensions are interpreted and applied. This highlights the practical implications of the framework, demonstrating how variability and uncertainty at earlier stages of the process may translate into inconsistent or inequitable medico-legal outcomes.

## **Integrative Interpretation of the Framework**

The Kalane Framework demonstrates that outcomes in MTBI cases are not solely determined by injury severity, but rather by the interaction between multiple interdependent processes. It provides a structured lens through which inconsistencies in medico-legal decision-making can be understood.

Specifically, the framework highlights key points of tension within the system, including:

- The disconnect between clinical complexity and legal classification.
- The limitations of existing diagnostic and assessment tools
- The influence of subjective and contextual factors in judicial reasoning
- The impact of legislative and policy constraints on compensation outcomes

By mapping these processes, the framework offers both a diagnostic and explanatory model of variability in MTBI-related adjudication.

#### **6.4.1. Key contributions of the model towards Neuropsychological assessments in judicial decision-making**

The emerging framework as articulated previously, was formulated from a combination of reviewed literature and data, collected through multiple-data collection phases, which included an initial retrospective review of patient records, followed by qualitative individual interviews of clinicians and court officials. The framework highlights the key dimensions in the process of diagnosing and classifying an MTBI. It also articulates the frameworks that should be utilized by the judicial system in appropriately making compensation decisions. Apart from being guided by the reviewed literature and collected data, the framework utilizes pre-existing theoretical perspectives in creating an implementable framework.

According to Lune and Burg (2017), an effective framework must have diagnostic dimensions, intervention guidance and must be in a practical and usable format. Guided by this assertion, the proposed framework has incapsulated all the characteristics of an effective theoretical framework. It facilitates the diagnosis of MTBI; it specifies different classifications of MTBI and notably, offers direction to guide judicial decision making. In addition to the diverse utility of the framework, it has been designed to allow for modification so that individual contexts, both locally and internationally, can create

adaptations. As such, the current framework can be utilized within the South African context, with the potential for modification for use in other regions.

#### **6.4.2 Unique theoretical contribution made by the model**

Articulating the nature and extent of theoretical contribution that may exist from the development of the framework, can be fully appreciated in the context of an acknowledgment that no previous work has been done to converge issues related to the diagnosis of MTBIs and resulting judiciary processing within the South African system. This multidisciplinary exploration represents a first within the South African context. Beyond its need to focus on this sparsely studied area, the proposed framework offers other notable novel contributions that include (but are not limited to) (i) its utility as a framework for assisting in the initial identification and classification the presence of an MTBI, and (ii) in offering a practical structure to decision-making as it relates to MTBI compensations. It allows the user to classify and understand the judicial approaches that a decision-making court official may follow in making compensation decisions in MTBI cases.

#### **6.4.3. Expected limitations of the proposed theoretical framework**

The Kalane framework is well designed and has several benefits that have been clearly articulated in earlier sections. Even so, it is equally important to note that the framework has some inherent limitations, which exist similarly within respect to other existing frameworks. In demonstrating a well-rounded appreciation, these inherent limitations must be acknowledged and addressed as a key step to establishing the credibility of the framework.

The selected study population was from the North of Gauteng province in South Africa. This limits the applicability of the framework, especially with respect to other contexts outside of Northern Gauteng. This limitation is not unique to the current study and has been dealt with within the research paradigm through several approaches. One of the approaches requires the user to understand that the proposed framework must only be used as a guiding tool and is modifiable for use and operationalisation in other contexts. Secondly, this expectation that users of the framework will apply context-based circumspection and utilize those elements of the framework that they judge to be relevant to the specific scenario. The use of frameworks requires that its users appreciate that they are guiding rather than prescriptive, in intent.

It is also important to recognise that the study was cross-sectional, and that data was collected from a population at one specific point in time. It is called cross-sectional because the information about X and Y that is gathered represents what is going on at only one point in time (Olsen & St, George, 2004). Given the nature of the study and time constraints, longitudinal understanding of the study phenomenon would have added meaningful additional perspectives. Cross-sectional exploration of a phenomenon is a typical starting point especially in subject field where initial research is being conducted. With that in mind, the cross-sectional nature of the current study need not be construed as a fundamental weakness but rather signaling of the fact that further research within the topic area is indicated. The current framework can be viewed as a foundational tool for other researchers to expand knowledge in the study area, through varied methodological choices and perhaps longitudinal understanding.

#### **6.4.4 Expected actions to verify and validate the model as a meaningful tool within practice**

The current framework has been presented and viewed as a theoretical contribution to the body of knowledge and for that reason it is imperative that the model be subjected to practical testing and verification within different contexts, to maximise its potential and utility in the real world. Carpenter (1987) supports the notion that in-field testing, and verification must be administered as it is not a cumbersome process.

As purported by Carpenter (1987), it is widespread practice to pilot the emerging framework within a small community or context to ensure that the factors driving the model are in fact relevant as posited by the researcher. The pilot process is ordinarily administered for a period of 6 to 12 months, thereafter the users and beneficiaries of the framework are given an opportunity to give feedback on the credibility and the utility of the framework in describing, predicting, and offering direction with regards to the phenomena. This identified gold standard was not achieved within the current study as a result of limitations associated with academic research and it is expected that in-field validation of the framework can be pursued in the future. Given this assertion, the researcher recommends that other scholars within a similar study area, extend the assertions made within the study through conducting further empirical research to modify and or further refine the study conclusions. Gaps in the body of knowledge have been identified and therefore this gives an opportunity for other scholars to conduct further research.

## **6.5. DIRECTIONS FOR FUTURE WORK**

Given that this is a novel conception, through the framework the researcher has been able to identify the range of considerations that are viewed as important in diagnosis and making of judicial decisions with respect to MTBI and Road Accident Fund claims within South Africa. Despite this framework representing a respectable guideline, it is necessary for further research in this area of interest to better understand the study phenomena. This serves as an initial impetus for researchers to conduct further research in future.

The study and by implication, the resulting framework have been the product of a very specified exploration within a small community and as such, there is need for replica research in other contexts so that a much wider understanding of relevant concepts can be obtained. This study focuses primarily on gaining in-depth insights through qualitative exploration and even though this allows for incredibly detailed understanding of the phenomena, it may be seen as being limited by virtue of its limited replication potential. Given this, it would be useful for future researchers to quantitatively evaluate out the factors that have been identified as noteworthy considerations in the study of MTBIs and the judicial decision-making process.

## CHAPTER 7

### CONCLUSIONS AND RECOMMENDATIONS

#### 7.1 INTRODUCTION

Chapter 6 of the study gave an exhaustive synopsis of the theory development process, which resulted in the development of a framework in the area of neuropsychological assessments and resulting claims, which can now be referred to as the Kalane Framework. The chapter addressed the resultant strengths and limitations of the framework in conjunction with the potential contributions that are expected to emanate from the framework. This chapter will give a conclusive overview and resultant recommendations with regards to the issue of neuropsychological assessments and resulting claims. Using multiple-data collection processes, the proposed study primarily aimed to critically explore the contributory influence of neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of road accident claims among victims of Mild traumatic brain injury (MTBI) in the South African Courts. The study was carried out at three psychological assessment and treatment centers located in the Northern Suburbs of Johannesburg, South Africa. Data was also solicited from clinicians and legal practitioners involved in settlement claims related to MTBI within the Northern Johannesburg courts. The study area is considered noteworthy by virtue of the significant number of road accidents that occur annually in the chosen region. Multiple data collection processes were utilized that included an initial retrospective review of patient records followed by qualitative individual interviews with clinicians and court officials. The clinicians included psychologists, psychiatrists, and neurosurgeons, while the court

officials included advocates and attorneys. The data was collected from the above multiple sources all with a variety of interests and roles within the issue of neuropsychological assessments and resulting claims which offered a rare opportunity to explore the diverse issues relating to this issue. The study sought to explore key theoretical and empirical research objectives, as specified below: -

As alluded to above, Phase 1 of the empirical study included a Retrospective review of patient records which gave an insight into the views of the individuals who were injured in road traffic accidents (PVA and MVA) and sustained MTBI. In addition, the review enabled the determination of the documented status of MTBI, and the judicial processing of causes related to MTBI. The data from the retrospective reviews was qualitative in nature and therefore was more about the depth and nature of the insights as opposed to being about the number of responses. Phase 2 of the empirical study comprised of qualitative individual interviews with a range of stakeholder participants who included clinicians and court officials. The participant responses in the interviews were recorded with an audio recorder and later transcribed verbatim. Flick (2017) acknowledges the importance of audio recordings as best practice in record collection.

### **7.1.1 Theoretical Objectives**

The theoretical component of the study aimed to:

1. Conducting a desktop review of the range of health and judiciary responses that have been articulated in global, regional, and national literature as representing the different practices as they relate to the identification and responses to MTBI

within the South African Judiciary specially in the of settlement of Road Accident Claims in the South African Courts.

2. Examine the range of health and judicial responses to MTBI within medico-legal contexts, particularly in relation to Road Accident Fund claims.
3. Identify and describe the diagnostic characteristics, symptom profiles, and functional impacts associated with MTBI as reported in the literature.
4. Explore existing theoretical and conceptual perspectives relating to neuropsychological assessment and judicial decision-making.

### **7.1.2 Empirical Objectives**

The empirical component of the study aimed to:

1. Examine the role of neuropsychological assessments in informing diagnostic, clinical, and medico-legal decision-making processes.
2. Explore the range and nature of decision-making strategies utilized by court officials in the adjudication of MTBI-related claims.
3. Investigate the perceptions and experiences of key stakeholders, including clinicians and court officials, regarding the diagnosis, assessment, and medico-legal interpretation of MTBI.
4. Evaluate the neuropsychological, emotional, and functional effects of MTBI on affected individuals, and how these are interpreted within judicial processes.

### **7.1.3 Applied Objective**

The applied objective of the study was to:

1. Develop a structured framework and set of recommendations to support more consistent, evidence-based assessment and adjudication of MTBI-related claims within the South African medico-legal context.

### **7.1.4 Research Questions**

Guided by the above objectives, the study sought to answer the following research questions:

1. What is the role of neuropsychological assessment in informing diagnostic, clinical, and medico-legal responses to MTBI?
2. What decision-making strategies are utilized by court officials in adjudicating MTBI-related claims?
3. How do clinicians and court officials perceive and interpret the nature and impact of MTBI?
4. What are the neuropsychological and functional effects of MTBI, and how are these evaluated within judicial processes?
5. What framework or set of guidelines can support improved consistency in the adjudication of MTBI-related claims?

### **7.1.5 RELEVANT THEORETICAL PERSPECTIVES**

The current study is located at the intersection of two complex knowledge domains: the clinical-neuropsychological understanding of mild traumatic brain injury (MTBI), and the judicial processes through which medico-legal claims are interpreted and adjudicated. The theoretical framing of the study therefore required attention to both the clinical classification of brain injury and the decision-making models that influence how courts interpret expert evidence. This dual theoretical orientation was necessary because MTBI-related Road Accident Fund claims are not determined by clinical evidence alone, but by the manner in which such evidence is understood, weighed, accepted, rejected, or translated into legal outcomes.

From a clinical perspective, the study was informed by theoretical and diagnostic approaches to traumatic brain injury classification. Traumatic brain injury is commonly classified according to severity, mechanism of injury, anatomical involvement, and progression of injury. These classifications assist clinicians in describing the nature of injury and in estimating likely outcomes. However, in the case of MTBI, these classification systems may be limited because the initial injury may appear clinically mild while the affected individual may later present with persistent cognitive, emotional, behavioural, and functional difficulties. This creates a significant challenge in medico-legal contexts, where courts often require clear evidence linking the accident, the injury, and the claimant's current impairment.

The Glasgow Coma Scale (GCS), loss of consciousness, post-traumatic amnesia, acute neurological signs, and radiological findings are commonly used to classify the severity of traumatic brain injury. While these indicators are useful in acute medical settings, they do not always capture the longer-term functional consequences of MTBI. A claimant may present with a GCS score within the mild range and normal neuroimaging yet still demonstrate measurable neurocognitive impairment on later neuropsychological assessment. This tension between acute clinical severity and later functional impairment is central to the problem investigated in this study.

The study therefore adopts a functional and evidence-based understanding of MTBI. This means that the classification of the injury cannot be limited only to acute medical indicators, but must also consider the individual's post-injury cognitive, emotional, behavioural, occupational, and social functioning. Neuropsychological assessment becomes important in this regard because it provides structured evidence of the functional consequences of injury, particularly in cases where radiological or neurological findings are inconclusive. This clinical perspective provides the foundation for examining why neuropsychological evidence may become central in MTBI-related medico-legal claims.

In addition to clinical theories of brain injury classification, the study was also informed by models of judicial decision-making. This was necessary because the settlement of MTBI-related claims does not depend solely on whether an injury

exists clinically, but also on how decision-making court officials interpret expert evidence. Judicial decision-making is shaped by legal principles, evidentiary standards, expert testimony, institutional expectations, and the discretion of the decision-maker. In claims involving MTBI, where the evidence may be complex, contested, or partly subjective, judicial interpretation becomes especially important.

Three broad models of judicial decision-making were considered relevant to this study: legal realism or pragmatism, attitudinalism, and the strategic model. These models assist in explaining why legal outcomes may differ even when cases appear clinically similar. They also provide a conceptual basis for understanding how expert evidence, including neuropsychological assessment findings, may influence or fail to influence judicial conclusions.

Legal realism or pragmatism suggests that judicial decisions are not made through mechanical application of legal rules alone. Instead, decision-makers interpret evidence within a practical context, considering the facts of the case, the available expert opinions, institutional realities, and the perceived fairness of the outcome. This model is particularly relevant to MTBI claims because such cases often involve evidentiary uncertainty. Where medical records are incomplete, radiological findings are normal, or expert opinions differ, decision-makers may rely on practical reasoning to determine whether the claimant's reported impairments are credible and compensable.

Attitudinalism emphasises the influence of the decision-maker's values, assumptions, beliefs, and prior experiences on legal outcomes. Within the context of MTBI-related claims, this model is relevant because some decision-makers may hold implicit views about the seriousness or legitimacy of mild head injuries. For example, if MTBI is viewed as transient, minor, or unlikely to cause long-term impairment, neuropsychological evidence may be approached with scepticism. Conversely, where decision-makers recognise the complexity of MTBI, they may place greater weight on neuropsychological findings. This model therefore helps explain how similar clinical evidence may be interpreted differently across cases.

The strategic model of judicial decision-making combines elements of legal realism and attitudinalism by recognising that decision-makers may have personal views or preferences, but must exercise these within legal, institutional, and evidentiary constraints. In MTBI-related RAF claims, decision-makers may be influenced by the quality of expert evidence, the persuasiveness of medico-legal reports, the credibility of witnesses, existing legal precedent, and broader concerns about fairness, consistency, and compensation. This model is useful for understanding how courts may navigate uncertainty when expert opinions are divergent or when the clinical evidence does not fit neatly into established legal categories.

Together, these judicial decision-making models provide an important lens for understanding inconsistency in MTBI-related settlement outcomes. If decision-making were purely rule-based, similar cases would be expected to produce similar outcomes. However, the clinical complexity of MTBI, combined with

variability in expert opinion and judicial interpretation, creates space for differing outcomes. This theoretical insight is central to the present study, which seeks to understand how neuropsychological assessments contribute to, influence, or clarify judicial decision-making in MTBI-related RAF claims.

The integration of clinical classification theory and judicial decision-making theory is therefore central to the conceptual foundation of the study. Clinically, the study recognises that MTBI cannot be fully understood through acute severity indicators alone. Legally, the study recognises that expert evidence does not automatically translate into consistent judicial outcomes. The central concern of the study lies in the interface between these two realities: how neuropsychological evidence is produced, interpreted, and utilised in the medico-legal determination of MTBI-related claims.

On this basis, the theoretical perspectives adopted in the study informed the development of the research questions, data collection instruments, analysis, and eventual framework. They allowed the study to explore not only whether neuropsychological assessment is clinically useful, but also how such evidence functions within the legal decision-making environment. This theoretical framing therefore supports the broader aim of developing a more consistent, evidence-informed approach to the assessment and adjudication of MTBI-related Road Accident Fund claims in South Africa.

## **7.2 THE PURPOSE OF THE STUDY**

The study explored the contributory influence of neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of Road Accident Claims among victims of Mild traumatic brain injury (MTBI) in the South African Courts.

## **7.3 RESEARCH DESIGN**

Pragmatism was the research paradigm that was most fitting to respond to the research objectives and questions posed in the study. The researcher treated the study as a multi-approach qualitative study which was previously termed by Creswell (2015) as multimethod research. Much like pragmatism, Creswell (2015) agrees that a multi-approach study involves the strategic combining and borrowing from well-established qualitative approaches to meet the needs of the given study. In this study the researcher used a multi-approach qualitative study as the primary guiding design, in response to the complexities acknowledged in the study and therefore a pragmatic approach was seen as the appropriate methodology to use. The initial phase of the study included a retrospective review of patient records to gain insights into pre-morbid presentations, assess relevant clinical histories and report physiological and psychological outcomes. In addition, the review was used to determine the documented status of MTBI, and the judicial processing of causes related to MTBI. The second phase of the study was qualitative individual interviews with clinicians and court officials who were strategic key informants that included neuropsychologists, neurologists, neurosurgeons, and court officials, about diagnosis and post-diagnosis challenge. Within this phase the study participants took on the role of being the authors of their experience giving the researcher

an opportunity to fully understand the phenomena of interest. The combination of the two phases set the study aside as a multi-approach qualitative enquiry.

## **7.4 THEORY DEVELOPMENT**

The collection of data from pre-existing literature and through the specified data collection processes within the study provided the necessary basis for the development of a theoretical framework in the form of the Kalane MTBI Diagnostic and Legislative Responses Framework. Through presenting four dimensions, the framework gives users direction on the diagnostic considerations that should be taken in the identification and classification of MTBIs. It also articulates the spectrum of decision-making constructs that are used within the judiciary in determining or reaching judgment about whether particular cases of MTBIs should be compensated. This resulting theoretical contribution is particularly notable by virtue of its emanating from an empirical study and for that reason it represents an important next step in the understanding of MTBIs and how they are responded to within the judiciary.

It is important that the intention of the framework is restated so that potential users may appropriately utilize it. The framework is developed as a guided rather than prescriptive tool and to that end, the specified factors and dimensions should be seen as foundational direction and a minimum standard for the considerations that individuals should engage in their work in this field.

## **7.5 SUMMARY OF KEY RESEARCH FINDINGS**

### **7.5.1 Sample Characteristics and baseline information**

The proposed study was conducted within both neuropsychological assessment and treatment centres and with court officials that presided on settlement claims related to MTBIs. Initially, data was collected from patients of three psychological assessment and treatment centres in the North of Johannesburg, Gauteng, South Africa. Similarly, court officials working within North Johannesburg claims courts were recruited as participants of the study. The location of the study i.e., Northern Johannesburg covers one of the most affluent and busiest areas in South Africa and indeed in Africa.

The sample for the qualitative study was determined through data saturation which is the point at which no new information, themes or data emerged from any additional interviews. The point of saturation was reached at 6 court-officials and 24 clinicians for the current study.

## **7.6 ADMINISTRATION OF THE DATA COLLECTION PROCESS**

A retrospective review of patient records and qualitative individual interviews were conducted where historic patient records were reviewed, and interviews were administered with court officials and clinicians. The interviews for the clinicians were conducted at three psychological assessment and treatment centers in the North of Johannesburg, while the court officials were interviewed at claims courts, within North Johannesburg.

## **7.7 SUMMARY OF RESEARCH FINDINGS**

In keeping with the primary aim of the study, the combination of data collection formats sought to respond to eight key research questions. The 2019 interim report by the Minister of transport indicated that in that year alone, South Africa, recorded over 200,000 non-fatal injuries that were caused by road traffic injuries. Population research studies have found that the most common causes of TBI in South Africa are road accidents. MTBI is the most common case of TBI and has been said to potentially cause adverse effects in the long-term neurocognitive performance and health of the victims.

The results of the study show that the GCS is commonly used as a main measure for brain injuries by medical practitioners in South Africa and that it also fails in measuring the intensity. All the respondents/patients were assessed with the GCS, and the scores were all between 13-15 on the scale which indicated mild head trauma as per guidelines, however many of the clinicians had a different perspective in terms of the scale and what should be considered mild, moderate, or severe. Further to this, the results show no mention from the clinicians that the GCS-E was being used as a measure in South Africa. For that reason, as identified in the literature MTBI in South Africa is likely wrongly diagnosed or interpreted and is not usually considered to having potential to produce long term neurocognitive sequelae. The results show us that because the diagnosis is usually vague and inconclusive the attorneys/legal practitioners within the judiciary system are not always able to adequately convince decision-making court officials that their clients qualify for compensation from the RAF.

The results also show that the most common symptoms reported by the patients are Post-Traumatic Amnesia with 81.8% (n=36) of the participants being diagnosed with,

Emotional Imbalance or Mood Swings (n=20; 45.5%), Fatigue or Lethargy (n=20; 45.5%), and headaches (n=17; 68.6%). The assessment from Neuropsychologists and Neurosurgeons indicated that most of their patients suffered from a decline in neuropsychological state (n=16; 66.7%) which leads to an increase in aggression, significant impulsivity, changes in personality and inappropriate emotional regulation and neurocognitive impairments (n=12; 50%).

The research findings also demonstrated that decision-making court officials relied heavily on neuropsychologists' reports to make their decision in cases where there was no obvious evidence of physical trauma to the head. This makes it very important that neuropsychologists produce reports of good quality to assist the court officials in making the right decision. The findings further substantiated the need for well qualified and experienced clinicians to be used in the assessments and court proceedings to ensure that reports assist the courts in settlements of these cases. Further to this the findings also allude to the fact that there is no guideline available for decision-making court officials with regards to compensation decisions related to MTBI. This then has made decision-making within the judiciary system inconsistent both in determining if the claimant should be compensated by RAF and the degree of compensation.

### ***7.8 KEY CONTRIBUTIONS OF THE STUDY TOWARDS MTBI ASSESSMENTS AND ROAD ACCIDENT FUND COMPENSATIONS***

The study has made a number of knowledge contributions in relation to the way that MTBI and road accident fund compensations are perceived and dealt with within practise. The most distinct contribution from this study is the Kalane MTBI Diagnostic and Legislative Responses Framework whose primary contribution to this study area is that it offers

direction in the identification and classification of Mild traumatic brain injury symptomatology. It also offers a framework for understanding the ways in which judicial decision-makers reach their decisions about the intensity and severity of an injury and in turn whether the injury warrants some form of compensation.

Outside of this distinct contribution, there are a number of salient noteworthy contributions that this study offers. Firstly, through its review of pertinent literature, the study was able to show and discuss issues related to the low consistency in assessments of head injury, particularly mild traumatic brain injury. Critically, the study highlights the serious challenge that exists as a result of legal and health practitioners using diverse groups of symptoms as a basis for their decision-making about whether a brain injury exists and whether it is an injury that warrants consideration from a compensatory point of view. The study draws together relevant research and attempts to harmonise the symptoms and classifications that should be taken account of within this discourse. Additionally, the study draws attention to a lack of clear guidance about the spectrum of symptoms that should be taken account of when assessing for the existence of a MTBI. On their own, the above noted contributions do not separate this study from others before it, however, where the study stands out is in its attempt to clarify and define the spectrum of symptoms that speak to a diagnosis of a MTBI. The study gives guidance to neuropsychologists to adopt a “uniform approach” in the diagnosis of Mild TBI. It also challenges the low importance attributed to psychological injury by comparison to physical injury and identifies very clearly how this has negatively impacted the way in which South Africa’s Road Accident Fund has become an instrument of exclusion for those that suffer mild head injuries rather than physical injury.

The legal and psychological dimensions of MTBI have received little joint consideration within the literature; a fact that the study attempts to draw attention to and at the same time offer some corrective inputs. As areas of practise, the disciplines of neuropsychology and the judiciary have received little joint multi and interdisciplinary exposition: - an issue that the current study attempts to correct through offering multidisciplinary consideration of the issue of MTBIs and their treatment/handling within judiciary compensation contexts.

### ***7.9 Unique theoretical contribution made by the study and the proposed model***

The literature reviewed demonstrated that South Africa is a country with a significantly higher rate of road traffic accidents in the world. MVA's are responsible for up to 50% of the cases of mild traumatic brain injury (MTBI) (RTA) in South Africa. Brain injuries (especially Mild Traumatic Brain Injuries, or concussions) are frequently the subject of legal challenges during claim settlement with clear evidence of disproportionate and uneven settlement outcomes, including, most notably, injury compensation rejection rates for persons with MTBIs. These outcomes frequently deviate from the average for similar mental and physical impairments.

There have been no published studies on the role and utility of neuropsychological tests in helping the settlement of road accident claims, particularly Mild TBI cases in the South African justice system. This realization prompted the researcher to conduct the current study, which critically examined the role of neuropsychological assessments in judicial decision-making in relation to the facilitation of settlements of Road Accident Claims among victims of Mild Traumatic Brain Injury (MBTI) in South African Courts. The current

study attempted to provide clinicians and court authorities with seminal and unparalleled evidence-based recommendations in the field of MTBI diagnosis and compensation claims.

As a result, the study offers the chance to 'appropriately' diagnose a MTBI, classify it, and aid the judicial system in making proper decisions in South Africa and around the world. There is no other published model or framework that combines the MTBI and judicial worlds into a single framework.

#### **7.9.1 Expected limitations of the proposed theoretical framework**

It is crucial to remember that, like all other frameworks, the framework has some inherent restrictions. When assessing the framework's legitimacy, these inherent limits must be acknowledged and expressed.

The study population was drawn from the north of South Africa's Gauteng province. This must be noted, and the framework's applicability in other contexts outside of Northern Gauteng should be questioned until it has been assessed with a variety of people. The resulting shortcoming is not unique to the current study and has been addressed in numerous ways within the research paradigm. One of the techniques necessitates that the user realize that the proposed framework should only be used as a guide and that it can be modified for use and operationalization in other settings.

It is also worth noting that the research was cross-sectional, meaning that data was gathered from a population at a single point in time. The longitudinal knowledge of the research phenomenon was not communicated due to the nature of the investigation and

time constraints. This should not be interpreted as a flaw in the study, but rather as a potential area for further longitudinal research. The existing framework can be seen as a foundational tool for other researchers to build on in order to improve knowledge in the study field, possibly through other methodological choices and longitudinal analysis.

### **7.9.2 Expected actions to verify and validate the model as a meaningful utility within practice**

Because the Kalane framework represents an abstract, albeit evidenced theoretical contribution, it must be field-tested and verified to fully comprehend its contribution to the present body of knowledge. The framework must therefore be tested for six to twelve months in a specific environment to see if the components in the framework are as important as the researcher claims. Furthermore, the researcher believes that other practitioners and researchers in the study area should use this research as a chance to do additional research in the field. The results of the additional research should include the possibility of modifying the current framework and refining the components inside it. The proposal for further work is respectfully made.

### **7.9.3 *Directions for future work***

Despite the fact that this study and its accompanying framework represent a significant advancement in the study field, more research in this area is required to better comprehend the study phenomena. This provides an initial impetus for scholars to pursue additional research in the future.

The study, and hence the ensuing framework, were the outcome of a highly specific examination of a specified study group, and as a result, replication research in other contexts is required to gain a much broader knowledge of key topics. This study relied mostly on qualitative inquiry to get in-depth insights, and while this allows for a very deep understanding of the phenomena, it may be considered as limiting due to its limited replication potential. Given this, future researchers should quantitatively evaluate the components that have been identified as crucial factors in the study of MTBIs and the judicial decision-making process.

#### **7.10 CONCLUDING REMARKS**

South Africa has a remarkably high incidence of road fatalities and injuries. The figures reported in 2019, by Minister of Road and safety demonstrate just how significant the number of road accidents is in South Africa. A preliminary “Easter report” (02/05/2019) by the Minister of Road and Safety for 2019 suggested that 162 people had died in 2019 from 162 road crashes during the Easter period. These figures were reported as a decline of 48% as compared to the figures of the same period the previous year (2018). When it comes to head injuries, the South African legal/judicial system relies heavily on Neurosurgeons and Clinical Psychologists practicing neuropsychology in deciding the merits for settling such claims lodged with the Road accident Fund. Within this, there exists substantial evidence that court judgements are inconsistent in their approach towards settlement of claims and there is limited scientific guidance to ensure more

objective evaluations of MTBI claims. But there is also a lack of clarity by different clinicians as to how these injuries are measured, which thus leads to further confusion.

The current study specifically looked at seminal and unprecedented evidence-based guidance to clinicians and court officials in the area of MTBI diagnosis and compensation claims. The need to develop an in-depth understanding of MTBI and claims within the judiciary system in South Africa provided the initial impetus for the researcher to conduct the current study. The study is a cross-discipline study and the first known opportunity in South Africa and worldwide designed to be able to give clarification of MTBI whilst also guiding the judicial system in appropriately making compensation decisions. By virtue of its pioneering existence, the framework that came out of the study serves as a starting point for future further research in the study area.

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## ANNEXURE A – ETHICAL CLEARANCE CERTIFICATE FROM UNISA



### COLLEGE OF HUMAN SCIENCES RESEARCH ETHICS REVIEW COMMITTEE

26 June 2020

Dear Manoke Eric Colin Kalane

NHREC Registration # :

Rec-240816-052

CREC Reference # : 2020-  
PsyREC-10396527

**Decision:**

**Ethics Approval from 26 June  
2020 to 30 September 2023**

**Researcher(s): Manoke Eric Colin Kalane**

**Supervisor(s): Prof T Mgutshini**

A critical explorative enquiry of neuropsychological assessments and their utilisation in the facilitation of settlement Road Accident Claims in the South African Courts: A mixed method case study of Mild Traumatic Brain Injury.

**Qualification Applied: PhD**

Thank you for the application for research ethics clearance by the Unisa Department of Psychology College of Human Science Ethics Committee. Ethics approval is granted for three years.

The **low risk application** was **reviewed and expedited** by Department of Psychology College of Human Sciences Research Ethics Committee, on **26 June 2020** in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.



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2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the Department of Psychology Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No fieldwork activities may continue after the expiry date (**30 September 2023**). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

*Note:*

*The reference number **2020-PsyREC-10396527** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,



Signature :

Prof I. Ferns  
Ethics Chair: Psychology  
Email: [fernsi@unisa.ac.za](mailto:fernsi@unisa.ac.za)  
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Signature :

Prof K. Masemola  
Executive Dean : CHS  
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## ANNEXURE B – GATEKEEPER ACCESS REQUEST LETTER



### ANNEXURE 1.

#### **SITE-ACCESS PERMISSION LETTER**

**Request for permission to conduct research in psychological clinics and healthcare centers in Northern, Johannesburg.**

**TITLE OF STUDY: - A critical explorative enquiry of Neuropsychological assessments and their utilisation in the facilitation of settlement of Road Accident Claims in the South African Courts: - A mixed method case study of Mild Traumatic Brain Injury.**

**Date: - 30 March 2020**

For the attention of: -

THE RESEARCH AND ETHICS COMMITTEE,  
Gauteng Department of Health, 3  
7 Pixley Ka Isaka Seme Street,  
Marshalltown. Johannesburg. 2001

Dear Sir/Madam

#### **RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH**

I, **Mr Manoke Eric Colin Kalane**, a Doctor of Psychology student with registration number **10396527** at the University of South Africa (UNISA), would like to conduct a research study which I will explore **Neuropsychological assessments and their utilisation in the facilitation of settlement of Road Accident Claims in the South African Courts**. The purpose of the study is to gain an in-depth understanding of the influence that **Neuropsychological assessments and their use in the facilitation of settlement of Road Accident Claims in the South African Courts**.

Please accept this as a formal request for permission to conduct research in health care centers within Northern Johannesburg, South Africa.

The study will be receiving academic ethical clearance from the University of South Africa's Ethics Review committee and as such, will adhere to the highest ethical



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standards. This is one of the number of provisions in place to ensure that my engagement with participants will be strictly in line with best ethical principles.

The proposed study will involve a retrospective review of specific psychological assessment records, face-to-face interviews and a questionnaire-based survey and required participants will include compensation claimants, neuropsychological clinicians and decision-making court officials.

Northern Johannesburg has been selected because of its relevance to the study being undertaken by the researcher. The information collected will only be used for research. The researcher wishes to declare that the data collection process will not deviate or prove counter-productive to health services study process. I have attached a full study information sheet to give a more detailed overview of the study.

Yours Faithfully

**Mr Manoke Eric Colin Kalane,**

PhD Researcher, Department of Psychology. UNISA



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**ANNEXURE.**

**INFORMATION SHEET**

**COLLEGE OF HUMAN SCIENCES**

**SCHOOL OF SOCIAL SCIENCES**

**DEPARTMENT OF PSYCHOLOGY**

**Degree:** Doctor of Psychology

**Researcher and contact details:** Mr. Manoke Eric Colin Kalane

**Email:** - [manoke@meckalane.co.za](mailto:manoke@meckalane.co.za) **Tel:**-081 530 3322

**Supervisor and contact details:** Prof T Mgutshini **email:** - [mgutst@unisa.ac.za](mailto:mgutst@unisa.ac.za)

I, **Manoke Eric Colin Kalane**, a Doctor of Psychology student with registration number 10396527 at the University Of South Africa (UNISA), would like to conduct research at your institution or in your locality.

I am interested in inviting you to take part in this study titled: - **A critical explorative enquiry of Neuropsychological assessments and their utilisation in the facilitation of settlement of Road Accident Claims in the South African Courts: - A mixed method case study of Mild Traumatic Brain Injury.**

As an introduction, the purpose of the study is to gain an in-depth understanding of Neuropsychological assessments and how they are used in the facilitation of settlement of Road Accident Claims in the South African Courts. The proposed study will be carried out in the Northern townships of Johannesburg where you live. You may be aware that the northern Johannesburg areas are among the most trafficked of townships in South Africa and are similarly one of the most densely populated. Neuropsychological assessments and how they are used to assist in the settlement of Road Accident Claims in the South African Courts are of central interest to the study. More specifically, I am interested in finding out more about head injury and how you see the neurological and psychological assessments contribution to how the court(s) respond to settlement claims. Within this, I will also be assessing how mild and minor brain injuries are responded to in court as claims are considered.



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---

As a summative product of the study, I intend to develop a framework

The research study will involve face-to-face interviews, focus group discussions and a questionnaire-based survey and required participants will include professionals involved in head injuries, court officials and the victims of head injuries. You will only be asked to take in one of the data collection approaches being used.

Taking part in the study is voluntary, and you are allowed to withdraw your involvement at any stage of the project without any negative repercussions and/or fear of being prejudiced against.

There will be no monetary benefits for your participation in the project. Confidentiality and anonymity will be ensured and where appropriate coded/disguised names of respondents/institutions will be used.

Should you have any queries about taking part in the interviews or completing the questionnaire or about your participation, you may contact any of the numbers provided on this sheet. The duration of Interview will take about 45 minutes to 60 minutes and I hope you will agree to take some of your time and take part in the study.

**Yours sincerely,**

**Manoke Eric Colin Kalane, (Doctoral Researcher).**

**Researcher's signature:**

**Date: 12 March 2020**



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## ANNEXURE C – INFORMED CONSENT AND INFORMATION SHEET

**Informed Consent**  
**A mixed method case study of Mild Traumatic Brain Injury.**

### **PARTICIPANT CONSENT FORM**

#### **TITLE OF STUDY**

**A critical explorative enquiry of Neuropsychological assessments and their utilisation in the facilitation of settlement of Road Accident Claims in the South African Courts: - A mixed method case study of Mild Traumatic Brain Injury.**

#### **PRINCIPAL INVESTIGATOR**

Degree: Doctor of Psychology  
Researcher and contact details: **Mr Manoke Eric Colin Kalane**  
**Email: - 10396527@unisa.ac.za Tel:-081 530 3322**  
Supervisor contact details: **Prof T Mgutshini email: - mgutst@unisa.ac.za**

#### **PURPOSE OF STUDY**

You are being asked to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information.

The purpose of the study is to critically explore the contributory influence of Neuropsychological assessments in judicial decision-making regarding the facilitation of settlements of Road Accident Claims among victims of mild brain injury in the South African Courts. The proposed study will be carried out across Northern Johannesburg.

#### **STUDY PROCEDURES**

The research study will involve online interviews, focus group discussions and a questionnaire-based survey; and required participants will include individuals who have experienced head injuries from road accidents or the clinicians that work with them or court of officials involved in presiding over related settlements. You will only be asked to take part in one of the data collection approaches being used

**Informed Consent**  
**A mixed method case study of Mild Traumatic Brain Injury.**

**RISKS AND BENEFITS.**

Taking part in the study is voluntary, and you are allowed to withdraw your involvement at any stage of the project without any negative repercussions and/or fear of being prejudiced against.

There will be no monetary benefits for your participation in the project. Confidentiality and anonymity will be ensured and where appropriate coded/disguised names of respondents/institutions will be used.

Should you have any queries about taking part in the interviews or completing the questionnaire or about your participation, you may contact any of the numbers provided on this sheet. The duration of Interview will take about 45 minutes to 60 minutes and I hope you will agree to take some of your time and take part in the study.

**CONFIDENTIALITY**

Your responses to this study will be anonymous. Please do not provide any identifying information on your transcript. Every effort will be made by the researcher to preserve your confidentiality including the following:

- Assigning code names/numbers for participants that will be used on all research notes and documents.
- Keeping notes, interview transcriptions, and any other identifying participant information in a locked file cabinet in the personal possession of the researcher.

Participant data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents. These incidents include, but may not be limited to, incidents of abuse and suicide risk.

**CONTACT INFORMATION**

If you have questions at any time about this study, or you experience adverse effects as the result of participating in this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with

**Informed Consent**  
**A mixed method case study of Mild Traumatic Brain Injury.**

the Primary Investigator, please contact the departmental research ethics committee chairperson and/or the researcher.

**VOLUNTARY PARTICIPATION**

Your participation in this study is voluntary. It is up to you to decide whether to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

---

**CONSENT**

I have read and understood the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature \_\_\_\_\_ Date \_\_\_\_\_

Investigator's signature \_\_\_\_\_ Date \_\_\_\_\_

Page 3 of 3

Participant's Initials: \_\_\_\_\_

**ANNEXURE D – RETROSPECTIVE REVIEW OF PATIENT RECORDS TEMPLATE**

**RETROSPECTIVE REVIEW OF ASSESSMENT-RECORDS  
SCHEDULE**

**1.4**

**A critical explorative enquiry of Neuropsychological assessments and their utilisation in the facilitation of settlement of Road Accident Claims in the South African Courts: - A multimethod case study of Mild Traumatic Brain Injury.**

**(For collating data from the patient / claimant psychological / assessment records)**

## SECTION A: DEMOGRAPHIC INFORMATION

Patient / record identifier code: - \_P\_\_\_\_\_

1. **Age of patient:**                      ☐ 16-18. ☐ 18-29    ☐ 30-49                      ☐ 50-69                      ☐ over 70  
years
  
2. **Gender of Patient:** ☐ M/ ☐ F
  
3. **Ethnic Background of patient:**  

☐ Black South African
☐ Black Foreigner
☐ Indian

☐ Coloured
☐ White- Afrikaans
☐ White-Other

☐ Other (*please specify*): \_\_\_\_\_
  
4. **Living Arrangements reflected on records:**    ☐ Living alone                      ☐ With intimate  
partner / spouse                      ☐ Other (*please specify*) \_\_\_\_\_
  
5. **Level of Previous Education of patient:**    ☐ Primary                      ☐ Secondary    ☐ Tertiary
  
6. **Employment status and type of occupation:** ☐ unemployed. ☐ self-employed ☐ student    ☐  
full / part-time employment
  
7. **Estimated Premorbid Cognitive/Intellectual Functioning:** ☐ Mentally handicapped ☐ Below  
Average ☐ ☐ Above Average ☐ Superior
  
8. **Highest Qualification Earned** ☐ Certificate / Diploma ☐ bachelor's Degree ☐ Postgraduate  
Qualification

9. Pre-existing Medical/Psychiatric Problems: Y ☐ / N ☒

(Elaborate) \_\_\_\_\_

10. Current Chronic illnesses: Y ☐ / N ☒

(Elaborate) \_\_\_\_\_

11. Family History of Psychiatric Problems: Y ☐ / N ☒ (Elaborate)

\_\_\_\_\_

12. Past Traumatic Experiences: Y ☐ / N ☒ (Elaborate)

\_\_\_\_\_

13. Substance Abuse Y ☐ / N ☒ (elaborate)

\_\_\_\_\_

14 Details relating to the index Traumatic brain injury: -

14.1 Date of index Road Traffic Accident: -.

14.2 Period between the date of assessment and date of accident in years:

14.3 State of Alertness after Accident: Loss of Consciousness/Confusion Y ☐ / ☐ N

Estimated Duration of LOC 0-10 ☐ 11-20

☐ 20-30 ☐ minutes.

Post Traumatic Amnesia Y ☐ / ☐ N,

Glasgow Coma Score 13-15

- 15 Period (in months) that has lapsed since index accident: - months.
- 16 Primary presenting symptoms / neurocognitive impairment and behavioural changes reported by the patient since their involvement in the accident under review
- 17 Recorded description of influences of MTBI on health status: -
- 18 What was the immediate medical attention / intervention provided immediately after the accident? -
- 19 What was the diagnosis and description given in the hospital records in relation to the brain injury? (Description should include determination of whether injury was identified as a concussion, contusion, penetration, diffuse axonal, or coup-contrecoup)
- 20 What is the recorded aetiology / causal explanation offered for the diagnosis? -
- 21 What is the professional designation of the clinician who provided this diagnosis?
- 22 What was the primary classification given to the brain injury? -
- 23 Assessed level of severity of MTBI, i.e., Grade 1 ☐ 2 ☐ 3 ☐ concussion
- 
- 24 Assessed injury progression / determination or prognosis and/or duration of likely impact from the accident): -
- 25 Notes made on projected progression of MTBI: -
- 26 Assessed future complications arising from impact of MTBI; -
- 27 Details of any other noted health problems that existed before the accident: -
- 28 Details of any other noted health problems that existed after the accident:
- 29 Neuropsychological Assessment Results:

|                        | POOR | BELOW<br>AVERAGE | AVERAGE | ABOVE AVERAGE |
|------------------------|------|------------------|---------|---------------|
| Concentration          |      |                  |         |               |
| Attention:             |      |                  |         |               |
| Memory:                |      |                  |         |               |
| Learning:              |      |                  |         |               |
| Executive Functioning: |      |                  |         |               |
| Depression:            |      |                  |         |               |

18 Overall Assessment of cognitive impairment: ☐ None ☐ Mild ☐ Moderate ☐  
Severe.

19 DSM 5 Diagnosis: ☐ Mild Neurocognitive disorder due to TBI ☐ Major Neurocognitive  
disorder due to TBI ☐ No diagnosis

20 Possible influence/role of other factors on the performance on the psychometric tests. i.e.,  
depression, anxiety, and pain: ☐ Yes/ ☐ No

21 Malingering Test:

## **ANNEXURE E – INTERVIEW QUESTIONNAIRE TEMPLATE**

Demographic Information:

Profession:

Race:

Age:

Qualification:

Gender:

Facilitator [00:02:12] So question one is, would you be able to describe to me what you understand to be a sign of Mild Traumatic Brain Injury? And your response can offer descriptions on how you would describe a Mild Traumatic Brain Injury and how it would be diagnosed.

Facilitator [00:02:59] How would you diagnose that

Facilitator [00:03:40] OK, great. And would you mind expanding on if there wasn't a direct blow to the head? How would that manifest?

Facilitator [00:03:53] But sure. So, can a person be diagnosed with a brain injury even if there was no direct blow to the head?

Facilitator [00:04:10] So can a person be diagnosed with a brain injury even if there was no direct blow to the head?

Facilitator [00:05:08] OK, and then connected to that, how easy is it to miss a mild traumatic brain injury?

Facilitator [00:05:50] OK, great. And what are the different sub-types of Mild Traumatic Brain Injury of which you are aware? Hello, and there we go, are you back? Sorry. Did you catch that? Yes.

Facilitator [00:06:30] And so I think the next question would be how would it differ in terms of their severity?

Facilitator [00:07:07] OK, and how useful is a CT brain scan in the diagnosis of mild TBI?

Facilitator [00:07:18] How useful is a C.T. brain scan?

Facilitator [00:07:55] OK, great, that is extremely helpful. And with each identified type of injury, what is the cause and type of impact on health?

Facilitator [00:08:10] If so, what is the likely impact on health for each of those types of injuries?

Facilitator [00:09:23] and feeding into that. Can a mild TBI produce long term permanent neurocognitive or behavioural impairment?

Facilitator [00:09:36] that just so basically, can a TBI, a mild TBI, lead to long term impairment, even behavioural or neuro cognitive function?

Facilitator [00:10:20] OK, and what is the difference between traumatic brain injury and traumatic head injury?

Facilitator [00:11:07] Thank you. Would you mind expanding or expanding on that as to why? Why that is how you perceive it.

Facilitator [00:11:40] Hello. Sorry I missed you. You said you were saying it is when they present, they come to the hospital not long after.

Facilitator [00:12:27] Yes, I am sorry, I think I take

Facilitator [00:13:15] consider a concussion, another form of traumatic brain injury? Let us this would you consider a concussion, another form of traumatic brain injury?

Facilitator [00:13:46] And I have it come through now,

Facilitator [00:14:05] So which you know, is it would you consider a concussion, another form of brain injury

Facilitator [00:14:20] Would you classify a concussion as a traumatic brain injury.

Facilitator [00:14:32] Yes. Traumatic brain injury

Facilitator [00:15:30] OK, great. And what aspects of daily functioning are affected with each type of Mild Traumatic Brain Injury?

Facilitator [00:18:24] OK. And how does that progress over the course of time? And what are those impacts on functioning long term? How do they progress

Facilitator [00:20:04] And a number of victims or patients complain of a multitude of symptoms often referred to as post-concussive syndrome. Would you be able to briefly explain it and comment on whether it can develop from a Mild Traumatic Brain Injury?

Facilitator [00:22:02] And a number of patients present with emotional problems. Do you believe that is due to psychological trauma from the accident or a possible chemical imbalance in the brain occurred during the trauma?

Facilitator [00:22:55] Yeah, OK. And besides using GCS as a bedside test, does the patient self-report of Loss of consciousness hold water in determining whether there was a brain injury?

Facilitator [00:24:03] So following from that, a lot of people will arrive in the hospital fully conscious, while others arrive unconscious and confused due to sedation by emergency personnel. How do you determine the severity of the brain injury in such cases?

Facilitator [00:24:25] So a lot of people will arrive in the hospital fully conscious or be confused due to the effect of sedation. So how do you determine the severity of the brain injury in those cases?

Facilitator [00:25:54] OK, and what are your views and beliefs about MTBE and its role in relation to health? So, like what does it have any influence on health status and if so, in what way?

Facilitator [00:26:13] But yes, I think we did talk about mental health.

Facilitator [00:27:40] OK, and do you believe that mild TBI's have a risk on future health complications?

Facilitator [00:28:33] you know, certainly taking a holistic view of.

Facilitator [00:28:41] OK, so what are your thoughts on mild TBI and whether it is such an injury should receive compensation by the road accident fund

Facilitator [00:29:57] Yeah, OK. And so, I guess this leads on quite well to what factors do you believe have an influence on the judge or court officials' decision making about whether to give a positive judgement on a head injury assessment claim.

Facilitator [00:30:59] Yes. So, I guess the next question is in making decisions about whether or not to award settlements, to claim what principles have you observed contributing to decision making processes, so and why would you believe that that is a factor?

Facilitator [00:31:32] So when you've been involved in settlement claims like the like with the Road accident fund looking at how legal decision makers have made decisions during the judiciary process, do you feel that it's a legal pragmatist? Approach has been taken so judges will look at existing law and its

previous application to understand related legal areas, or is it Attitudinalism to that's using pre-existing attitudes and beliefs about the severity and functional impact of mild traumatic brain injuries and how those can influence decision making? Or is there a strategic approach where social political considerations and existing affiliations influence decision making?

Facilitator [00:34:36] And do you think any so any pre-existing attitudes or beliefs about the severity of MTV's influence decision making, or do you think it's very much the outdated of pragmatism that feeds into it?

Facilitator [00:35:55] Yeah. No, you can only speak to your own experience and your insight. It's very helpful. So, I think I'm moving into an because that links to previous experiences with concussions. But so, what are the social factors that you believe have an influence on a cortical vessels decision about whether to positively respond to the settlement claim?

Facilitator [00:37:22] And are there any other factors that you believe have an influence in a court? Officials' decision beyond social factors

Facilitator [00:39:55] Yes, I was speaking to advocate earlier, and she was talking about how helpful educational psychologists are when looking at young people. Is that something that you agree with?

Facilitator [00:40:45] And so it links quite well to how helpful are assessments and reports compiled by neuropsychologists, particularly related to mild TBI in the assessment of relaxing claims.

Facilitator [00:41:34] I missed the first word when you started speaking initially. Who were what were you when you started? You were talking. Were you talking about psychologists or?

Facilitator [00:42:14] OK, so which discipline do you believe is better positioned to give a better explanation and clarity on health status of claimants?

Facilitator [00:43:05] And what are your thoughts on ways in which a neuropsychological assessment could be improved to ensure more fair and appropriate outcomes for claimants?

Facilitator [00:45:20] OK, and in terms of having more ensuring more fair Judicial Decision-Making, what do you think could be changed there to ensure fairness regarding decision makers?

Facilitator [00:46:17] So would you suggest potentially for judges being assigned these kinds of cases, a training module or access to, OK?

## ANNEXURE F – CERTIFICATE OF EDITING

Academic and manuscript Editing Services.



### Annexure

To Whom It May Concern:

Date: 26/02/2022

Re: **DOCTOR OF PHILOSOPHY IN PSYCHOLOGY**

Thesis : Title: **A CRITICAL EXPLORATIVE ENQUIRY OF NEUROPSYCHOLOGICAL ASSESSMENTS AND THEIR UTILISATION IN THE FACILITATION OF SETTLEMENT OF ROAD ACCIDENT CLAIMS IN THE SOUTH AFRICAN COURTS: - A MIXED METHOD CASE STUDY OF MILD TRAUMATIC BRAIN INJURY**

#### ▲ Client name: MANOKE ERIC COLIN KALANE

This serves to confirm that the above identified mini-dissertation was edited and finalised by feraPHASE Academic and manuscript Editing services for language and format adherence in line with the Harvard (version 6..1) manuscript formatting requirements.

This was in preparation for submission **IN ACCORDANCE WITH THE REQUIREMENTS FOR the Dissertation submitted in fulfilment of the requirements for the Degree in For the degree of DOCTOR OF PHILOSOPHY IN PSYCHOLOGY In the DEPARTMENT OF PSYCHOLOGY At the UNIVERSITY OF SOUTH AFRICA**

Dr Sunil Sagoo

SIGNATURE:  
  
.....

Director "feraPhase Academic and manuscript editing services.

94 Condere Estate , Bergrivier Drive , 1619 - sunil.sagoo5@gmail.com

Director(s): Dr S Sagoo and Dr S. Vyas

## **ANNEXURE G – CURRICULUM VITAE MANOKE ERIC COLIN KALANE**

### **Curriculum Vitae of Manoke Eric Colin Kalane**

**Address:** No 6 Lafayette Country Estate,  
61 Rose Road,  
Beaulieu,  
Midrand  
1684

**Postal Address:** Po Box 30508,  
Kyalami,  
1684

### **PROFESSIONAL PROFILE**

Senior Clinical Neuropsychologist, Medico-Legal Expert, and Practice Director with over two decades of experience in clinical psychology, neuropsychological assessment, and healthcare leadership in South Africa. Registered with the Professional Board for Psychology under the HPCSA and accredited as a Commercial and Health Sector Mediator.

Extensive expertise in neuropsychological evaluation, medico-legal reporting, and expert witness testimony, with a strong track record of contributing to high court matters across multiple jurisdictions. Proven ability to integrate clinical, neurological, and psychological data to produce defensible, high-quality medico-legal opinions.

Founder and Director of a multi-disciplinary psychology practice operating across Gauteng and the Western Cape, with demonstrated capability in building, leading, and scaling clinical teams. Experienced in supervision, mentorship, and professional development of psychologists and psychometrists.

Recognised for collaborative work with multidisciplinary medical teams including psychiatrists, neurologists, neurosurgeons, and specialist physicians. Increasingly focused on advancing neuropsychology within medico-legal frameworks, particularly in the context of traumatic brain injury and Road Accident Fund claims.

Active contributor to professional discourse through media engagement, academic involvement, and ongoing doctoral research focused on the role of neuropsychology in medico-legal outcomes.

## **CORE AREAS OF EXPERTISE**

- Clinical Neuropsychological Assessment
- Medico-Legal Reporting & Expert Testimony
- Traumatic Brain Injury (TBI) Evaluation
- Psychological Treatment (Adults & Children)
- Practice Leadership & Clinical Governance
- Multidisciplinary Collaboration
- Mediation (Commercial & Health Sector)
- Supervision & Mentorship
- Public Engagement & Psychoeducation

## **PROFESSIONAL EXPERIENCE**

### **MEC Kalane Neuropsychological Centre Inc | Pretoria**

*Chief Clinical Psychologist*

**2013 – Present**

- Lead neuropsychological assessments and medico-legal reporting.
- Provide expert opinions in high court matters.
- Supervise clinical staff and psychometrists.
- Drive strategic direction of neuropsychological services.

### **MEC Kalane & Associates | Pretoria / Western Cape**

*Clinical Psychologist & Director of Clinical Services*

**1998 – Present**

- Founded and developed a multi-site psychology practice.

- Deliver psychological and neuropsychological services.
- Manage multidisciplinary clinical teams.
- Oversee operations, governance, and quality assurance.

**Child Guidance Clinic, Department of Education | Welkom**

*Clinical Psychologist*

**1997 – 1998**

**Baragwanath Hospital | Johannesburg**

*Child Psychiatry (Clinical Exposure)*

**1997**

**University of the Western Cape | Bellville**

*Academic Assistant (Psychology)*

**1996 – 1997**

- Facilitated tutorials and supported undergraduate teaching.

**Lentegeur Psychiatric Hospital | Cape Town**

*Intern Clinical Psychologist*

**1995 – 1996**

**EDUCATION**

**M. Psych (Clinical Psychology)**

University of the Western Cape, 1998

**BA Honours (Psychology)**

University of the Western Cape, 1993

**Bachelor of Arts**

University of the Western Cape, 1992

## **PROFESSIONAL CERTIFICATIONS**

- Accredited Commercial & Health Sector Mediator – MiM (UCT), 2017
- Medical Law for Health Practitioners – Legal Education & Development, 2015
- Basic Law & Ethics for Health Practitioners – Legal Education & Development, 2015

## **PROFESSIONAL AFFILIATIONS**

- Health Professions Council of South Africa (HPCSA)
- American Psychological Association (Division 50: Clinical Neuropsychology)
- South African Medico-Legal Society
- Clinical Psychology Forum
- South African Clinical Neuropsychological Association

## **ADDITIONAL PROFESSIONAL CONTRIBUTIONS**

- Expert witness in High Courts (Mafikeng, Pretoria, Polokwane)
- Media contributor (Lesedi FM, Radio 2000 and others)
- Former Team Psychologist: Bloemfontein Celtic Football Club
- Supervisor and mentor to Clinical Psychologists and Psychometrists

## **RESEARCH**

Current doctoral research focuses on:

**“The role of neuropsychology in the settlement of mild traumatic brain injury claims within the Road Accident Fund in South Africa.”**

## **KEY SKILLS**

- Advanced Clinical Assessment & Diagnosis
- Medico-Legal Analysis & Report Writing
- Strategic Leadership & Practice Management

- Communication & Expert Testimony
- Critical Thinking & Decision-Making

### **References:**

1. **Reference:** Professor M. Makotoko

**Position and Company:** Specialist Cardiologist, Universitas Hospital

**Contacts:** On request

2. **Reference:** Professor PL Lekgwara

**Position and Company:** Head of Department, Specialist Neurosurgeon, Sefako Makhato University.

**Contacts:** On request

3. **References:** Dr Joachim Mureriwa

**Position and Company:** Clinical Neuropsychologist. Biofeedback Laboratories

**Contacts:** On request

All the above can comment on my character as a person and a professional