# Ka Mua, Ka Muri: Exploring Mātauranga Māori Foundations for Healing Traumatic Brain Injury

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Health Science

in

Psychology

at Massey University, New Zealand

Tania Kahika-Foote

(Te Whakatōhea, Te Whānau-ā-Apanui)

2025

# Abstract

Globally, traumatic brain injury (TBI) is the leading cause of long-term disability and injury-related death. In Aotearoa New Zealand, TBI disproportionately affects Māori, yet contemporary neurorehabilitation settings remain grounded in Western biomedical frameworks. These frameworks inadequately reflect Māori understandings of healing and well- being, often rendering cultural identity as invisible. This thesis explores how mātauranga Māori (Māori knowledge) understandings of injury trauma and brain health inform healing pathways for Māori with TBI. Grounded in Kaupapa Māori Research methodology, this study employed a dual-method approach that combined archival research with semi-structured interviews.

Archival research was undertaken through a culturally guided, iterative process that engaged trusted repositories of mātauranga Māori to examine ancestral teachings relating to injury trauma and the brain. Semi-structured interviews were conducted with Māori health professionals enabling an in-depth exploration of TBI from those who navigate both clinical contexts and Māori cultural paradigms. Analytical rigour was maintained through a six-step process that wove together Pūrākau and Ara Wairua as complementary analytical frameworks ensuring coherence with Māori ontologies and ethical commitments.

The findings, were presented across three analytical chapters, culminating in a synthesising discussion that advanced three interconnected theoretical propositions. First, it is fundamental that TBI rehabilitation is centred around understandings of tapu (sacredness), wairua (spiritual), and mauri (life force). Second, the brain carries whakapapa (lineage), it embodies cosmological connections, ancestral knowledge and sociocultural lineages that shape both vulnerability to injury and pathways of recovery and resilience. Third, for ethical and culturally safe neurorehabilitation practice, the study calls for pedagogical shifts and neuro-health professionals to champion the integration of mātauranga Māori within clinical spaces, enabling practices that uphold the sanctity of the upoko (head) and support whānau-centred (family) healing.

## Acknowledgements

Firstly, I express my gratitude to the participants of this rangahau. To our tūpuna who generously pass on their taonga to the next generation, and to the Māori health professionals who gave me their time and entrusted me with their mātauranga. Your openness, your insights and your experiences not only enriched this research, but also personally provided me with heartfelt kōrero.

Next, I give a very big thank you to my supervisors Dr Angelique Reweti and Dr Pikihuia Pomare. To Angelique, your guidance, encouragement and expertise throughout this thesis journey has been invaluable. Thank you for wrapping your beautiful rangahau korowai around me as I navigated my way through this thesis.

Third, I mihi to Te Rau Puawai, Onuku Māori Land Trust and Houpotu Te Pua Ahu Whenua Trust for the financial support, without this pursuing academic study would not have been possible. I also acknowledge Massey University, I was the very proud recipient of the 2025 Massey University Māori Research Scholarship.

Finally, I give the deepest thank you and expression of aroha to my whānau for their unwavering love and support.

Ka aroha nui ki a koutou.


## AI Statement

This research utilised Microsoft Word spell-check to correct typographical errors and ChatGPT (OpenAI, 2025) to suggest minor edits to improve sentence clarity and readability. I confirmed accuracy and retained ownership of all content.

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# Glossary

| | |
|---|---|
| Āheinga | Function |
| Āhua | Character |
| Ake | Locative meaning upward |
| Aotearoa | New Zealand |
| Arawai | Waterway, body of water |
| Ara Wairua | Fox's (2024) Data Analysis Tool |
| Aroha | Love |
| Atua (ngā Atua) | God, Gods |
| Hā a koro mā, a kui mā | Tentacle in Te Wheke Model of Health |
| Hāpai | ACC's culturally responsive support team |
| Hapū | Subtribe |
| Hauora | Health, well-being |
| Heke | Rafters |
| Hine-ahu-one | First women created |
| Hinengaro | Mind, consciousness, mental capacity |
| Hui | Meeting |
| Iho | Locative meaning downward |
| Ikura | Menstrual fluid |
| Ira atua | Divine essence, all deities |
| Ira tangata | Human essence |
| Iwi | Tribe |
| Kai | Food |
| Kaikōrero | Speaker |
| Kaimirimiri | Traditional body healer |
| Kairongoā | Traditional healer |
| Kanohi-ki-te-kanohi | Face to face |
| Karakia | Prayer |
| Kare-a-roto | Dimension of deeper analysis in Ara Wairua |
| Kare-pū-toro | Dimension of initial analysis in Ara Wairua |
| Kaumātua | Elders |
| Kaupapa | Topic, purpose |
| Kaupapa Māori Theory | Māori ideology, theory, principled approach |
| Kaupapa Māori Research | Research methodology by Māori, for Māori, with Māori |
| Kererū | Native New Zealand bird |
| Kia tupato | To be careful, cautious |
| Kiritaki | Client |
| Kiwi | Native New Zealand bird |
| Kōrero | Speak, conversation, interview |
| Korimako | Native New Zealand bird |
| Koro | Grandfather |
| Korowai | Traditional cloak |
| Kukune | Foetus, embryo |
| Kupe | Renowned Māori navigator |
| Kupu Māori | Māori words |
| Kurawaka | Vulva of Papatūānuku |
| Mahunga | Head |
| Mamaetanga | Physical or emotional pain |
| Mana | Spiritual authority, prestige |
| Mana ake | Unique identity |

| | |
|---|---|
| Manaakitanga | Hospitality, generosity, kindness |
| Māori | Native people of Aotearoa |
| Marae | Traditional Māori meeting area |
| Maramataka | Māori lunar calendar |
| Matakitetanga | Prophetic intuition, clairvoyancy |
| Mātauranga-a-wairua | Spiritual Knowledge |
| Mātauranga-a-whānau | Family Knowledge |
| Mātauranga Māori | Knowledge, wisdom |
| Mauri | Life Force |
| Mauri noho | Withdrawal, despondency |
| Mauri oho | Awakening, alertness |
| Mauri tau | Calm, balanced |
| Mihi | Greeting |
| Mirimiri | Massage |
| Mōtoi | The cerebellum |
| Ngahere | Forest, native bush |
| Ngākau | Heart |
| Ngā taonga a ngā tūpuna | Ancestral treasures |
| Noa | Balance, to make ordinary, restoration |
| Pā | Settlement, villages |
| Pae | Orators bench |
| Pae ora | Healthy futures |
| Pākehā | European, English |
| Papatūānuku | Earth mother |
| Pārore | a rongoā healing balm |
| Patu ngākau | Strike to the heart |
| Pepeha | Tribal affiliations |
| Pēpi | Baby |
| Pou | Post |
| Pou kaiawha | External veranda post located outside front of whare |
| Pouritanga | sadness, despondency |
| Pou tāhū | Weight bearing post located at front of whare |
| Pou tokomanawa | Post located at the mid-point of whare |
| Pou tuarongo | Weight bearing post located at rear of whare |
| Pū | Brainstem |
| Pukatea | Rongoā healing balm |
| Pūmotomoto | Fontanelle |
| Pūrākau | Oral traditions, Literature |
| Pūroro | Vital functions of the brain |
| Rangahau | Research |
| Rangatira | Elder, Leader, Chief |
| Ranginui | Sky father |
| Raranga | Flax weaving |
| Reretahi | Cerebellum |
| Rō | Inside, within |
| Ro Ake | Atua, twin of Ro Iho |
| Ro Iho | Atua, twin of Ro Ake |
| Rongoā | Medicinal applications |
| Rongoā pani | Rongoā balm |
| Rongoā rākau | Native healing plants |
| Rongomaitahanui | Atua, twin of Rongomaitaharangi |

| | |
|---|---|
| Rongomaitaharangi | Atua, twin of Rongomaitahanui |
| Roro | Brain |
| Roro hiringa | Higher functions of the brain |
| Roro tuarongo | Coordination |
| Rua-i-te-mahara | Atua, twin of Rua-i-te-pūkenga |
| Rua-i-te-pūkenga | Atua, twin of Rua-i-te-mahara |
| Ruawhetu | Hollow in the skull of the foetus |
| Ruru | Morepork |
| Taha | Side |
| Tāhuhu | Ridgepole, spine |
| Taiao | Natural environment |
| Tama | Young boy |
| Tamaiti | Child |
| Tamariki | Children |
| Tāne | Atua, God of the Forest |
| Tangaroa | Atua, God of the Ocean |
| Tangi | Funeral |
| Tangihanga | Funeral |
| Taonga | Treasure |
| Taonga Tuku Iho | Inherited treasures |
| Tapu | Sacred |
| Te Āheinga Pū Reretahi | Hanara's (2020) Neurofunctional Model of the Brain |
| Te Ao Māori | The world of Māori |
| Te Ao Mārama | The world of Light |
| Te kauwae runga | Celestial knowledge from above |
| Te kauwae raro | Celestial knowledge from below |
| Te Kore | Realm of potential |
| Te Kura-i-awaawa | Ancient School |
| Te Pō | Realm of darkness and becoming |
| Te reo Māori | The Māori language |
| Te Tai Tokerau | Northland region of Aotearoa |
| Te Tiriti o Waitangi | The Treaty of Waitangi |
| Te Waka Kuaka | Elder's (2017) bilingual cultural needs assessment tool |
| Te Waka Oranga | Elder's (2017) culturally responsive support framework |
| Te Whakatōhea | Eastern Bay of Plenty Tribe in Aotearoa |
| Te Whānau-a-Āpanui | East Coast Tribe in Aotearoa |
| Te Whare o Oro | McLachlan et al. (2023) brain & neurodevelopment framework |
| Te Whare Tapa Whā | Durie's (1985) Māori model of health |
| Te Wheke | Pere's (1984) Māori model of health |
| Tihei mauri ora | Dimension of data integration in Ara Wairua |
| Tika | To be fair, proper, accurate |
| Tikanga | Customs, protocols |
| Tinana | Physical body |
| Tino Rangatiratanga | Self-determination, sovereignty |
| Titiro | Look |
| Tohu | Sign |
| Tohunga | Skilled expert |
| Tohungatanga | expertise |
| Tūī | Native New Zealand bird |
| Tukutuku | Decorative panels in whare |

| | |
|---|---|
| Tūpuna (nga tūpuna) | Ancestors |
| Upoko | Head |
| Wā | Timing, readiness |
| Wāhi | Place |
| Wai | Water |
| Waiata | Song, to sing |
| Waikato | Region of Aotearoa |
| Waiora | Total well-being |
| Wairoro | Brain |
| Wairua | Spiritual |
| Wairuatanga | Spirituality |
| Waka | Canoe |
| Whaikōrero | Speech |
| Whaiora | Person seeking health |
| Whakaaro | Thoughts, insights, understandings |
| Whakairo | Carving |
| Whakamā | Shame, disconnection |
| Whakamomori | Deep despair, suicidal ideation |
| Whakapapa | Genealogy |
| Whakapapa kōrero | Ancestral stories |
| WhakataukĪ | Proverbs, quotes, sayings |
| Whakawhanungatanga | To make connection, establish relationship |
| Whānau | Family |
| Whanaungatanga | Kinship, relationship |
| Wharenui | Central meeting house |
| Whare tūpuna | Ancestral meeting house |
| Whatumanawa | Emotional expression |
| Wheke | Octopus |
| Whenua | Land |

# Chapter One: Introduction

**I te ahatia e koe taku taonga?**

**What did you do with the treasure that I gave you?**

This question, posed in the writings of Te Ahukaramū Charles Royal (2009, p.6), arises from the wisdom of Māori elders who challenge future generations to safeguard and activate the taonga (treasure) of mātauranga Māori. For me, these words form both a beginning and a pou (support post) for this rangahau (research), guiding how I carefully and respectfully explore the potential of mātauranga Māori understandings of injury trauma, the brain, and brain health as pathways towards healing for Māori whānau living with TBI.

I open this thesis with an introduction chapter that begins with the sharing of my pepeha (tribal affiliations) and who I am. I offer both, as a) this is an important cultural value within Te Ao Māori (the Māori world), and b) informs the reader of my positionality within this research kaupapa. I then present the aims and purpose of this research before closing the chapter with information of how this paper has been structured.

## Ko Wai Au

Ko Maungarangi me Whanokao ngā maunga

Ko Otara me Mōtū ngā awa

Ko Mātaatua te waka

Ko Ngāti Ngāhere me Te Whānau-a-Hikarukutai ngā hapū

Ko Te Whakatōhea me Te Whānau ā Apanui ngā iwi

Ko Tania Kahika-Foote tōku ingoa

I am a Māori woman from Te Whakatōhea and Te Whānau ā Apanui through my mother's whakapapa. I also have English ancestry from my father and my mother's maternal line. I was raised

in the Eastern Bay of Plenty in an environment that as a child I viewed as being deeply embedded in Te Ao Māori. I regularly attended tangi (funeral) and tribal events with my whānau. I often travelled to these events with my Great Aunty (my Koro's sister), she was the eldest female of her siblings and held an impressive repository of mātauranga-a-wairua (spiritual knowledge) and tohungatanga (expertise). During this period of time, I was in the fortunate position to sit at the feet of my elders as they shared kōrero (conversations), mātauranga Māori and whakaaro (thoughts) around all things Te Ao Māori. Everywhere I went as a child was filled with whānau; Aunties and Uncles worked in the same places as my parents and grandparents, and cousins filled my classrooms. However, as I reached the age to move on to high school our small town began to experience the impacts of socio-economic politics, which created new barriers for many families, including my own. As such, my whānau encouraged me to consider attending high school elsewhere, and I chose a college on Auckland's North Shore. On one hand I was now living with my great Aunty and my home environment was still filled with all things Māori. On the other, I was experiencing for the first time what it meant to be *'othered'*, one of only a handful of Māori in a school of approximately 2000 students. I also began to understand what it feels like to be geographically separated from the place that you whakapapa to. It is a feeling inside you that is hard to explain, except that 'distance' itself becomes an emotion. These experiences shaped my understanding of growing up Māori, of becoming urbanised, and of the societal and psychological changes that occur when you find yourself in the minority. In addition, these early experiences of being othered also sharpened my awareness of how invisibility operates more broadly. Later, when I entered health services as both a practitioner and consumer, I recognised a similar lack of cultural presence and support. The same sense of absence I had felt at high school was now mirrored in systems that often failed to see or value Māori ways of being.

I currently reside in both Northland and the Eastern Bay of Plenty. I am a student, a researcher and an allied health professional. It was in this occupation as a Soft Tissue and Clinical Sports Therapist where my interest in the interconnectedness of the human body deepened,

particularly the ways the emotional, mental, spiritual and cultural dimensions influence physical well-being. This curiosity led me to return to university to explore the relationship between injury trauma and psychology. As a health professional I understand the importance of forming and maintaining relationships with the people and whānau who seek health and well-being services, with colleagues, and across multidisciplinary healthcare settings. I am also aware of the broader systems that shape healthcare in Aotearoa, and the barriers that Māori health professionals may feel more acutely as both workers and consumers of health. At the same time, I acknowledge that much of my previous career has been in private practice and in an un-regulated health profession. This requires me to reflect on the different relational dynamics involved in working both within the health system and on its periphery.

I was raised to be proud of my Māori lineage, a sentiment nurtured not only by my Māori whānau, but also by my non-Māori grandparents and extended family. I come from a strong line of aspirational cultural thinkers and supportive whānau. When I have seen these elements lacking within health services, I have questioned why this invisibility exists and how such cultural deficiency impacts health outcomes. I understand the apprehension felt by Māori health professionals who are; taught within Western systems, grounded within Western knowledge, and expected to work in Western-informed clinical settings while internally, their wairua urges them to apply mātauranga Māori to guide clinical reasoning and treatment. This tension becomes even more acute when working with TBI, where the dominant approach is biomedical and functional, often overlooking the spiritual and relational dimensions of healing and recovery that are so vital within Te Ao Māori. For me, this highlighted the need to ask how mātauranga Māori could reshape brain injury rehabilitation and offer pathways that reflect the full reality of Māori experiences of trauma and healing.

As a researcher and psychology student, my intention for this thesis is to privilege Māori knowledges and ways of being, whilst also protecting and respecting the whakapapa of these knowledges, and to contribute research that offers aspirational and empowering pathways for Māori

whānau with TBI. In doing this work, I am also honouring the teachings I received as a child sitting at the feet of my elders. Their kōrero and mātauranga planted the seeds that now guide this research. This thesis is therefore not only an academic pursuit; but also, a continuation of my whakapapa responsibilities to uphold and activate the treasures entrusted to me.

## Aims and Purpose

Having positioned myself and the whakapapa of this research, I now turn to the aims and purpose of the study. At the heart of this thesis is a response to longstanding concerns about the inadequacy of Western-informed approaches of neurorehabilitation for Māori.

Western-informed neurorehabilitation environments for TBI care and rehabilitation have been critiqued as non-functional and ineffective for Indigenous populations due to their poor regard for cultural identity (Dudley et al., 2014; Elder, 2017; Lakhani et al., 2017; Wilson et al., 2022). Across the globe, neurorehabilitation researchers and academics assert that to reduce inequities in neuro-health outcomes between Indigenous and non-Indigenous peoples, culturally informed healing approaches must be centred within rehabilitation settings (Dudley et al., 2014; Elder, 2017; Hanara, 2020; Keightley et al., 2011; Salaheen et al., 2022).

In Aotearoa New Zealand, mātauranga Māori has been identified as a powerful foundation for reshaping neurorehabilitation practice, enabling outcomes that are culturally relevant, sustainable, and transformative for Māori. This thesis responds to that call. To date, Māori health research has predominately focussed on engagement with Māori and on the meanings of well-being and ill-being. However, research exploring how Māori understand the physical and spiritual composition of the body, particularly when either or both of these aspects are injured remains limited.

By bringing mātauranga Māori into conversation within neurorehabilitation, I seek to explore how Indigenous knowledge systems can contribute to healing solutions for Māori whānau affected

by TBI. In doing so, this work not only challenges the dominance of Western frameworks in rehabilitation but also honours the intergenerational responsibility carried within the taonga of mātauranga Māori.

With this in mind the overarching research question is:

> How do mātauranga Māori understandings of injury trauma and brain health inform healing pathways for Māori recovering from traumatic brain injury?

The sub-questions are:

a. How is trauma understood within mātauranga Māori, particularly in relation to brain health and recovery?

b. What mātauranga Māori knowledge, practices, and healing approaches support brain health and recovery from traumatic brain injury?

c. To what extent do Māori experts see mātauranga Māori understandings of injury trauma reflected in contemporary recovery and rehabilitation practices in Aotearoa?

## Thesis Structure and Overview

The structure of this thesis intentionally departs from the conventional linear format typically used in Western academic scholarship. This decision reflects a commitment to tikanga (custom) and to the epistemological foundations that guide Māori ways of ordering knowledge. Within Te Ao Māori, and particularly within my whānau our cultural practice is to begin proceedings by first acknowledging ngā atua (Gods) and ngā tūpuna (ancestors), those that have gone before us, this value underpins this thesis by honouring these foundational sources of mātauranga Māori. This approach is also an expression of embodied whakapapa; what has been inherited, what is being transformed through new learning, and what will continue into future generations. Structuring the

thesis in this way signals the centring and legitimacy of mātauranga Māori within the field of health research that have historically privileged Western paradigms.

Secondly, the concept of wairua is woven throughout this thesis. To avoid repeating lengthy and multifaceted explanations of how Māori make sense of wairua, I have chosen to describe wairua as it arises within each chapter's subject matter. For example, Chapter Two explores wairua as a dimension of hauora, and in Chapter Three wairua is described as it relates to the methodology of this thesis. In this way, my hope is that wairua is understood within the context of each topic, allowing the reader's understanding of its importance to grow organically as the thesis unfolds.

There are seven chapters to this thesis. Chapter One: Introduction outlines the aims and purposes of the study and situates the personal, cultural, and academic motivations that shaped the direction of this work.

Chapter Two: Background and Context begins with acknowledging mātauranga Māori before providing an historical overview of Māori health in Aotearoa, and a discussion of hauora as it is understood within Te Ao Māori. The second section of this chapter situates TBI within both biomedical and sociocultural contexts, the literature examines TBI in Aotearoa, TBI within psychology and the movement from cultural invisibility to cultural inclusivity within neurorehabilitation settings.

Chapter Three: Methodology outlines the Kaupapa Māori Research framework underpinning this study. The chapter explains the methodological approaches and methods used for data collection and analysis, and concludes with ethical considerations, including data sovereignty, cultural safety, and researcher accountability.

Chapters Four, Five, and Six depart from the conventional separation of findings and analysis. Instead, they follow an integrated format used by other Māori researchers (Hanara, 2020; Haenga-O'Brien, 2025), where archival findings, participant kōrero, and analytic interpretation are woven

together throughout. This approach reflects the relational and interconnected nature of mātauranga Māori and supports a more holistic form of analysis.

Chapter Four: Ngā Taonga a Ngā Tūpuna examines mātauranga Māori understandings of the roro (brain). It traces conceptualisations of the brain from whakapapa origins associated with ngā atua through to contemporary interpretations. The chapter then explores Māori understandings of trauma, including the violation of tapu, patu ngākau (strike to the heart), historical and intergenerational trauma, and the conceptualisation of TBI. Together, these strands demonstrate how mātauranga Māori provides an interconnected, spiritually grounded framework for understanding the brain, trauma, and healing.

Chapter Five: Te Whai Ao o ngā Roro focuses on the healing approaches and practices used by Māori health professionals working alongside TBI whānau. It explores four interrelated themes: wairua, rongoā (medicinal applications), whakapapa kōrero (ancestral stories), and whānau, and illustrates how these practices support recovery and restoration.

Chapter Six: Ngā Pūrākau o ngā Kaimahi Roro considers the extent to which contemporary neurorehabilitation practices in Aotearoa reflect or exclude mātauranga Māori understandings of head injury. It highlights both current realities and the transformative possibilities for embedding Indigenous knowledge systems within TBI rehabilitation.

Lastly, Chapter Seven: He Ara Whakaora provides a synthesised discussion and concluding analysis. It brings together the major findings, articulates their broader significance, and outlines implications for practice, policy, and Māori communities. The chapter concludes by identifying pathways for future research and opportunities for re-centring mātauranga Māori within TBI care.

# Chapter Two: Background and Context

**Mā te whakarongo, ka mohio**

**Through listening comes knowledge**

## Introduction

This chapter grounds the exploration of mātauranga Māori understandings of injury trauma, the brain and brain health by situating the research within the wider context of Māori health and TBI.

First, I open this chapter by acknowledging mātauranga Māori. In Te Ao Māori, it is customary at the beginning of any hui (meeting), mihi (greeting), whaikōrero (speech) or karakia (prayer) to pay respect to ngā atua and ngā tūpuna, those that have come before and laid the foundations for all that follows. In the context of this thesis, I position mātauranga Māori as a tūpuna in its own right, a living body of ancestral knowledge that continues to evolve and inform contemporary practice. Beginning this way honours the epistemological ground on which this research stands and the theoretical discussions that guide this thesis. This overview is intentionally brief, as more detailed kōrero of mātauranga Māori is woven through the chapters that follow.

Attention then turns to understanding conceptualisations of Māori health and wellbeing. First, by tracing historical influences that have shaped Māori health; from colonisation to present day health outcomes. Then discussing hauora (health) as it is understood within Te Ao Māori. To illustrate these understandings two foundational Māori models of health; Te Whare Tapa Whā and Te Wheke are introduced as exemplars of frameworks grounded in Māori worldviews and relational approaches to wellbeing.

The final section of the chapter situates TBI within both biomedical and sociocultural contexts, examining TBI in Aotearoa, TBI within psychology and the movement from cultural invisibility to cultural inclusivity within neurorehabilitation settings.

## Mātauranga Māori

Mātauranga Māori is a distinct Māori knowledge arising from, and embedded with the histories, diverse realities, and worldviews of iwi (tribe), hapū (sub-tribe) and whānau (Royal, 2009). Tā Hirini Moko Mead (2003, p. 320) describes mātauranga Māori as a "super subject" as it encapsulates an expansive range of subject matter from ancestral understandings and practices to present-day disciplines such as astronomy, education and health. Mātauranga is not restricted to linear ways of thinking nor, confined by rigid notions of right or wrong (Mikaere, 2011). Instead, mātauranga Māori embraces complexity, recognising that multiple truths can coexist and that there are many valid pathways to reach a desired outcome.

A unique aspect of mātauranga Māori is the interconnectedness and relationality of knowledge, meaning that for Māori, relationships and connection to place are central for the facilitation of knowledge sharing and transmission of mātauranga (Mead, 2003). The teaching, sharing and learning of mātauranga are rooted in whanaungatanga (kinship) and reciprocal relationships. Mead (2003) emphasises that mātauranga Māori continues to grow as each generation respectfully contributes to its maintenance and growth. In this sense, mātauranga Māori remains dynamic, continually expanding to embrace knowledge and understandings that are still to emerge.

The transmission of mātauranga Māori is embedded in traditional practices such as oral forms of pūrākau (stories), waiata (songs) and whakapapa kōrero; creatively via raranga (flax weaving) and whakairo (carving); and practically in the form of maramataka (Māori lunar calendar) and rongoā (Hikuroa, 2017; Inia, 2021; Royal, 2009). Mātauranga Māori is not held by only those that would be viewed as 'experts' through a Eurocentric lens such as academics or scholars. It is also carried by those whose practical experience is grounded in cultural values such as kaumātua (elders), tohunga (skilled expert), healers and artists (Smith et al., 2016). Similarly, mātauranga Māori is not the mythological or patriarchal construct it has been historically misrepresented as (Mikaere, 2011).

Rather, it is a taonga, to be respectfully shared in mana-enhancing ways that enrich Māori in their everyday lives (Le Grice et al., 2017; Royal, 2009).

Mātauranga Māori is an Indigenous knowledge system (Hikuroa, 2017) with its own epistemological integrity and mana (spiritual authority), providing authoritative understandings of health, injury, and healing that stand alongside biomedical paradigms. Narratives drawn from ngā atua, ngā tūpuna and the taiao (natural environment) provide understandings and insights on subjects or phenomena that can enable Māori to identify with their bodily experiences and make meaning of their disability, illness or injury (Elder, 2013a; Pihama & Smith, 2023; Smith, 2019). In this way, mātauranga Māori becomes an essential source of insight and healing, supporting Māori to understand and recover from experiences of trauma (Pihama & Smith, 2023) and traumatic brain events (Elder, 2024).

## Māori Health and Well-being

### *Historical Influences on Māori health*

Historians estimate that the first encounters between Māori and European navigators to Aotearoa New Zealand occurred from 1769 (Salmond, 2017). In the decades that followed, European ethnographers and travellers often marvelled at the healthy physical appearance and innate wellbeing of Māori (Kingi, 2018; Salmond, 1997). Health historians assert that prior to European contact, Māori were generally healthier, and their life expectancy was similar to that of Europeans (Moewaka Barnes & McCreanor, 2019). As Tā Mason Durie (1998) explains, early Māori pā (settlements, villages) illustrate the workings of a Māori public health system that symbiotically linked relationships with the natural environment to social behaviours and spiritual beliefs. For Māori, health and well-being were collective priorities intimately connected with their natural environment (Durie, 1998).

However, the continuous arrival of European immigrants from the early 1800s brought two life-altering forces: first, the introduction of diseases such as tuberculosis, measles, and influenza, which Māori had no immunity to, and second the onset of colonisation following the signing of Te Tiriti o Waitangi (The Treaty of Waitangi) in 1840 (Durie, 1998; Waitangi Tribunal, 2023). From this point, the health and well-being of Māori declined dramatically, and disparities between Māori and Pākehā (European New Zealanders) rapidly increased (Walker, 2004). In 1810, the Māori population was approximately 95,000, but by the 1880s it had fallen to around 42,000 (Moewaka Barnes & McCreanor, 2019). Life expectancy for Māori had also plummeted to approximately 25 years, compared with 55 years for European settlers (Moewaka Barnes & McCreanor, 2019).

Despite the guarantees of tino rangatiratanga (self-determination, sovereignty) and active protection afforded by Te Tiriti o Waitangi, a Pākehā-appointed government-imposed laws and policies entrenched in racism that excluded Māori conventions and promoted inequity (Mutu, 2019; Walker, 2004). The confiscation of land under legislation such as the New Zealand Settlement Act 1863 and the Native Land Acts of 1862 and 1865 displaced Māori from their homes and tribal areas, causing profound economic hardship and cultural dislocation (Durie, 2001). Education policies such as the Native Schools Act 1867 reprimanded children for speaking te reo Māori (the Māori language), forcing generations into assimilation and towards a homogenous British society (Walker, 2004). The Tohunga Suppression Act 1907 further undermined cultural value systems and promoted cultural marginalisation by suppressing traditional Māori healing practices (Walker, 2004). These processes of land alienation, forced assimilation, and cultural suppression fragmented Māori communities and eroded connections to sources of social, cultural, and spiritual support (Moewaka Barnes & McCreanor, 2019), deliberately stripping away cultural awareness of mātauranga and undermining the foundations of Māori identity (Walker, 2004).

Today, the legacy of the historical injustices remains evident in Aotearoa New Zealand's healthcare system, which researchers argue continues to privilege Western ideologies and endorse

colonial constructs (Espiner et al., 2021; Graham & Masters-Awatere, 2020; Waitangi Tribunal, 2023). Evidence of these systemic inequities is stark in contemporary health data. For example, although Māori life expectancy has increased to around 74 years, it remains approximately seven years lower compared to non-Māori (Ministry of Health – Manatū Hauora, 2024). Māori also experience higher mortality rates from many preventable diseases, including cardiovascular disease, rheumatic heart disease, diabetes, and chronic obstructive pulmonary disease (Ministry of Health – Manatū Hauora, 2024). Within mental health, Māori are also disproportionately affected, with prevalence rates of psychological distress nearly double those of other ethnic groups (Te Hiringa Mahara Mental Health and Wellbeing Commission, 2023). For many Māori, cultural disconnection and the loss of traditional ways of being were, and still are precursors to ongoing health challenges (Durie, 2001; Health Quality & Safety Commission, 2019).

### *Conceptualisations of Hauora Māori*

Māori understandings of health and well-being are grounded in a holistic worldview, where the spiritual, cultural, and collective dimensions of life are intrinsically connected and interdependent (Durie, 1985). At the heart of this worldview is the reciprocal relationship one has with the whenua (land), atua and whānau (Durie, 1998; Riki Tuakiritetangata & Ibarra-Lemay, 2021). These relationships are guided and sustained through key Māori values; whakapapa, mauri, mana, wairua, tapu, and noa (balance and restoration) (Durie, 2004; Rameka, 2016).

**Whakapapa.** For Māori, an essential component of hauora and overall well-being lies in their enduring relationship with the land and the central role it plays in shaping identity (McIntosh et al., 2021; Pihama et al., 2023). Within a Māori worldview, Papatūānuku (Mother Earth) is recognised as an important female Atua providing physical and spiritual sustenance necessary for life and well-being. Life is understood to have emerged from her soil, and it is she who nurtures, protects, and sustains all living beings (Pihama et al., 2023). Through this lens, the whenua provides not only a

sense of belonging but also a source of ancestral connection, a place that cultural practices and traditional knowledge can be accessed and maintained.

Whakapapa is literally translated as, “to place in layers” (Moorfield, 2025). For Māori, cultural identity is grounded in the genealogical layers of whakapapa and whenua, which is expressed through the interconnected process of locating oneself within tribal geographies, through ancestral lineages, and the collective relationships of living whānau (Jones et al., 2024; Rameka, 2016). Research demonstrates that a secure and actively expressed cultural identity is essential for optimal health and psychological well-being (Elers & Dutta, 2024; Houkamau & Sibley, 2011; Reweti, 2022; Rua et al., 2017). For example, the Te Oranga Hinengaro – Māori Mental Wellbeing Survey found that mental health outcomes improve when Māori are connected to ancestral lands, waterways, and cultural environments, while disconnection was associated with anxiety and depression (Russell, 2018).

**Mauri.** Mauri refers to the life force or essence of life that emanates from all living and non-living things (Durie, 2001). When mauri is strong it fosters vitality, balance and resilience; when weakened it may lead to disconnection, illness and imbalance (Marsden, 2003; Pohatu, 2011). Importantly, mauri is not only an internal life force but also a quality that exists within the reciprocal relationships between human beings and the wider environment (Durie, 2001). Any shift in the mauri of one element therefore influences the mauri of others, which give rise to varying psychological states such as mauri ora (flourishing), mauri oho (awakening or alertness), mauri tau (calm), and mauri noho (withdrawal or despondency) (Durie, 2001; Waitoki & McLachlan, 2023).

Within Te Ao Māori, the whenua, ngahere (forests, native bush) and arawai (waterways, bodies of water) are recognised as vital reservoirs of mauri or places where life force, spiritual presence, and ancestral power are held in abundance (Mcintosh et al., 2021). Mauri in this sense is dynamic and responsive, capable of being strengthened or restored through meaningful reconnection to whenua, whakapapa and immersion in Te Ao Māori (Mcintosh et al., 2021;

McLachlan et al., 2021). Practices such as the recital of one's pepeha, re-establishing links with ancestral lineages, and returning to culturally significant environments activate these relationships, reaffirming the spiritual and physical bonds that ground a person within their whakapapa. Through these connections, mauri is revitalised, supporting balance, vitality, and wellbeing. In this way, Māori understand themselves as beings who embody both physical and spiritual dimensions, with well-being dependent on maintaining harmony across these realms (Tate, 2021). Therefore, mauri does not exist in isolation (Apiti et al., 2024). It operates within a wider spiritual ecology where mana and wairua also play central roles, providing the spiritual depth, presence, and power through which balance, healing, and vitality are sustained.

**Mana.** Mana refers to the spiritual authority, power, prestige and charisma that a person or entity carries (Marsden, 2003; Tate, 2021; Royal, 2012). Reverend Māori Marsden (2003) and Tohunga Wiremu NiaNia et al. (2019) describe mana as a sacred endowment from atua, a gift entrusted to humans and other living entities so that they may act in alignment with ancestral purpose. This relationship is deeply genealogical, as Apiti et al. (2024) explain, mana and mauri originate within the cosmological sequence of creation, passing through Te Kore (the realm of potential), Te Pō (the realms of darkness and becoming), and Te Ao Mārama (the world of light, knowledge, and form). Through whakapapa, every human, elemental, and spiritual entity inherits these qualities. Within this relationship, mauri operates as the conduit through which mana is expressed; without the vitality and coherence that mauri provides, there is no foundation from which mana can manifest (Royal, 2012).

Mana, therefore, is not a form of personal power but a relational and intergenerational responsibility. Like mauri, it can be strengthened or diminished (Pihama et al., 2023) and may also be earned through actions aligned with ancestral values (Dell et al., 2018). To carry mana is to uphold integrity, safeguard personal and collective well-being, and act in ways that reflect balance, ethics, and care for others (Tate, 2021; Durie, 2001). An example of mana in well-being might be a whānau

member who demonstrates calm leadership during a health crisis, holding space for others, communicating with clarity, and ensuring that decisions honour both the individual and the collective. Their behaviour uplifts those around them, reinforces trust, and reflects both their inherited and enacted responsibilities, thereby enhancing the mana of the whole whānau.

**Wairua.** Wairua is a foundational, yet complex concept that resists simple translation, definition, or measurement (Haenga-O'Brien, 2025; Valentine et al., 2017). Durie (2001) describes wairua as the spiritual dimension of life, representing the non-physical essence that underpins well-being and shapes connections to people, place, and the wider environment. Similarly, Marsden (2003) describes, wairua as the ultimate reality grounded in the spiritual realm, which is regarded as the fundamental basis of existence and the source from which all other aspects of life derive meaning. Mead (2003) shares every person carries wairua and embodies spiritual qualities simply by being born into Te Ao Mārama. These conceptualisations of wairua bind Māori across time and space, encompassing both physical and non-physical paradigms and affirms wairua as both ancestral and intergenerational.

Like mauri and mana, wairua does not act in isolation. Instead, wairua is lived and experienced through whakapapa, the practice of tikanga and seamless engagement with Te Ao Māori (Mead, 2025; Moewaka Barnes et al., 2017). For Māori, this awareness of, and connection to wairua strengthens both cultural identity and well-being, situating wairua as a central element of hauora (Durie, 2001; Haenga-O'Brien, 2025; Valentine et al., 2017). Therefore, any disturbance in wairua may manifest as physical, spiritual or familial ill-health (Marsden, 2003). Traditionally, highly skilled tohunga would identify and address these disturbances, drawing on karakia, rongoā, and their own matakitetanga (prophetic intuition, clairvoyancy) to restore harmony and ensure spiritual wellbeing (Mead, 2025; Valentine et al., 2017).

**Tapu and Noa.** Tapu and noa form another essential dimension of Māori understandings of wellbeing, operating as a dynamic system that regulates balance between the spiritual and physical

worlds**.** Tapu, often understood as sacred or restricted, provides a protective framework that regulates relationships between people, places, and the spiritual realm (Mead, 2003; Tate, 2021). All things both inanimate and animate are understood to carry an element of tapu; the extent of tapu varies according to function and relationship to the surrounding environment (Sullivan & Hakopa, 2017; Tate, 2021). When tapu is upheld appropriately, it safeguards wellbeing, reinforcing the spiritual structures that protect individuals and whānau.

In contrast, noa, is the balancing counterpart, restoring equilibrium and making spaces, objects, or people safe for interaction (Tate, 2021). Noa is intentionally invoked through karakia, kai (food), or the enactment of tikanga, to return a person or environment to a state of balance and everyday functioning (Durie, 2004). Neither tapu nor noa exist in opposition. Instead, together, tapu and noa maintain social and spiritual order, ensuring balance between the sacred and the everyday (Durie, 2004). Within the context of health, the interplay of tapu and noa provides a vital framework for recognising when wairua, mauri, or mana may require protection or recalibration, underscoring the significance of spiritually safe practice in healing and recovery.

### *Māori Models of Health*

To explore these conceptualisations of hauora further, it is helpful to turn our attention towards Māori models of health. Drawing on mātauranga Māori understandings of well-being, Māori health scholars have developed frameworks that both reflect Māori epistemologies of hauora and guide culturally informed approaches within Aotearoa New Zealand's health sector. Māori ways of knowing are often expressed through rich layers of symbolism, metaphor, and figurative language, allowing complex ideas to be communicated with clarity, depth, and cultural nuance (Henare, 2001). Such expressions carry meanings that operate beyond the literal, drawing on genealogy, environment, and ancestral experience to convey understandings of wellbeing, balance, and the interdependence of all life.

Among the earliest and most influential of these is Tā Mason Durie's (1985) Te Whare Tapa Whā, which introduced an Indigenous worldview into mainstream health discourse, and has since become a cornerstone model for understanding hauora (Rochford, 2004). Te Whare Tapa Whā depicts a wharenui (meeting house) supported by four interdependent taha (sides) each representing a vital dimension of well-being for Māori. Taha wairua refers to spiritual health and reflects the significance of cultural and religious values and practices along with the profound connection between self, whānau, ngā atua and the natural world. Taha hinengaro, psychological well-being refers to one's conscious awareness and is central to the formation of identity, shaping how individuals perceive and affirm their presence in the world (Durie, 1985). Durie (2001) acknowledges that poor mental health may emerge when thoughts, feelings, and emotions are unable to be expressed or processed in a balanced way, highlighting that practices such as karakia and whakawhanaungatanga (building and maintaining relationships) play a vital role in supporting mental well-being, as they strengthen connections to community and foster collective support. Taha whānau emphasises the central role of the extended family and social relationships in shaping resilience and belonging. Whānau is a foundational element within Te Ao Māori, offering kinship, supportive networks, security, protection and cultural connection (Durie, 1985). Lastly, taha tinana represents physical health, encompassing the body and its capacity to function and thrive.

Similarly, Te Wheke, developed by Dr Rangimārie Te Turuki Arikirangi Rose Pere (1991), is a model of health that positions individual well-being within the wider context of the whānau. The model illustrates that well-being is not an individual experience but a collective one, with each dimension of health interconnected and contributing to the vitality of the whole whānau. Pere (1991) uses the metaphorical illustration of a wheke (octopus) to represent the whānau unit, the head symbolises the collective whānau and the eyes embody waiora (total well-being) of both the individual and whānau. Each of the eight tentacles represent a distinct dimension of hauora including; whanaungatanga, mauri, mana ake (unique identity), hā a koro mā, a kui mā (inherited strengths), whatumanawa (emotional expression), and three that are also found in Te Whare Tapa

Whā; hinengaro, taha tinana and wairuatanga (spirituality). The suckers found along each tentacle reflect the many factors held within each health dimension (Love, 2004). Notably, this model highlights the interconnectedness of hauora, illustrating the way the tentacles or dimensions overlap and depend on one another for hauora to flourish (Love, 2004).

The critical component located within both these models is that the four dimensions of Te Whare Tapa Whā, and the head and the tentacles of Te Wheke are not separate entities but interwoven aspects of a holistic system, where imbalance in one area can affect the stability of the whole (Durie, 2001; McIntosh et al, 2021). Every dimension of the models are of equal importance in the balance of well-being just as they are in the absence of ill-being. This also highlights the strength of metaphors and symbolism as intellectual and spiritual frameworks drawing on imagery that is both culturally familiar and conceptually profound (Hiroa, 1987). Te Wheke for example, employing the octopus, reflects the navigational knowledge systems used by renowned Māori navigators such as Kupe to read currents, tides, and horizons (Grace, n.d). Within this context, Māori models of health can be understood as metaphorical and conceptual maps that articulate worldviews, offering holistic ways of framing wellbeing grounded in ancestral knowledge and relationality.

Māori understandings of health stand in clear contrast to Western biomedical constructions. The biomedical model conceptualises well-being as the absence of disease or infirmity, reducing health to biological functioning which prioritises individual pathology and privileges diagnosis, treatment, and cure through medical intervention (Tosam, 2022; Wade & Halligan, 2017). While this approach has advanced clinical medicine, its reductionist focus neglects the psychological, cultural, and spiritual dimensions that are fundamental to Māori experience (Peters & Petersen, 2019). Even broader definitions, such as that of the World Health Organization (2020) remain rooted in Western paradigms that overlook the centrality of whenua, whakapapa and wairua to Indigenous well-being (Durie, 2004). These concepts continue to privilege Western constructions of health and risk

reinforcing the disconnection between the health system and Indigenous peoples (Peters & Petersen, 2019).

When whakapapa, mauri, mana, wairua and tapu are absent from health practice, Māori well-being is fragmented, and cultural identity becomes treated as an optional addition rather than the organising centre of hauora. Reinstating these foundations is not simply a cultural preference, it is essential for restoring balance, strengthening identity, and supporting healing pathways that align with Māori realities. Recentring Māori worldviews and values provides a more expansive, relational and culturally grounded understanding of well-being, and lays the groundwork for health approaches that genuinely serve whānau.

## Traumatic Brain Injury

Traumatic brain injury (TBI) is the leading cause of long-term disability and injury-related death worldwide, with data showing that more than 50 million people sustain a TBI every year (Maas et al., 2022; Zhong et al., 2025). However, it is widely accepted that brain injuries are significantly under-reported (Haarbauer-Krupa et al., 2021) due to a general lack of awareness regarding head injuries and the circumstances in which they occur including domestic violence and assaults (King et al., 2023; Thorburn et al., 2025). Globally, the most common causes of TBI are falls, motor vehicle accidents and assaults (Zhong et al., 2025). Listed as a Global Burden of Disease, incidence rates for TBI are highest amongst children and young male adults (Bentley et al., 2022; Maas et al., 2022). Concerningly, Australasia has one of the highest incidence rates of TBI at 479 per 100,000 people, coming second to Eastern Europe with 522.4/100,000 (Zhong et al., 2025).

There is an alarmingly disproportionate spread of TBI across Indigenous populations worldwide. In Canada the First Nations and Inuit peoples are 2.68 and 1.84 times more likely to be hospitalised due to a TBI compared to the non-Indigenous population (Salaheen et al., 2022). In Australia, Aboriginal people are 21 times more likely to be hospitalised as a result of a TBI compared to non-Aboriginal people (Lakhani et al., 2017). Consistent with these inequitable global trends, in

Aotearoa New Zealand, Māori are 1.5 times more likely to experience a TBI than non-Māori (Barker-Collo et al., 2019; Feigin et al., 2013).

### *Definition*

Traumatic brain injury occurs when there is evidence of brain pathology which is caused by the application of an external physical force and results in a change in brain function (Menon et al., 2010). The 'external force' may be caused by physical impact to the head, from a penetrating injury, from blast-related forces, or from biomechanical acceleration/deceleration force to the head such as the shaking of the head or body, (American Psychiatric Association, 2022; Menon et al., 2010).

Traumatic brain injury severity has three classifications: mild, moderate and severe. At present there is no universally accepted classification criteria (Iverson & Lange, 2011). However, following the TBI event, the severity is measured by the length of time of initial post-traumatic amnesia, the reduction or loss of consciousness and the Glasgow Coma Scale (GCS) (American Psychiatric Association, 2022; Northern Region Trauma Network, 2021). The GCS is an initial post-injury baseline instrument that reviews an individual's level of consciousness by assessing their verbal response, eye-opening response and motor response (Te Whatu Ora Health New Zealand, 2023).

Mild TBI is defined by a loss of consciousness for less than 30mins and/or post-traumatic amnesia lasting less than 24 hours, with GCS 13-15; moderate TBI has a loss of consciousness greater than 30 mins up to 24 hours and/or post traumatic amnesia lasting longer than 24 hours up to 7days, with GCS 9-12; and severe TBI has a loss of consciousness more than 24 hours and/or post traumatic amnesia lasting longer 7 days with GCS 3-8 (American Psychiatric Association, 2022; Iverson & Lange, 2011; Northern Region Trauma Network, 2021).

### *Pathophysiology*

Traumatic brain injury pathophysiology is complex as it is influenced by the initial impact of the TBI event (primary injury) and delayed damage to brain tissue (secondary injury) (Freire et al., 2023; Iverson & Lange, 2011). When the brain experiences injury trauma, the primary damage can cause contusions and oedema, diffuse axonal injury and neuronal stretching, and significant alterations to the brain's chemical composition (Freire et al., 2023; Iverson & Lange, 2011). A coup injury occurs when the brain is damaged at the site of impact, such as when the front of your head hits the steering wheel during a motor vehicle accident (Iverson & Lange, 2011). In contrast, a contrecoup injury occurs when the brain impacts the skull on the opposite side of the initial blow. For example, after the head hits the steering wheel, the brain is forced backwards inside the skull and causes damage to the occipital lobe, located at the back of the brain (Iverson & Lange, 2011). Both coup and contrecoup injuries may lead to cerebral contusions to the brain tissue and oedema (Iverson & Lange, 2011).

Traumatic axonal injuries are caused by rapid acceleration/deceleration mechanisms or severe rotational forces that cause the shearing of axons; these are the long nerve fibres responsible for transmitting signals across the brain (Iverson & Lange, 2011). Such injuries often result from sudden changes in head velocity, which may occur following a direct blow to the skull (Freire et al., 2023). When normal brain function is disrupted, a surge of neurotransmitters such as glutamate and calcium is triggered (Freire et al., 2023). This chemical imbalance causes neurons to fire uncontrollably, further disturbing the brain's unique chemical balance and leading to abnormal electrical signalling and increased demand on neuronal energy (Freire et al., 2023). At the same time, these chemical changes impair the brain's ability to metabolise oxygen, thus reducing the availability of glucose which is the brain's primary energy source (Freire et al., 2023).

Following a TBI, a person may experience a diverse arrangement of physical, cognitive and psychological symptoms (National Institute of Neurological Disorders and Stroke, 2024). Physical

symptoms include headaches, blurred vision, sensitivity to light, loss of balance or nausea; cognitive symptoms may include confusion, memory impairment and poor decision-making; and psychological symptoms may comprise of irritability, depression or anxiety (National Institute of Neurological Disorders and Stroke, 2024; Stochetti & Zanier, 2016). Recovery from TBI is variable and aside from the specific injury trauma, is dependent on many factors such as a person's age, any previous traumatic brain injuries, comorbidities and the effectiveness of neurorehabilitation interventions (American Psychiatric Association, 2022; Iverson et al., 2019).

Those diagnosed with a moderate to severe TBI and a previous history of TBI incidence are likely to have long-lasting health consequences, including long-term disability, an increased likelihood of developing other neurodegenerative conditions and lower life expectancy (Cornelius et al., 2013; Etemad et al., 2023; Stocchetti & Zanier, 2016). While an expanding body of research challenges the characterisation of mild TBI as a benign condition. Longitudinal studies indicate that post-injury cognitive, physical, and emotional difficulties may persist for extended periods, sometimes months or years, following mild TBI (Sheldrake et al., 2022; Theadom, 2016). For some, these enduring symptoms develop into persistent post-concussion symptoms. Current expert consensus defines persistent post-concussion symptoms as the presence of one or more symptoms that emerge within hours of the initial concussion, cannot be explained by a pre-existing condition, persist on a daily basis for at least three months post-injury, and interfere with at least one domain of everyday functioning (Lagacé-Legendre et al., 2021).

Contemporary aetiological models of persistent post-concussion syndrome adopt a biopsychosocial framework, recognising that symptoms emerge through the interaction of pre-injury vulnerabilities, acute pathophysiological effects, and post-injury psychological and social factors (Faulkner & Snell, 2023). Over time, elements such as emotional responses to injury, coping strategies, mental health, and cumulative psychosocial stressors increasingly shape symptom persistence (Faulkner & Snell, 2023), with evidence demonstrating that mild TBI can exacerbate pre-

existing mental health conditions (Lamontagne et al., 2022) and may compromise TBI rehabilitation (Sheldrake et al., 2022).

### *Traumatic Brain Injury in Aotearoa New Zealand*

In Aotearoa New Zealand, an estimated 35,000 people receive a TBI every year (Accident Compensation Corporation, 2023; Neurological Foundation, 2019). To put that into context, today 95 people will suffer from a TBI. As mentioned above, there is a disproportionate spread of TBI incidence with Māori 1.5 times more likely to experience a TBI than non-Māori (Barker-Collo et al., 2019; Feigin et al., 2013). Moreover, children under the age of 5 years old have the highest incidence rate, followed by those aged 15-35 years of age (Barker-Collo et al., 2019). Gender disparities are also evident with males twice as likely to sustain a mild TBI and three times more likely to sustain a moderate TBI compared to females (Barker-Collo et al., 2019). Furthermore, TBI risk in rural areas is 2.5 times greater than urban areas (Feigin et al., 2013).

Around 70–90% of all TBIs in Aotearoa are classified as mild with the remainder classified as either moderate or severe (Barker-Collo et al., 2019). A longitudinal population-based study in Aotearoa New Zealand found that nearly 50% of mild TBI patients continued to experience symptoms one-year post injury (Theadom et al., 2016). Moreover, this study revealed Māori and Pacific peoples, women, and those with comorbidities experienced poorer outcomes at the 12-month mark.

Consistent with international data, the most common cause of TBI in Aotearoa New Zealand are from falls (37.7%), being hit by an object (21%), motor vehicle accidents (20.2%) and interpersonal violence (16.7%) (Barker-Collo et al., 2019). However, TBI incidence in Aotearoa New Zealand is likely to be much higher. Recent studies have highlighted that during interpersonal violence nearly 60% of women report being punched in the head by their abusers (Thorburn et al., 2025), with 30 - 40% of interpersonal violence survivors reporting a loss of consciousness (King et al., 2023; Thorburn et al., 2025). Of particular concern is that 25% of interpersonal violence survivors are

prevented from accessing medical services by their abusers (Thorburn et al., 2025), and of those who are hospitalised fewer than 1% receive a formal TBI assessment or referral to a post-brain injury specialist (King et al., 2023).

Sport-related TBIs present further challenges. While general practitioners report confidence in recognising mild TBI, many remain uncertain about referral pathways to specialist concussion services (Stuart et al., 2022). According to Accident Compensation Corporation (ACC) data, only one-third of people with a mild TBI claim receive a follow-up from a health professional after their initial appointment (Bastos Gottroy et al., 2022). As such, researchers have raised concern over the disparity between hospital presentation of head injury, the lack of TBI assessment by health care providers and poor referral to neurorehabilitation services (Bastos Gottroy et al., 2022; King et al., 2023; Stuart et al., 2022). Timely access to TBI advice and neurorehabilitation services is crucial for treatment and recovery (Forrest et al., 2018).

The societal and economic cost of TBI in Aotearoa New Zealand is significant. A study by Te Ao et al. (2014) measuring the economic cost of TBI in 2010 found that the total lifetime cost of TBI survivors was NZ$218 million and this cost was expected to increase to NZ$263.9 million by 2020. Five years later in 2015, ACC (2017) reported their annual TBI rehabilitation cost was over $83.5 million.

Equity concerns are also evident in access to specialist care. A recent report released by Te Tahū Hauora Health Quality & Safety Commission and National Trauma Network (2025), revealed that only 44% of Māori who receive a serious TBI receive specialist neurorehabilitation care in Aotearoa New Zealand. This national data is in line with global patterns which confirms that despite Indigenous populations being disproportionately affected by TBI, they are least likely to receive specialist neurorehabilitation care (Lakhani et al., 2017; Salaheen et al., 2022).

There remains a paucity of research on TBI within Māori communities, particularly research that examines the underlying reasons for increased vulnerability. However, existing evidence

indicates that Māori are disproportionately exposed to multiple, compounding risk factors for TBI across the life course. Socioeconomic status playing a critical role in shaping TBI incidence and outcomes, with local analyses revealing concerning patterns that reflect entrenched structural inequities (Chauhan, 2023; Zeiler & Zeiler, 2017). Young Māori men are more likely to experience educational inequities, and lower educational attainment is associated with reduced income opportunities and increased engagement in unsafe driving, gang involvement, and substance use (Burkett, 2014; Clark et al., 2018). Māori are also over-represented in high-risk industries such as forestry, transport, and construction, and are more likely to experience interpersonal violence (Bentley et al., 2022; Chauhan, 2023; Zeiler & Zeiler, 2017). These factors collectively contribute to the disproportionate burden of TBI borne by Māori.

### *Traumatic Brain Injury and Psychology*

Psychology plays an important role in TBI neurorehabilitation. A neuropsychologist specialises in the unique relationship between brain pathology and human behaviour (Halalmeh et al., 2024). Neuropsychologists provide assessment, diagnosis, treatment plan formulation and neurorehabilitation to a person with a TBI (Halalmeh et al., 2024). Following a TBI a person may find that their cognitive and behavioural symptoms are persisting beyond the expected recovery timeline, or they may have been identified as having an increased risk of developing cognitive and behavioural impairments due to their age, comorbidities, mental health history or TBI history (Halalmeh et al., 2024; Karr et al., 2014; Lamontagne et al., 2022). As such, neuropsychological assessments are essential for identifying any specific cognitive or behavioural impairments and addressing the increased risk to their mental health (Halalmeh et al., 2024).

In recent years, advancement in understanding the neuropsychiatric sequelae of TBI has made significant progress, as evidenced by the inclusion of ‘Traumatic Brain Injury’ for the first time in the American Psychiatric Association’s 2013 release of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (Wortzel & Arciniegas, 2014). Classified as Major or Mild Neurocognitive

Disorder (NCD) due to Traumatic Brain Injury, the DSM-5 provides criteria for the diagnosis of and ascribes the neurocognitive symptomology for major or mild NCD due to TBI (American Psychiatric Association, 2022). The DSM-5 diagnosis requires the development of neurocognitive symptoms to occur immediately, or after recovery from the loss of consciousness, due to the TBI event and continue to persist past the period of acute injury. The inclusion of this specific criterion clarifies the clinical link of neurocognitive symptoms to the occurrence of the TBI (Wortzel & Arciniegas, 2014).

The severity of cognitive impairment and the effect this has on an individual's function of daily life is the key difference for differentiating diagnosis between major or mild NCD due to TBI. Cognitive impairment severity is identified and measured with clinical assessment and neuropsychological testing (Wortzel & Arciniegas, 2014). The selection of neuropsychological tests and assessment should be individualised and depend on the specific referral question, the person's age, clinical presentation and their cultural background (Dudley et al., 2014; Halalmeh et al., 2024).

A comprehensive review by Howlett et al. (2022) examined the epidemiology of mental health difficulties following TBI in military, sports and civilian populations. While the authors noted an increase in research attention to this area, they highlighted that existing studies vary considerably in design and methodology, limiting the overall robustness of findings. Despite these methodological inconsistencies, substantial evidence indicates that individuals with TBI regardless of injury severity face an increased risk of developing affective symptoms and, in many cases, clinically significant affective disorders such as major depressive disorder, anxiety, and post-traumatic stress disorder (PTSD). Similarly, Alway et al. (2016), found that among 161 Australian participants with moderate to severe TBI, 62% met the diagnostic criteria for at least one DSM-IV Axis I disorder within the first-year post-injury. Axis I disorders refer to major clinical mental health and substance use conditions, including depression, schizophrenia, and anxiety disorders, which are the central focus of diagnosis and treatment (Koponen et al., 2002). These conditions are distinguished from personality and developmental conditions by their episodic or potentially chronic-based nature (Koponen et al.,

2002). In New Zealand, Gibson and Purdy (2015) also found that 57.7% of patients in TBI rehabilitation services experienced significant psychological symptoms such as major depression disorder, generalized anxiety disorder, schizophrenia and PTSD, underscoring the high prevalence of mental health challenges in this population.

### *From Indigenous Invisibility to Indigenous Inclusivity*

Providing support and clear communication to whānau are critical elements of psychological neurorehabilitation. Equally important is the role of the psychologist in instilling hope, validating lived experience, and helping individuals and whānau to make sense of the psychological and physiological effects of TBI (Elder, 2013a; Brenner et al., 2018). For Māori, the needs of both the injured person and their whānau are shaped by the unique social and cultural contexts that influence how injury, recovery, and healing are understood (Elder et al., 2024). Recognising and responding to these cultural dimensions are therefore essential to effective and ethical practice. However, research shows there is a persistent absence of Indigenous worldviews in the understanding and treatment of TBI (Fitts et al., 2019; Harding et al., 2022; Salaheen et al., 2022) as standard assessment tools are grounded in Euro-Western paradigms that often render Indigenous cultural identity 'invisible', leading to culturally inappropriate or ineffective rehabilitation practices of care (Dudley, 2016; Elder, 2013a; Wilson et al., 2022). Māori whānau have reported that the lack of cultural responsiveness within psychological and neurorehabilitation services creates barriers to accessing care, engagement, and achieving meaningful recovery outcomes (Dudley, 2016; Elder, 2013a; Wilson et al., 2022).

Cultural invisibility is perpetuated by the use of neuropsychological assessments that have been developed and validated within Euro-Western contexts but not within Māori populations (Elder, 2012; 2013a; 2013b; Elder et al., 2024). While this gap is beginning to be addressed in areas such as dementia care (Dudley, 2020; Te Maringi Mai o Hawaiiki et al., 2024), the need for culturally informed neuropsychological tools remains significant. Scholars in cross-cultural neuropsychology have cautioned that simply adapting Western assessment tools for use with Indigenous populations

introduces substantial limitations, potentially affecting every stage of the clinical process - from information gathering and interviewing; to testing, interpretation and formulation (Dudley et al., 2019; Ogden, 2001). For Māori, comprehensive assessment often requires time, relational engagement, and the inclusion of cultural protocol, which are all elements that may conflict with Western-informed clinical priorities of efficiency and brevity (Elder et al., 2024). Research by Dr Hinemoa Elder (2013a; 2013b; 2024) emphasises that allowing time and space for cultural processes not only honours tikanga but also enhances the validity and accuracy of assessments, leading to more appropriate and effective rehabilitation plans.

In response to these systemic gaps, Elder (2013a; 2013b; 2017; 2024) has developed several kaupapa Māori frameworks to support Māori affected by TBI. These include Wairua Theory of Mokopuna TBI (discussed in Chapter Four); Te Waka Oranga, a framework designed to offer more culturally responsive supports for Māori; and Te Waka Kuaka, a bilingual cultural needs and assessment tool (Elder, 2017). Te Waka Oranga extends Māori understandings of health using the metaphor of a waka (canoe). From a bird's-eye view, the waka represents the collaborative and dynamic partnership required between whānau and clinicians when supporting Māori with TBI (Elder, 2017). Each person paddling in rhythm, guided by a common direction, ensuring the journey is both safe and meaningful. Seven guiding pou structure this voyage; wairua as the starting point of healing; recognising whānau as the central source of strength; acknowledging that clinical spaces may feel culturally unfamiliar or unsafe; valuing mātauranga Māori for its nuanced insights into mokopuna TBI; upholding Māori identity as inherently relational; affirming the importance of place in grounding wellbeing; and understanding that TBI-related kōrero can surface historical or intergenerational trauma (Elder, 2017). Inspired by the kuaka (godwit), a bird renowned for its long-distance navigation, Te Waka Kuaka is a model that orients practitioners toward four key priorities: wā (timing, readiness, and the unfolding of healing), wāhi (the influence of place and environment), tangata (relationships and collective responsibility), and wairua practices (strengthening of spiritual wellbeing) (Elder et al., 2024).

The development of these frameworks, 'by Māori, for Māori' is critical for ensuring cultural validity and embedding Māori values, realities and ways of understanding well-being within neurorehabilitation practice. At present, it is unclear how widely Te Waka Kuaka and Te Waka Oranga are being implemented in TBI care across Aotearoa New Zealand, as existing information does not clearly outline the extent of their use or their impact. Exploring this in depth was beyond the scope of this current thesis. Even so, their development represents a pivotal move from Indigenous invisibility towards Indigenous inclusivity, signalling the beginnings of a much-needed transformation in how TBI care is conceptualised, delivered, and evaluated in Aotearoa.

## Chapter Summary

This chapter has outlined the broader context in which this thesis is situated. It began by first acknowledging mātauranga Māori as an Indigenous knowledge system grounded in relationality and interconnectedness. Mātauranga Māori is dynamic and ever changing, its transmission through traditional practices reflects a holistic orientation in which knowledge, people, and the natural world are interwoven. Within this worldview, Māori conceptualisations of health emphasise collective wellbeing and the reciprocal relationships shared with whenua, ngā atua, and whānau. Values such as whakapapa, mauri, mana, wairua, tapu, and noa act as essential foundations that guide balance, identity, and restoration. These perspectives stand in contrast to Western biomedical models that privilege disease pathology and individual-focused treatment. Recentring Māori worldviews provides a more expansive and relational framing of health, which in turn supports the development of Māori health models that articulate culturally grounded pathways to wellbeing.

The chapter then shifted to outline key understandings of TBI, noting its status as a leading cause of long-term disability worldwide and its disproportionate impact on Indigenous populations, including Māori. Definitions, global epidemiology, and the pathophysiology of TBI were introduced, followed by an overview of psychology's essential role in neurorehabilitation. Neuropsychologists contribute specialised expertise in the assessment, diagnosis, formulation, and treatment of

individuals with TBI, with recent advancements highlighting the increasing recognition of neuropsychiatric outcomes within diagnostic frameworks such as the DSM-5.

Despite this progress, the chapter underscored an absence of Indigenous worldviews in the understanding and treatment of TBI. Māori whānau have repeatedly reported that psychological and neurorehabilitation services often lack cultural responsiveness, creating barriers to access, engagement, and meaningful recovery. This cultural invisibility is further reinforced by the widespread use of neuropsychological assessment tools that have been validated primarily in Euro-Western contexts, limiting their relevance and accuracy for Māori populations. As a result, inequities in TBI outcomes remain entrenched, reflecting the ongoing legacy of colonisation and the systemic marginalisation of Māori ways of knowing within contemporary health systems.

Together, these sections highlight the need for approaches that honour mātauranga Māori, recognise the cultural and structural determinants shaping TBI experiences, and promote more inclusive psychological practices that uphold the wellbeing of Māori and their whānau. The next chapter will review the methodology and methods used in this thesis.

# Chapter Three: Methodology

**Mā te whakarongo, ka mohio**

**Through listening comes knowledge**

## Introduction

This research is grounded in Kaupapa Māori methodology, providing both a philosophical foundation and ethical compass to guide every stage of the study. As this thesis explores how mātauranga Māori understandings of injury trauma, and brain health are reflected (or not) in contemporary TBI rehabilitation practices, Kaupapa Māori Research offered a culturally congruent foundation from which to examine these questions.

I begin this chapter by describing Kaupapa Māori Theory and the Kaupapa Māori Research principles that underpin this thesis. I then explain Pūrākau and Ara Wairua, the two methodologies I have woven together to guide this study. This combined framework ensures that the design, conduct, and interpretation of the study remain accountable to Māori values, communities, and aspirations for pae ora (healthy futures).

Following this, I describe the research design and participant selection, including how Māori health practitioners and brain health experts were engaged to share their kōrero. I then detail the methods of data collection and analysis which include archival research and in-depth semi-structured kōrero.

## Kaupapa Māori Theory and Kaupapa Māori Research

In Aotearoa New Zealand, research has not escaped the suppressive effects of colonisation. The imposition of imperialism was often facilitated by colonial researchers, who perpetuated false assumptions about Māori and enacted dehumanising research practices (Smith, 2021). Māori were subjected to approaches that misrepresented their knowledges, practices, and values, while being

denied the power to challenge or correct such narratives (Mahuika, 2008). Observations and interpretations about Māori were filtered through a predetermined, Eurocentric lens that positioned European knowledge systems and Christian beliefs as superior, relegating Māori to a position of inferiority (Mahuika, 2008). These practices simultaneously disempowered and marginalised Māori while reinforcing ideologies of European supremacy (Smith, 2021). Such histories have understandably fostered deep distrust of Western-informed research approaches, particularly when conducted *on* Māori rather than *with* or *by* Māori. As research continued in this manner, Māori scholars increasingly questioned the appropriateness of Western-centric philosophies and methods, especially those designed, analysed, and reported entirely from a non-Māori perspective (Smith, 2003; Smith, 2021; Walker et al., 2006). They challenged the 'production of knowledge' that had, in many cases, suppressed or even criminalised Māori views and knowledges (Smith, 2021; Walker, 2004). Furthermore, control over data dissemination and interpretation remained in the hands of the dominant culture, shaping narratives and policies that further entrenched colonial power and the marginalisation of Māori (Mahuika, 2008).

In response, Kaupapa Māori Theory emerged from emancipatory roots, initially within the education sector as a platform for reclaiming Māori autonomy and restoring language, belief systems, and social structures (Smith, 2003). Kaupapa Māori Theory rejects the imperial ideologies and assimilatory practices inherited from European settlement (Mane, 2009; Smith, 2003). Instead, it is grounded in Te Ao Māori, tikanga Māori, and mātauranga Māori (Mane, 2009; Smith, 2003). Over time, Māori academics extended these principles beyond education, positioning Kaupapa Māori Theory as a culturally grounded and politically relevant approach to research (Eketone, 2008). From these developments, Kaupapa Māori Research emerged and transformed research from a space of colonial control to one that privileges Māori self-determination (Walker et al., 2006) and validates Māori knowledges and ways of being (Mane, 2009). Kaupapa Māori Research is anchored in a 'by Māori, for Māori, with Māori' paradigm that legitimises the diverse realities and worldviews of Māori (Smith, 2021). Crucially, it rejects research *on* Māori, disrupting entrenched power imbalances and

reconfiguring the research space as one that is culturally determined. Furthermore, Kaupapa Māori Research unsettles hegemonic ways of thinking and fosters knowledge creation that empowers Māori and supports aspirational pathways (Smith, 2003).

As a research framework, Kaupapa Māori Research is underpinned by principles that provide conceptual, theoretical, and methodological guidance (Walker et al., 2006), as well as values that ensure culturally safe engagement that privilege Māori ways of being and doing (Mahuika, 2008; Rua et al., 2021; Walker et al., 2006). While these principles have evolved, several remain consistent:

- Tino Rangatiratanga – Self-determination and autonomy over cultural well-being and outcomes (Smith, 2003), providing Māori with authority and decision-making power within the research process.
- Taonga Tuku Iho – Validation of cultural identity and aspirations (Smith, 2003), affirming Māori epistemologies and ontologies, centring the revitalisation of traditions, mātauranga, and te reo Māori.
- Social Justice – Addressing power imbalances and enhancing Māori well-being (Walker et al., 2006), contributing to the decolonisation of research methodologies and enabling Indigenous-centred aspirations.
- Whakawhanaungatanga – Prioritising and nurturing relationships (Walker et al., 2006), recognising relational accountability as integral to ethical research engagement.
- Whānau – Emphasising the inclusivity of extended family and community (Smith, 2003), embedding collective responsibility, decision-making, and support structures within the research process.
- Kia Tupato – Exercising caution and ensuring cultural safety (Cram et al., 2001), requiring researchers to remain mindful of their positionality and potential risks for participants, particularly when addressing sensitive topics such as health, historical trauma, or spirituality.

Unlike many Western research methodologies, which often prescribe rigid protocols, Kaupapa Māori Research is intentionally flexible, enabling participant self-determination and privileging culturally informed practices. There is no single, standardised formula in Kaupapa Māori Research, instead, tikanga is intrinsically woven into the framework, providing the ethical foundations for research (Smith, 2021). Tikanga offers both the rationale and the method for doing things in ways that are correct from a Māori perspective (Marsden, 2003). As Smith (2021) affirms, Kaupapa Māori methodology 'is ours', an unapologetically Māori approach to making meaning and creating knowledge. Moreover, Kaupapa Māori Research is transformative, it enables data to be analysed, interpreted, and theorised by Māori through a distinctly mātauranga Māori lens (Smith, 2021). This self-determining and transformative element is particularly relevant to the present study, which seeks to explore mātauranga Māori understandings of injury trauma, and brain health from the perspectives of Māori health professionals, many of whom work within environments that are systemically Western led.

For some, Kaupapa Māori Research can seem conceptually complex, as it allows the researcher to exercise tino rangatiratanga when applying theoretical, conceptual, and methodological considerations that make sense from within a Māori worldview. While there is no prescribed step-by-step process, Smith (2021) emphasises the importance of reflexivity throughout the research journey. In Chapter One: Introduction I share who I am and how I position myself as the researcher. I now advance this commitment to research transparency and Kaupapa Māori praxis by sharing my research rationale and my own conceptualisation of Kaupapa Māori Research.

## Research Rationale

At the heart of this study is the exploration of mātauranga Māori and ancestral knowledge about a topic that is considered incredibly sacred by Māori. Kaupapa Māori Research is an approach embedded in principles that uphold the knowledges, sovereignty and ethical philosophies of Te Ao Māori. Accordingly, I determined that a Kaupapa Māori research framework was an appropriate

approach to conduct research that; centres Indigenous knowledges, reclaims Indigenous approaches, and honours and protects the knowledges being shared, the mana of the participants, ngā tūpuna and myself as the researcher. Table 1 illustrates how the principles of Kaupapa Māori Research underpin the practices within this research.

**Table 1**

*Kaupapa Māori Principles to Research Practice*

| Principle | How it was enacted in this study |
|---|---|
| **Tino Rangatiratanga** | Participants chose interview location/time; transcripts returned for checking/editing; data sovereignty upheld through Māori-led analysis and decisions. |
| **Taonga Tuku Iho** | Use of Pūrākau and Ara Wairua methodologies; keeping kupu Māori (Māori words) intact in coding; drawing on archival Māori sources alongside kōrero. |
| **Whakawhanaungatanga** | Recruitment via trusted networks; kanohi-ki-te-kanohi kōrero (face-to-face); whakawhanaungatanga before formal consent. |
| **Whānau** | Acknowledgement of whānau and tūpuna guidance; dissemination back to communities. |
| **Kia Tūpato** | Karakia and wairua; iterative consent; mindful handling of trauma-related kōrero. |
| **Social Justice** | Focus on TBI recovery inequities; centring Indigenous healing approaches; dissemination aimed at influencing service provision. |

## A Bricolage of Methodology

Esteemed Māori health researchers Tā Mason Durie (1997) and Mātua Angus MacFarlane et al. (2011, 2018) advocate for methodological innovation at the research interface where Indigenous and Western knowledges and theories can be harnessed side-by-side, to create new knowledge,

while maintaining Māori data sovereignty. As such, I have positioned the research at this interface by grounding it in Kaupapa Māori methodological approaches and adopting the stance of an 'Indigenous bricoleur'. Lee (2009) explains, as an Indigenous bricoleur the researcher reflexively uses and weaves together various methods and methodologies to elicit the appropriate research tools to fit the research context. In this way, the researcher actively seeks the most appropriate way to capture the often-complex realities and perspectives of the participants, determine engagement with current socio-political contexts, and to include the lived experiences of the Indigenous researcher who is actively decolonising and reclaiming their research setting (Lee, 2009). As an Indigenous bricoleur, I have applied pūrākau as a method of narrative inquiry within both the archival research and participant kōrero, as this approach validates and centres Māori perspectives and experiences (Lee, 2009). In addition, I have drawn on Ara Wairua to guide the data collection and data analysis (Fox, 2024). In the next section, I outline each of these approaches and how they have been applied within this study.

### *Pūrākau as a methodology*

Pūrākau, as described by Marsden (2003) is a form of literature that carries knowledge through story. Similarly, Pere (1994) shares this understanding, describing her active participation in sharing pūrākau as a vital means of transmitting and safeguarding mātauranga across generations. Within Indigenous cultures, stories function as rich repositories of knowledge, with the act of storytelling serving as a process of teaching, understanding and meaning-making (Ware et al., 2018). Correspondingly, pūrākau is both a methodology and a practice by Māori to preserve, protect and evolve their understandings of the past, present and future. Importantly, pūrākau are living narratives that are adaptable to the audience and the context by which they are shared, ensuring ongoing relevance and vitality. For example, Māori narrators purposefully adapted tribal history and whānau pūrākau in a way that retold their stories about occupation and land rights in the Native Land Courts that suited the judicial court environment and enabled understanding by Pākehā (Lee,

2009). This illustrates how pūrākau operates as a flexible yet robust methodological form, it can be reshaped to meet contextual demands without compromising its ontological grounding or cultural integrity. Within research, pūrākau as Lee (2009) explains is a culturally responsive Kaupapa Māori form of narrative inquiry that is embedded with epistemological constructs and the unique worldviews of Māori. Critically, by using pūrākau the challenge of forcing Māori data into a Western research praxis is removed (Lee, 2009).

Within this study, the methodological bricolage of pūrākau has been applied in multiple ways. Primarily, pūrākau has served as a method of Narrative Inquiry to collect and analyse narratives relating to trauma, the brain, and brain health from archival resources and participant kōrero. Traditionally, Narrative Inquiry, as a Western methodological approach, recognises and legitimises the storyteller, seeking to elicit an understanding of their realities, experiences, actions, and practices (Pino Gavidia & Adu, 2022). Collaboration within Narrative Inquiry is established through the relationship between the storyteller and the story listener, working retrospectively to construct meaning (Pino Gavidia & Adu, 2022). The characteristics of Narrative Inquiry have resonated with Māori researchers in their pursuit of Indigenously aligned research paradigms, underpinned by values and ethical principles consistent with those of Te Ao Māori (Ware et al., 2018). For example, Narrative Inquiry recommends the establishment of a meaningful connection between participants and researchers, similar to the Kaupapa Māori concept of whakawhanaungatanga. The stories revealed through archival research and participant kōrero provide deep insights into the epistemological constructs and whakapapa kōrero unique to each individual. Guided by pūrākau inquiry I approach this work as both an expression of tikanga and a responsibility to honour each story with accuracy in a mana-enhancing way.

Secondly, pūrākau is utilised as an exchange of knowledge, a highly valued act of reciprocity within Te Ao Māori (Inia, 2021). To extract data authentically and assist the storyteller with ‘unpacking’ their pūrākau it is pertinent that I share some of my own pūrākau, thus placing me within

the pūrākau of this research as an 'insider' in collaborative partnership with the participant. In this way Moeke-Maxwell et al. (2013) describe the concept and practice of manaakitanga (kindness, hospitality) in research, as similar to draping a protective korowai (cloak) around the shoulders of both the researcher and the participant. Under the protection of the korowai, the researcher can navigate ethical considerations and maintain the integrity of cultural safety of both themselves and the participants as they gather, share and collate the pūrākau (Moeke-Maxwell et al., 2013). This is particularly apt when the research topic is considered tapu such as end of life, or in the case of this study, trauma and the head.

Thirdly, every story and narrative within this research is considered a pūrākau, intimately layered with a richness that comes from one's whakapapa, tribal, historical and social contexts. To examine the different layers both within and between the pūrākau, and to weave the narratives from this data into themes, involves the interpretation and intuition of myself as the researcher. As such, my own lived experiences and diverse realities also become woven into the whakapapa of each pūrākau. From here, as suggested by Lee (2009) I attempt to reclaim pūrākau as my ancestors have done before me, not in a Native Land Court or before the Waitangi Tribunal, but in the form of a thesis that contributes to the decolonisation of research and articulation of Indigenous knowledge.

### *Ara Wairua*

Conducting research, analysing and writing about concepts that are deeply respected within Te Ao Māori requires an approach grounded in sensitivity to meaning-making and Indigenous ways of knowing. From the outset of this study, I was clear that every aspect of this research should be guided by wairua. As described in Chapter Two, wairua is a multifaceted concept whose meaning is shaped by the unique interpretations of whānau, hapū and iwi (Haenga-O'Brien, 2025; Valentine et al., 2017). This diversity reflects the richness and complexity of Māori spiritual perspectives (Ahuriri-Driscoll, 2014; Valentine et al., 2017). Initially, I considered developing my own wairua methodology. However, I soon realised that creating such a framework while remaining within the scope of a

Master's thesis would be a significant undertaking. As happened often throughout this research, intuitive guidance emerged when it was most needed. On the second day of writing my methodology chapter, a tohu (sign) appeared on my laptop screen, leading directly to the discovery of Ara Wairua (Fox, 2024).

Ara Wairua as described by Fox (2024) is a tool of intuitive inquiry grounded in pūrākau methodology and used to capture the richness and depth of one's experiences. It guides researchers through a cyclical process of thinking, being, and doing across the research journey. This process fosters reflexivity and reflection, both of which are essential when working alongside Indigenous communities. There are four mātauranga Māori informed stages of the Ara Wairua data analysis tool:

1. Kare-pū-toro involves the analysis of manifested audio and visual data to gain an intuitive sense of what the participants are feeling in terms of their wairua. Through the practice of observation, the researcher remains in a state of neutrality, similar to a traditional healer, allowing them to focus on subtle signs of the participants such as posture, facial expressions, and moments of silence during the kōrero process.
2. Whatumanawa is the application of intuitive thinking to analyse the raw data and key messages within each pūrākau, beginning the development of codes and themes utilising sense-making and meaning-making.
3. Kare-ā-roto involves progressing to a deeper analysis of sub-themes and themes using the hinengaro to expand upon and theorise the context of the data.
4. Tihei mauri ora is the integration of the data with the literature to present an authentic description and interpretation of the research findings.

Engaging Ara Wairua affirms the legitimacy of Māori spiritual knowledge and weaves elements of traditional healing into this research (Fox, 2024). In doing so, it strengthens Indigenous psychologies and validates Indigenous methodologies (Fox, 2024). Ara Wairua serves as a vital tool for navigating both the physical and spiritual realms; without it, forging meaningful

connections between the kaupapa (topic, purpose) and the pūrākau would be challenging. By incorporating wairua in this culturally nuanced way, this research is both ethically and spiritually responsive to the needs of the participants and to my needs as the researcher, ensuring that this research is conducted with integrity and respect.

## Data Collection

### *Archival Research*

Archival research is a methodological approach that involves the systematic examination of existing records and documents to address a research question (Lucas, 2017). Traditionally, archival research has focused on historical sources such as preserved documents, data sets, and other materials that provide insight into past events, trends, and phenomena, thereby contributing to an understanding of the historical context of a topic (Ventresca & Mohr, 2002). In contemporary scholarship, archival methods are also employed to investigate current issues, often in conjunction with other strategies such as fieldwork or surveys. This includes the analysis of modern and digital sources, including online databases, email correspondence, and web-based content, to explore organisations, individuals, and events (Ventresca & Mohr, 2002). Importantly, archival research demands a slow and deliberative process for data collection (Lucas, 2017). Therefore, it is not only a process of patient and attentive discovery, but one that also requires meaningful engagement. In this way, archival research reminds me of the times I have sat at the feet of my kaumātua, listening carefully with both my ears and my wairua to their pūrākau, their whakaaro and their whakapapa kōrero.

I utilised trusted archival resources to gain deeper insight into the various conceptualisations of mātauranga Māori relating to injury trauma and the brain. This process included peer-reviewed journals, books, conference proceedings, and reports. The archival research process followed a structured sequence of steps informed by Kaupapa Māori Research principles. First, I conducted keyword searches within the Massey University Library database using terms such as *injury trauma,*

*trauma, brain, brain health, roro,* and *upoko* to identify relevant scientific literature. Additional searches on Google Scholar using the terms *mātauranga Māori* and *kaupapa tūpuna perspective* helped locate Indigenous theoretical and conceptual scholarship. Then, I examined archival materials held at the National Library and the New Zealand Electronic Text Centre to access historical manuscripts, traditional narratives, and early Māori writings. Third, I incorporated hard-copy resources drawn from Kawerau Library, Whangārei Library, and personal whānau collections, recognising that mātauranga Māori is often preserved in non-digital repositories. At each stage, I engaged with the materials through a Kaupapa Māori lens, prioritising culturally grounded interpretation, respect for mātauranga Māori, and the inclusion of broad voices within Te Ao Māori. This involved intentionally seeking sources that represent diverse domains of mātauranga, including whakairo, hauora, taiao, rongoā, and taonga tuku iho, to ensure the archival material reflected the depth and breadth of Māori epistemologies relevant to understanding TBI. Table 2 outlines archival resources used in this research.

**Table 2**

*Archival Research Resources for Head Injury Trauma and the Brain*

| **Author and Published Date** | **Resource Title** |
|---|---|
| Te Rangi Hiroa (1987) | The Coming of the Māori |
| Māori Marsden (2003) | The Woven Universe |
| Taiarahia Melbourne (2009) | Te Whare-oohia: Traditional Maaori Education for a Contemporary World |
| Hoani Te Whatahoro (2011) | The Lore of the Whare-wānanga: Or Teachings of the Maori College on Religion, Cosmogony, and History (Vol. 3). |
| Hinemoa Elder (2012; 2013) | Tuku Iho, he tapu te ūpoko: From our ancestors, the head is sacred: Indigenous theory building and therapeutic framework development for Māori children and adolescents with traumatic brain injury (Doctoral dissertation)<br><br>Te Waka Oranga: An Indigenous Intervention for Working with Māori Children and Adolescents with Traumatic Brain Injury |

| | |
|---|---|
| Ngarino Ellis (2016) | Te Ao Hurihuri o ngā Taonga Tuku Iho: The Evolving Worlds of our Ancestral Treasures |
| Sullivan & Hakopa (2017) | Mahunga, Pakahiwi, Puku, Hope, Waewae: The Importance of the Human Body to Indigenous Māori (internship report) |
| Takirirangi Smith (2019) | He Ara Uru Ora: Traditional Māori Understandings of Trauma and Wellbeing |
| Wiremu NiaNia (2019) | Huarahi Oranga: An Introduction to Māori Concepts Informing a Māori Healing and Psychiatry Partnership |
| Benjamin Hanara (2020) | Tangaroa Wai Noa, Tangaroa Wai Tapu, Tangaroa Wairoro (Master's thesis) |
| Melanie Riwai-Couch (2021) | Poipoia ngā ākonga kanorau ā-roro |
| McLachlan et al. (2023) | Te Whare o Oro: A Mātauranga Māori Framework for Understanding the Roro |
| Hirini Moko Mead (2025) | Mātauranga Māori |

### *Recruitment of Participants*

As this study seeks to understand mātauranga Māori perspectives of injury trauma and brain health within the TBI context, it was important to connect with Māori health practitioners and brain health experts who carry cultural knowledge and who have meaningful experience supporting whānau living with TBI.

Following approval from the Massey University Ethics Committee Ohu Matatika 2 (OM2 25/26) (see Appendix A for details) participant recruitment commenced with existing professional connections within the Allied Health sector across Aotearoa. These relationships included physiotherapists, kairongoā (traditional Māori healers), massage and soft tissue therapists, and were then extended to whānau, hapū, and iwi networks. Given the pre-existing meaningful relationships with these contacts, engagement was undertaken in a personal manner, beginning with the sharing of a memory or personal anecdote, followed by an explanation of the purpose of the contact and a brief outline of the research aims. Following the initial processes of whakawhanaungatanga, and once it was

confirmed that my contacts were willing to share my request for participants, they were provided with the Participant Information Sheet (see Appendix B for details). This facilitated research transparency and enabled prospective participants to make an informed decision regarding their involvement in the study. The information sheet outlined the research aim, methodological approach, procedures for data collection and storage, the nature of participant involvement, and the contact details for myself, the research supervisor, and the Massey University Ethics Committee Chairperson. To elicit a broad understanding and insight into neurorehabilitation service provision there was no exclusion criteria for geographical location or whether someone worked in the private or public sector.

Once a participant was identified, I approached them using the engagement method recommended by my initial contact. This varied between participants and included email, text message, and social network messaging. After reiterating the details of the research and my request to kōrero with them, I invited each participant to meet at a time and location of their choosing. All kōrero took place kanohi-ki-te-kanohi, through a mix of in-person and online meetings, beginning with whakawhanaungatanga before reconfirming the participant's willingness to proceed. At this stage, the Informed Consent form was signed or verbally consented to (see Appendix C for details). In one instance, I was unable to provide the Participant Information Sheet in advance, as the meeting had initially been arranged as a social engagement. However, through the guidance of our tūpuna, the day prior to our meeting, it became apparent that this individual would participate in the study. Accordingly, the Participant Information Sheet was shared with them on the day, and prior to beginning our kōrero I ensured they had adequate time to reconsider their participation.

The research participants in this study were five experienced Māori health practitioners who currently work in various health and community settings. Their professions were Occupational Therapist, Kairongoā, Social Worker and Clinical Psychologists, and they were based in Te Tai Tokerau, Waikato, and the Bay of Plenty. Each of the participants have been assigned a pseudonym, the name of a native bird. As a I drove to meet with the first participant a beautiful, and rather large Tūī swooped

in front of me. I perceived this as an affirming tohu, that the upcoming kōrero would be watched over and gently guided by our tūpuna. Again, as I was driving to meet with my second participant a striking Kererū in full flight made his presence known. These tohu gifted the five pseudonyms: Tūī, Kererū, Kiwi, Korimako & Ruru.

### *Pūrākau Inquiry and Kōrero*

In qualitative health research, semi-structured interviews are frequently employed for their capacity to combine flexibility and spontaneity with a coherent structure for dialogue (DeJonckheere & Vaughan, 2019). This method utilises open-ended and follow-up questions, alongside probing comments to explore participants' insights on a research topic (DeJonckheere & Vaughan, 2019). In this study, a semi-structured interview format facilitated in-depth exploration of the subject matter, supported respectful navigation of tapu and sensitive issues, and enabled the integration of cultural concepts within a framework of culturally safe practice. Although the Participant Information Sheet and Consent Form used the term "interview," I purposefully used the word kōrero when engaging with participants. Within a Māori context, kōrero signifies a culturally resonant mode of interaction that privileges the sharing of knowledge and the reciprocal exchange of dialogue (Rarere, 2022; Wilson, 2023). Interviews were conducted between July and September 2025.

Each interview was approximately 60-90 minutes long. To remain engaged with the participant and facilitate a natural conversational flow that was uninterrupted and supportive of wairua, I utilised audio recording to capture each kōrero. While I made small notes during each kōrero and brief reflections after each kōrero, the audio recording served as the primary form of data collection.

I began transcribing the audio recordings verbatim within a few days of each kōrero. To respectfully enact tino rangatiratanga each transcript was then shared with the corresponding participant for review to ensure that I had captured their kōrero correctly and encapsulated their mātauranga appropriately. I encouraged the participants to edit the transcript or inform me of any

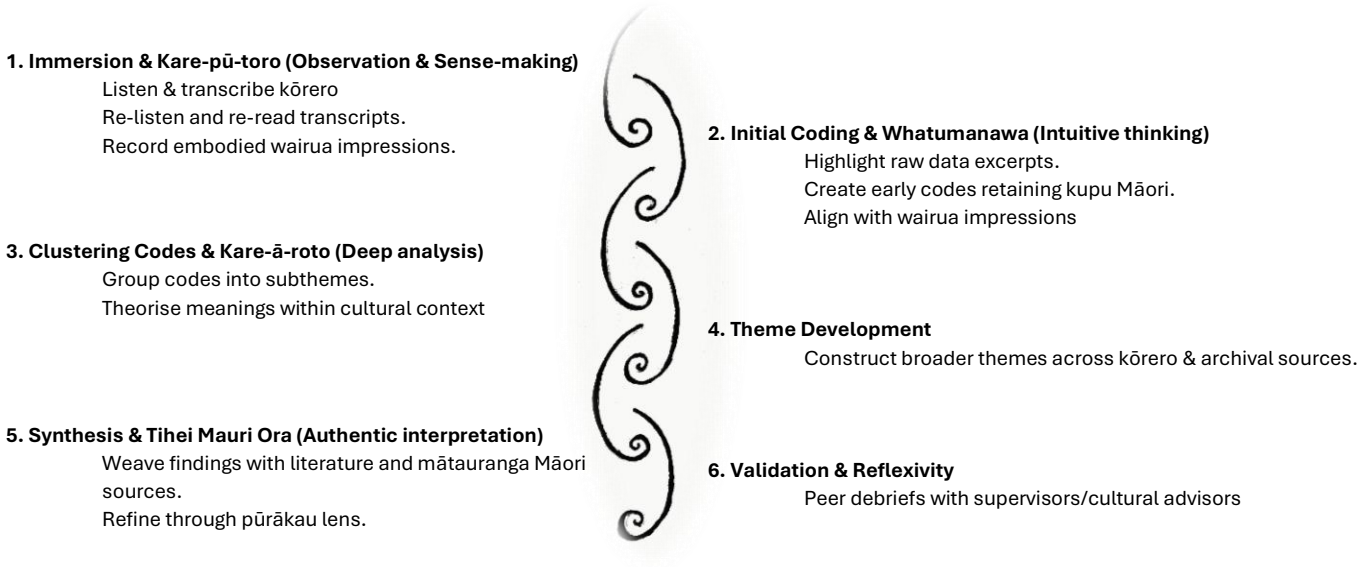
amendments that were required. Both the audio recordings and transcripts were kept on a password protected Massey University platform, ensuring data protection and compliance with university policies. Once I received the participants approval, I began the analysis.

## Data Analysis

As outlined earlier in the Pūrākau and Ara Wairua sections of this chapter, Pūrākau acknowledges the unique cultural narratives within a Te Ao Māori perspective, and Ara Wairua ensures a culturally grounded frame to guide the authentic description and interpretation of the research findings. To ensure that the analysis remained rigorous, culturally safe, and aligned with the intentions of this study, I followed a six-step process that brings together Pūrākau and Ara Wairua as complementary analytical guides. To carefully, respectfully and culturally analyse the kōrero and archival pūrākau I have applied a blended matrix of Pūrākau and Ara Wairua see Figure 1.

**Figure 1**

*Six-Step Analysis for Thesis Research*




Throughout the six-step process, I engaged in repeated readings and listening's of each kōrero, allowing myself to move iteratively between the raw data, my wairua-based impressions, and the codes that were beginning to take shape. Coding and theme development were carried out

manually using a Microsoft Excel spreadsheet, which enabled the systematic tracking of emerging ideas, recurring kupu Māori, and conceptual links to archival pūrākau. As potential themes developed, I regularly returned to the full transcripts to ensure that all interpretations remained firmly anchored in participants' original intent and that the analysis upheld mana, accuracy, and cultural integrity. Reflexive notes were maintained throughout, documenting intuitive insights, emotional responses, and positional considerations that guided my analytic choices. Credibility and cultural safety were further supported through regular debriefing with my supervisors, which provided additional layers of reflection, accountability, and robustness to the final themes.

## Ethical Considerations

Ethical approval was granted by the Massey University Ethics Committee Ohu Matatika 2 (OM2 25/26) (see Appendix A for details), in May 2025. The ethical foundation of this study draws from *Te Ara Tika: Guidelines for Māori Research Ethics* (Hudson et al., 2013), ensuring that the research process honours Māori values and is guided by a culturally grounded approach. Three key principles underpin this work: whakapapa, by fostering respectful and transparent connections and meaningful engagement between myself as the researcher, the participants, and their mātauranga; tika (to be fair, proper, accurate), through careful planning and consideration at each stage of the research design, from the formulation of research questions through to data collection and analysis to ensure positive outcomes for Māori communities; and manaakitanga, upholding tikanga, respecting participants, and safeguarding mana, privacy, and confidentiality.

Importantly, ethical safeguards were embedded to uphold Māori data sovereignty, ensuring participants remained informed and retained agency over their contributions, from transcript review to the final report. The research underwent review and guidance from my Master's thesis supervisors, aligning ethical practices with both academic standards and Kaupapa Māori values. Lastly, ethics was not treated as a separate requirement but woven into every stage of this research, ensuring that the study was conducted respectfully and in a way that is culturally responsive.

# Chapter Four: Ngā Taonga a Ngā Tūpuna | Treasures from our Ancestors

**Kia whakatōmuri te haere whakamua**

**I walk backwards into the future with my eyes fixed on the past**

## Introduction

This chapter is the first of three (followed by Chapter Five and Chapter Six) that blends an analytical lens with the findings collated from the archival literature and participant kōrero. Interwoven throughout both the archival records and participant kōrero was a shared acknowledgement that the mātauranga discussed is wisdom gifted by ngā atua and carried forward through the teachings of ngā tūpuna. This recognition underscores that ngā taonga a ngā tūpuna (ancestral treasures) remain a vital and living repository from which Māori continue to draw insight, understanding, and foundations for future growth.

The opening whakataukī (proverb), kia whakatōmuri te haere whakamua - I walk backwards into the future with my eyes fixed on the past provides a guiding frame for this chapter, reminding us that pathways forward are often illuminated by the wisdom and experiences of the past. In this way, the past is not separate from the present; rather, it offers a bridge through which both ancestral and contemporary understandings of brain health, trauma, and healing can be meaningfully interpreted.

It is therefore fitting that this chapter explores the first research question, 'How is trauma understood within mātauranga Māori, particularly in relation to the brain and brain health?' This chapter begins by examining Māori understandings of the roro (brain) and trauma. The analysis traces conceptualisations of the brain from whakapapa origins associated with ngā atua to contemporary interpretations informed by mātauranga Māori. The chapter then examines Māori perspectives on trauma, including the violation of tapu, patu ngākau, historical and intergenerational dimensions of harm, and TBI. Together, these sections illuminate how mātauranga Māori offers an interconnected and spiritually grounded understanding of the brain, trauma, and well-being.

## Understanding the Roro

Within Te Ao Māori, the upoko is regarded as the most sacred part of the body, encompassing not only its physical form but also the knowledge, essence, and identity it carries (Elder, 2012; Marsden, 2003; Mead, 2003; Smith, 2019; Sullivan & Hakopa, 2017). At the heart of this sanctity lies the understanding that the brain itself is imbued with tapu and mana, signifying its role as both a source of spiritual authority and a vessel of sacred power (Sullivan & Hakopa, 2017).

### *The Sanctity of the Roro*

With purpose, passion and reverence Tūī stated, “of course, the brain is tapu”. The sentiment behind this statement, and one that was unequivocally shared by all participants was an internal knowingness that there is a profound tapu encasing the head. From the moment of conception, the developing brain of a pēpi (infant) is regarded as inherently tapu, carrying sacred significance from the earliest stages of life (McLachlan et al., 2023; Smith, 2019). McLachlan et al. (2023 p.11) describe:

> From the time of conception, it is said that ira atua (all deities) knowledge is instilled within the kukune (foetus, embryo) through the pūmotomoto (fontanelle), also referred to as ruawhetū (a hollow in the skull of the foetus, the intersection of the transmission of scared knowledge).

Similarly, Korimako affirmed:

> In terms of whakapapa our tūpuna viewed the roro or the brain as a deeply tapu part or aspect of ourselves, and there's so much tikanga around that, that reinforces that, and it was known as something that is your connection to te ara wairua. And the pēpi, the pūmotmoto, that was the way in which they imbued the values into you and the aspirations for you. And if you think that's how our tūpuna viewed the roro, the head, there is no way in which they would be wanting to impose harm upon it.

In this way, the unborn child is imbued with ancestral knowledge and spiritual essence, reinforcing the understanding that whakapapa is not only biological but also spiritual, connecting pēpi directly to Atua, tūpuna, and the wider cosmos (Smith, 2019). Upon birth, the head becomes the defining feature of an individual and the primary marker of individuality and identity (Sullivan & Hakopa, 2017). Within the brain lies the skills, attributes, characteristics, and personality that make a person unique (Sullivan & Hakopa, 2017).

With tapu, comes mana. Niania and colleagues (2019), explain mana is gifted by divine authority, through wairua, through the legacy of tūpuna, and by the recognition of one's people. To carry mana is to uphold the values, integrity, and well-being of both the self and the collective (Tate, 2021). As an example, historically, when a person passed away, the head was regarded as the most sacred because it carried the mana, tapu and whakapapa of that person (Hiroa, 1987; Beattie, 2024).

Roro is the Māori term for the brain, spongy matter, and marrow; it is also the name given to the front section or porch of a whare tūpuna (ancestral meeting house) (Ellis, 2016; Riwai-Couch, 2021). The structure of a whare tūpuna is a conceptualisation of the human body, with the roro representing the brain of the ancestor who is embodied within the whare (Ellis, 2016). The location of the roro in the whare tūpuna means it is typically framed by carvings depicting ancestors whose role it is to safeguard the roro (Ellis, 2016). This metaphor reflects the way in which the brain is similarly protected within the head. Just as the carvings surrounding the roro stand as guardians of ancestral wisdom, the anatomical structures of the head shield the brain, preserving both physical function, knowledge, and the continuity of whakapapa.

### *Ngā Atua o ngā Roro: Cosmological Guardians of the Brain*

According to pūrākau, human life is understood to have begun with the creation of Hine-ahu-one, the first woman, who was formed by Tāne, a male Atua with human-like attributes and the son of Ranginui (sky father) and Papatūānuku (Hiroa, 1987). Tāne sculpts Hine-ahu-one using ikura (menstrual fluid), the vital menstrual essence drawn from Papatūānuku at Kurawaka (vulva of

Papatūānuku) (Murphy, 2019). Tāne's siblings contributed to this act of creation by offering various internal body parts, ensuring the successful formation of Hine-ahu-one (Hiroa, 1987). Smith (2019), drawing on both his personal learnings and archival sources offers a detailed exploration of mātauranga understandings of the brain and its relationship with ngā atua. He explains that the human body and its anatomy is divided into sections that are under the guardianship and influence of specific atua, each aligned with the realms of Ranginui and Papatūānuku. The upper and external parts of the body, such as the head above the upper jaw, the brain, the back, and the spinal column, are associated with Ranginui. Within this framework, te kauwae runga (celestial knowledge from above) embodies celestial knowledge, gifted by Ranginui, including the creation of Te Ao Marama (Mead, 2025; Smith, 2019). In contrast, te kauwae raro (celestial knowledge from below) refers to knowledge rooted in Papatūānuku, encompassing wisdom related to the whenua and the internal systems of the body from the lower jaw down (Smith, 2019). The meeting point of te kauwae runga and te kauwae raro is located at the temporomandibular joint and is regarded as highly significant and sacred (Smith, 2019). These Atua associations are not merely symbolic; they establish an epistemological system through which Māori understand the origins, functions, and vulnerabilities of the roro. I acknowledge that it is not within the scope of this thesis to explore te kauwae runga and te kauwae raro; as Mead (2025) highlights, these divisions hold extensive realms of mātauranga beyond what can be addressed here. However, by locating brain processes within the domain of Atua, Māori explanations of brain injury trauma draw upon cosmological order and understandings rather than biomedical reductionism.

A number of Atua have been identified as having specific associations with the brain. Smith (2019) acknowledges Te-Whānau-a-Rua including Rua-i-te-pūkenga and Rua-i-te-mahara who are responsible for the permeation of knowledge into the developing foetus through the ruawhetū. This understanding reflects an ontological positioning whereby the ruawhetū is both a physical structure and a metaphysical conduit through which mātauranga is transmitted prior to birth. Cognitive development is therefore understood to evolve through both biological and spiritual process,

affirming Māori perspectives of the brain as embedded within whakapapa relationships that extend beyond the individual and across generations (Smith, 2019).

McLachlan et al. (2023) explain that within some iwi traditions, the ngā Atua twins Rō Iho and Rō Ake are credited with gifting the left and right hemispheres of the brain. The term roro derives from the repetition of their name, Rō meaning 'inside' or 'within' reflecting both their twin relationship and the locative sense of their name (McLachlan et al., 2023). Furthermore, iho (downward) and ake (upward) signal spatial relationships, denoting that which descends from above and that which rises from below. This linguistic and cosmological framing illustrates the positioning of the brain within the body and its unique role as a mediator between te kauwae runga and te kauwae raro (McLachlan et al., 2023).

Melbourne (2009) acknowledges within the ancient teachings of Te Kura-i-awaawa ngā Atua twins Rongomaitahanui and Rongomaitaharangi are conceptualised as abstract representations of the right and left-side of the brain, together embodying the conscious mind. In contrast, the subconscious is represented by the mōtoi (the cerebellum) and is understood to form part of a symbiotic relationship with the whatumanawa, or supreme subconscious (Melbourne, 2009). While the cerebral hemispheres of the brain are personified through these two Atua, the mōtoi is regarded as independent, its function understood as arising from an atua-derived cosmological order rather than human or evolutionary design (Melbourne, 2009). This understanding positions the mōtoi as preceding the genealogy of atua, or the sequencing of physical evolution. From this perspective the brain carries both conscious and subconscious awareness, and the mōtoi is uniquely positioned to access deeper cosmological dimensions of knowledge, enlightenment and potential (Melbourne, 2009).

Meanwhile Hanara (2020) gives recognition to Tangaroa, Atua of the ocean, as an important influence over brain health and function. His research highlights the extensive work of Te Rangi Hiroa in the translation of human anatomical terminology into te reo Māori. Wairoro is the term Te Rangi

Hiroa used to describe the brain (Hanara, 2020). Placing ‘wai’(water) before ‘roro’ acknowledges the watery substance of cerebrospinal fluid located within the brain, signalling a relationship between the brain, water and Tangaroa. This framework is discussed in more detail in the next section, Roro Research and Contemporary Conceptualisations: Reclaiming Māori Brain Frameworks.

The presence and names of these Atua within roro narratives encode specialised knowledges about function, capacity, and energetic flow. From this perspective, a TBI represents a disturbance in the relational order maintained by these cosmological guardians, disrupting not only neural functioning but also extends to the spiritual well-being, the alignment of whakapapa, and ancestral connections. Such a perspective expands interpretations of injury beyond biological impairment, highlighting spiritual, ancestral, and environmental dimensions that biomedical frameworks typically overlook, signalling the importance of culturally grounded interventions and emphasising the broader relational work required for meaningful recovery.

***Roro Research and Contemporary Conceptualisations: Reclaiming Māori Brain Frameworks***

A number of Māori brain health scholars have all acknowledged the scarcity of mātauranga Māori within brain research and neuro-health settings (Dudley et al., 2014; Elder, 2012; Hanara, 2020; McLachlan et al., 2023). Each author highlights that this scarcity does not reflect an absence of mātauranga Māori relating to the brain and healing as these understandings have long been held by tūpuna and maintained through whakapapa and lived practice. Instead, they argue that the ongoing impact of colonisation, suppression, and continued dominance of Western-informed praxis within formal research and clinical spaces are primary mechanisms through which Indigenous knowledges have been systematically marginalised. Contemporary scholarship reflects ongoing efforts to reconnect with, revitalise, and restore these knowledges within spaces from which they were historically excluded.

Dr Benjamin Hanara (2020) specifically addresses the lack of mātauranga Māori understandings relating to the basic functions and structures of the brain. He developed Te Āheinga

Pū Reretahi, a neurofunctional model that integrates the rich understandings of the brain from within Te Ao Māori. Grounded in pūrākau and whakapapa relating to Tangaroa the framework draws on Tangaroa's attributes and achievements as metaphors for brain function. The model identifies three core pillars of the brain: Āheinga: Roro Hiringa (higher functions), Pū: Pūroro (vital functions), and Reretahi: Roro Tuarongo (coordination). These are mapped onto specific brain structures including the brainstem (pū), the cerebellum (reretahi), and are united by the overarching concept of āheinga (function). Within each pillar are four key elements that are important within Te Ao Māori. In contrast to dominant Western models of brain function, which often reduce the brain to a mechanistic organ arranged in a hierarchical sequence, Te Āheinga Pū Reretahi embeds neuro function and development within mātauranga Māori, emphasising spiritual, ecological, and ancestral dimensions. This positioning challenges the biomedical tendency to universalise knowledge and demonstrates how Indigenous frameworks can reconfigure understandings of brain health in ways that are culturally relevant and relational. Moreover, the significance of Te Āheinga Pū Reretahi lies in its ability to enable Māori to draw on ancestral knowledge and articulate culturally grounded approaches to brain health learning that is developed by Māori, for Māori. Looking ahead, Te Āheinga Pū Reretahi creates space for the further advancement of mātauranga Māori within the field of brain research.

Dr Andre McLachlan et al. (2023) introduce Te Whare o Oro, a framework grounded in mātauranga Māori to understand brain structure, neurodevelopment and trauma in children. Using the metaphor of the whare tūpuna, Te Whare o Oro draws on the structural features, functions, and whakapapa narratives of a whare tūpuna to conceptualise neurodevelopment and the effects of trauma on children at various life stages, including pre-birth, birth, and early development. Central to the framework is the alignment of specific structures within the whare tūpuna and their connection with the anatomy of the brain. For example, within the whare, the roro and tāhuhu (ridgepole) represent the brain and spinal column which is a vital conduit for relaying information between the external and internal realms of the house and therefore, embodies the central nervous system.

The pou tuarongo, the main weight-bearing post at the rear of the house represents the critical functions of the brainstem. The pou tāhū located at the front and bearing the foremost weight of the tāhuhu, is linked to the diencephalon and cerebellum. The pou tokomanawa, situated at the mid-point of the house and often referred to as the heart of the whare represents the limbic system. The pou kaiāwhā, standing externally at the very front and holding up the veranda, represents the cerebral cortex. The heke (rafters) which connect the roro to the body of the whare, represent responses to trauma within these areas. The decorative tukutuku panels that line the walls of the whare represent the neurons and neural pathways. Lastly, Te Whare o Oro incorporates the principles of Te Whare Tapa Whā, with its four corner pou symbolising the foundations of Māori health and wellbeing. This model highlights the significance of critical periods when the developing brain is especially sensitive to experiences that influence its structure, function, and long-term pathways. McLachlan et al. (2023) invite prospective users to add their own mātauranga Māori to Te Whare o Oro, reflecting a core value within Te Ao Māori of creating strengths-based, whānau-led and mana-enhancing pathways towards well-being and pae ora.

Both Ruru and Korimako spoke about Te Whare o Oro in their kōrero. Sharing that their understandings of the brain and neurodevelopment have been informed by the mātauranga grounded within the development of this framework. As Korimako explains:

> My understanding of where mātauranga Māori fits with making sense of brains is really grounded in Te Whare o Oro. Outside of that, I haven't really had any other exposure to how you could weave mātauranga Māori or Kaupapa Māori approach into making sense of the brain and how things are impacted.

Together, frameworks such as Te Āheinga Pū Reretahi and Te Whare o Oro demonstrate how mātauranga Māori can provide dynamic, culturally aligned explanations of brain structure and function that better reflect Māori understandings of identity, spirituality and relationality, rather than as a purely mechanical structure. This reorientation has profound implications for how TBI is

recognised, assessed, and supported for Māori. For example, they offer an integrative lens that bridges cultural insight with modern understanding of neural networks and function. Thus has the potential to change clinical settings to environments that enhance meaning-making.

## Understanding Trauma

Trauma is a term that originates from Western and European contexts (Linklater, 2020) and defined as either a physiological or psychological injury. From a physiological perspective trauma is a physical injury to body tissue from a violent event or accident, where the body initiates various immunological, metabolic and nervous system pathways to heal and restore homeostasis (Dumovich & Singh, 2022). From a psychological perspective, trauma is broadly understood as an exposure to event(s) or conditions that overwhelm an individual's capacity to cope which lead to significant and lasting impacts on mental, emotional, and physical functioning (American Psychological Association, 2018; Friedberg & Malefakis, 2022). The DSM-5 defines a traumatic event as exposure to actual or threatened death, serious injury, or sexual violence, whether experienced directly, witnessed, or learned about when it occurs to others (American Psychological Association, 2022). The impact of trauma is not uniform. Individual responses are shaped by a range of contextual and personal factors such as, age, socioeconomic position, ethnicity, gender, prior experiences of resilience or adversity, and pre-existing mental health conditions (Friedberg & Malefakis, 2022).

In the context of TBI, trauma refers to the physiological damage to the brain by an external force and, the psychological and emotional consequences that follow (Northern Region Trauma Network, 2021). Although these physical and psychological definitions of trauma offer diagnostic value, they provide a siloed understanding of trauma (Linklater, 2020), limited to the physical and emotional impact assigned to the event (Bassett et al., 2012). Such definitions fail to capture Indigenous conceptualisations of trauma, which extend far beyond this restrictive binary view. Instead, Indigenous conceptualisations of trauma encapsulate spiritual, cultural, environmental and historical dimensions (Smith, 2019; Wirihana & Smith, 2014).

### *Te Ao Māori Conceptualisations of Trauma and their Implications for TBI*

**Violation of Tapu.** From a Māori perspective NiaNia (2019) shares that one conceptualisation of trauma within Te Ao Māori is the violation of tapu. Trauma occurs when infringement upon the tapu of an individual causes a disruption of their wairua, mana or mauri. He explains that such a breach can erode a person's mana, leaving them spiritually vulnerable and exposed to negative spiritual forces, which may manifest as symptoms resembling psychological symptomology such as depression or anxiety.

Similarly, Marsden (2003 p.41) describes the violation of tapu to be met with "divine retribution" whereby an act of transgression whether through carelessness or deliberate intent violates the sanctity of the sacred and weakens a person's mana. He explains that the consequence of this imbalance may manifest as psychological ill health, illness, or even death. In both accounts, trauma is understood not as an isolated physical or emotional state but as a profound disruption to spiritual, relational, and energetic equilibrium. Injury from trauma therefore includes harm to wairua, and the weakening of mana, tapu and mauri.

Participants echoed these understandings, describing TBI as a disruption to one's relational and spiritual world, compromising mana and unsettling connections between, self, ancestors, and environment. Symptoms of TBI were often expressed not only through cognitive or behavioural terms but also through experiences of whakamā (shame or disconnection), withdrawal from whakapapa and whenua, and a decline in mauri. As Ruru explained about a respected Rangatira (elder, leader):

> He was on their pae (orators' bench), their lead kaikōrero (speaker) for whaikōrero for tangihanga (funeral). The hardest thing that has been a challenge for him was a lot of whānau expecting him to still be that same person and be able to be the kaikōrero at all these hui. He found those situations really overwhelming, and so he felt really whakamā. But it was because of a lack of understanding within his whānau, because physically, he

> looked okay, he still looked normal. He struggled for a number of years and initially it was the expectations he was putting on himself because he felt like, 'you should be able to recover, and you should be okay'.

For this Rangatira, the inability to meet customary expectations as kaikōrero generated a sense of whakamā, reflecting the emotional and spiritual consequences of navigating changed capacity within a role that carries significant mana and responsibility. The mismatch between his visible recovery and his internal struggle disrupted relational expectations, producing whakamā as he navigated altered cognitive capacity alongside enduring cultural obligations. This highlights how TBI impacts are lived not only within the individual, but across whānau relationships and roles shaped by whakapapa. These accounts suggest that in practice clinical understandings of trauma should expand to include spiritual and relational dimensions.

**Patu Ngākau.** Another conceptualisation of trauma, as explained by Tākirirangi Smith (2019) is a term that is best understood through the mātauranga Māori concepts of patu ngākau, mamaetanga (physical or emotional pain), and pouritanga (sadness, despondency). He describes the term patu ngākau as a deep laceration to emotional well-being caused by a traumatic event. Patu is to strike and ngākau refers to the viscera in the thoracic and abdominal regions of the human body. The ngākau is related to the domain of Papatūānuku and te kauwae raro, where ones' emotions and memories of substance are stored, whereas fleeting or impulsive thoughts are located in the brain.

Mamaetanga refers to experiencing pain or injury, whether physically, emotionally or psychologically, while pōuritanga refers to feelings of deep sadness, despondency, or depression following a traumatic injury or event. In this sense, patu ngākau captures the impact the traumatic event has on emotional, cultural, and spiritual well-being, whereas mamaetanga and pouritanga reflect the ongoing state of being that may follow.

Smith (2019 p.28) explains the effect of patu ngākau may cause a "feeling of internal powerlessness" resulting in emotional or spiritual disruption that may manifest as whakamā or

whakamomori (deep despair or suicidal ideation). When discussing trauma and concussion, Ruru shared:

> Trauma is a big thing when relating to concussion symptoms, and also what's happened around the incident. We talk about trauma, being like a patu ngākau so something that has impacted on your ngākau. But then it also impacts on your māhunga (head), your roro, it impacts on your mauri, and you feel disconnected from your whānau and your whenua. A lot of our whānau when they have a concussion, they don't feel themselves, and so they feel disconnected from who they are and there is a loss of sense of purpose.

This account suggests that TBI unsettles more than cognitive processing; it destabilises mauri and the coherence between roro, ngākau, and wairua. Feeling not like themselves and disconnected from purpose reflects a disruption to the energetic and affective core of personhood. In this sense, the trauma is not confined to the roro but reverberates through the ngākau, unsettling identity, purpose, and one's sense of belonging within whānau and whakapapa networks.

Therefore, understanding TBI through concepts such as patu ngākau underscores the need for interventions that acknowledge emotional, spiritual, and historical injuries as intertwined with neurological harm. This perspective challenges clinical approaches that isolate the brain from the person, their history, and their whakapapa.

**Historical Trauma.** For Māori modern conceptualisations of trauma are embedded with historical experiences and inter-generational perspectives. Indigenous scholars describe historical trauma as the cumulative and intergenerational wounding of the soul, emotions, and wairua resulting from large-scale collective experiences of violence and oppression (Duran, 2006; Pihama et al., 2014). Historical trauma describes the ongoing transmission of unresolved grief and loss that extends beyond the lifespan of the original trauma survivors, embedding itself within subsequent generations (Duran & Duran, 1995; Pihama et al., 2014). For Māori, these traumas are rooted in the violent processes of colonisation, which systematically disrupted the social, cultural, and spiritual

fabric of iwi and hapū. As described in Chapter Two, British colonisation radically transformed the world of our ancestors through the imposition of racial superiority, individualism, and patriarchy. These acts of epistemic and structural violence were not isolated historical events but ongoing processes that continue to reverberate intergenerationally, shaping Māori identity, wellbeing, and lived realities today.

All participants referred to the impact of historical and intergenerational trauma on both TBI incidence and recovery. As Korimako shared:

> In terms of the viewing it [TBI] from a lens of intergenerational trauma, if you are somebody that is raised in an environment where you're more impoverished, where you're in a more low socio-economic status, where you're in an unsafe neighbourhood, where you already have neurodevelopmental predispositions to be more impulsive. You are more likely to end up in a situation where you are in a gang fight, are in an abusive relationship, where you are more likely to be hurt. Maybe driving more impulsively, higher rates of substance misuse. So, the whakapapa of head injury. If it is accidental, there are social indicators which then influence the likelihood of you experiencing further TBI's based on the intergenerational way in which we make sense of client presentation.

These understandings situate TBI within a wider genealogy of trauma, acknowledging that its occurrence and impact are often entwined with earlier experiences of harm, whether, personal, social, historical or intergenerational. For many Māori, the brain injury may act as a trigger or continuation of unresolved trauma, recalling previous TBI's or trauma stemming from colonisation, the confiscation of land and cultural suppression. For practitioners, this means recognising that a single TBI event may intersect with long-standing intergenerational trauma, influencing how Māori present and engage in rehabilitation.

Acknowledging historical trauma also provides insight into why Māori experience disproportionate rates and impacts of TBI. These historical and intergenerational traumas shape

exposure to risk, access to care, and the meanings whānau attach to injury and recovery. Ultimately, historical trauma and intergenerational experiences highlight that the trauma of brain injury is rarely isolated from broader structural and ancestral contexts. Attending to these layered histories is essential to understanding both vulnerability and recovery for Māori whānau.

### *Te Ao Maori Conceptualisations of Traumatic Brain Injury*

As mentioned in Chapter Two, during her doctoral research, Dr Hinemoa Elder (2012) explored Māori perspectives on supporting mokopuna with TBI. The resulting Wairua Theory of Mokopuna TBI revealed the belief that a traumatic brain injury affects not only the physical structures and functions of the brain but also the wairua. Central to the theory is the view that an injury to the head of a mokopuna reawakens whānau awareness of the tapu status of the upoko. This event resonates beyond the individual, as the injury is transmitted through wairua into the whakapapa, extending both backwards to tūpuna and forwards to future generations.

Elder (2013a) asserts, whakapapa responds to this disruption in two keyways. First, it recalls memories of past traumatic events, bringing intergenerational concerns into view and situating the current injury within a long-standing continuum of experience. Second, it activates mātauranga-a-whānau (family knowledge) resources, enabling whānau to draw on inherited knowledge and practices that support healing of the wairua dimension of mokopuna TBI. In this way, whakapapa functions both as a vessel of memory and as a repository of healing knowledge. Recognising the whakapapa of TBI reframes the condition from being viewed solely as a medical diagnosis to being understood as part of a broader cultural and historical continuum, one that demands healing at physical, psychological, spiritual, and collective levels. This challenges TBI services that focus solely on cognitive and behavioural rehabilitation, signalling the need for approaches that also attend to wairua, whakapapa, and whānau healing.

## Chapter Summary

This chapter has explored how trauma is understood within mātauranga Māori, particularly in relation to the brain and brain health, by drawing together Indigenous cosmologies, contemporary Māori brain models, and conceptualisation of trauma. Central to these understandings is the sacredness of the roro and upoko, which hold not only anatomical significance but deep spiritual authority. The brain is imbued with tapu and mana, functioning as a vessel through which whakapapa, ancestral knowledge, and spiritual essence flow. This positioning of the roro as both biologically vital and cosmologically charged establishes a uniquely Māori foundation for understanding the impacts of injury.

Framing the brain through the realm of atua offers an additional epistemological layer for interpreting both normal functioning and the effects of trauma. Atua associations form a cosmological framework that explains the origins, behaviours, vulnerabilities, and interconnected systems of the roro, situating brain health within a wider relational order that links the physical, spiritual, and ancestral domains. This cosmological grounding shifts the locus of meaning-making away from a solely biomedical dysfunction and instead provides an interpretive lens through which brain injury can be understood from a mātauranga Māori perspective that acknowledges injury and trauma as a disruption of spiritual, relational, and metaphysical order.

Contemporary Māori brain models such as Te Āheinga Pū Reretahi and Te Whare o Oro extend this worldview into accessible frameworks that integrate mātauranga Māori with modern understandings of neuroanatomy and function. These models illuminate how identity, spirituality, emotion, cognition, and environment are neurologically and culturally entwined. Importantly, they reposition clinical interpretation, enabling more culturally congruent approaches to support Māori engagement, and create therapeutic environments that enhance healing and identity restoration.

The chapter also examined Māori understandings of trauma. Mātauranga Māori conceptualisations of trauma encompass not only physical injury but breaches of tapu, disruptions to wairua and mana, and enduring emotional and spiritual impacts described through patu ngākau, mamaetanga, and pōuritanga. These understandings foreground that healing must occur on multiple interwoven levels, not solely upon the physiological or psychological element of injury. Intersections with historical and intergenerational trauma further intensify both vulnerability to TBI and complexity in recovery, where a single injury may reactivate or compound earlier transgenerational harm. For practitioners, this underscores the need for neurorehabilitation approaches that recognise the cumulative weight of trauma across generations.

The Wairua Theory of Mokopuna TBI provides a clear illustration of how all these concepts converge. Demonstrating that TBI affects not only neural structures but the wairua of mokopuna, and the collective wairua of whānau. Injury to the head reanimates awareness of its tapu status and activates whakapapa as a repository of memory and healing knowledge. Within Te Ao Māori we remain mokopuna across the lifespan and understanding TBI through whakapapa reframes injury from a discrete medical event into an episode within a broader cultural continuum, one that requires healing across physical, psychological, spiritual, and collective dimensions.

Taken together, the chapter demonstrates that within mātauranga Māori, trauma related to the brain is understood as a profound disturbance to spiritual and relational balance, ancestral continuity, and embodied identity. The roro is not merely an organ but a sacred site of connection between atua, tūpuna, whānau, and the self. Healing therefore requires approaches that honour the tapu of the upoko, restore wairua, uphold mana and mauri, and recognise the deep genealogies of both trauma and resilience that shape Māori experiences of TBI.

The next two chapters build from this foundation, shifting from conceptual understandings to the lived experiences of Māori health practitioners who work alongside TBI whānau. Examining

how these mātauranga-informed perspectives manifest in practice, influence meaning-making, and shape culturally responsive pathways for TBI neurorehabilitation in Aotearoa.

# Chapter Five: Te Whai Ao o ngā Roro | Illuminating Brain Healing

**Ehara taku toa i te toa takitahi, engari he toa takitini.**

**Success is not the work of an individual, but the work of many**

## Introduction

In this chapter I explore the second key objective of this thesis, 'to seek insight into the mātauranga Māori knowledges, practices, and healing approaches that support brain health and recovery from TBI, from the perspective of the Māori health professionals who work alongside TBI whānau'. As participants shared their knowledge and perspectives of healing approaches for brain health, their perspectives consistently emphasised that Māori conceptualisations of well-being are grounded in interdependence between people, the environment, the spiritual realm, and the physical body.

Observing and listening to this kōrero reminded me of the whakataukī, 'ehara taku toa i te toa takitahi, engari he toa takitini - success is not the work of an individual, but the work of many'. This whakataukī provides the foundation for this chapter, encapsulating the essence of collective strength and interconnectedness that lies at the heart of Te Ao Māori. It reflects the understanding that wellbeing and healing are not achieved in isolation, but arise through the collective contributions of whānau, hapū, iwi, and the wider community.

Four interrelated themes were identified from the participants' kōrero: wairua, rongoā, whakapapa kōrero and whānau.

The first theme articulates the importance of understanding wairua in TBI neurorehabilitation. Wairua was described as vulnerable to disruption following TBI, yet central to the restoration of wellbeing. When wairua is unsettled, participants noted that expressions such as whakamā, disconnection, and diminished mauri may surface.

Rongoā was considered a vital healing approach for restoring spiritual and relational harmony and supporting reconnection to ancestral knowledge systems that facilitate embodied healing. Whakapapa kōrero reawakened a sense of belonging and (re)connection with cultural identity, supporting pathways for healing and trauma processing. Lastly, the presence of whānau was considered essential, not only as a powerful source of guidance, resilience and mātauranga, but also because whānau are also deeply affected by the occurrence of TBI.

## Wairua

Participants described wairua as both vulnerable to disruption and essential to healing following a TBI. This notion reflects a Māori worldview that wairua is the spiritual dimension of existence, connecting us to self, people, place, across time and space (Durie, 1998; Marsden, 2003; Mead, 2025). Importantly, there is a connection between wairua, tinana and mauri that creates a sense of "balanced wholeness" (Valentine et al., 2017, p. 66). This balance is essential to the well-being of wairua (Haenga-O'Brien, 2025). When a TBI occurs, the injury is not confined to the physical brain, rather, it extends to the hinengaro, wairua and whole-being and can disrupt the spiritual balance within the person and their whānau. As Korimako explains:

> A Te Ao Māori way of viewing this [brain injury], is that your brain is a connection of you as a spiritual being as a whole. And in essence if you experienced injury to any part of your brain, there will be a flow on effect to how it affects the different aspects of your wairuatanga, of your mauri, of different areas of your functioning and well-being as a whole. So, head injury would be viewed in that light as it impacts on your whole āhua (character), your whole being and ultimately, your connection and ability to connect with the world around you.

Korimako's words reveal a fundamental understanding that when TBI occurs, wairua injury also occurs (Elder, 2012). Therefore, wairua was seen as both affected by and essential to recovery from TBI.

Participants spoke of how disruptions to wairua manifested as whakamā, an emotional and spiritual distress. Whakamā was described as arising when a person felt their mana had been weakened or their tapu violated due to the injury, resulting in a deep sense of shame or diminished self-worth. When describing the link between whakamā, wairua and the experience of TBI, Tūī shared a story of a kaumātua who was assaulted at a party, "some guy came out behind him and hit him with a bottle". For this kaumātua, the sanctity of his upoko had been violated when he was hit over the head. Following this event, he was left trying to navigate his way through managing his brain injury, a change in his psychological state, and the effect this had on his whānau. Although his whānau had not witnessed the attack on their dad, it was "like they were there". They intimately felt the injury to their father's wairua as their own injury. Within this worldview the tapu of their elder and the mana of their whānau wairua had been violated. As a result, the kaumātua held a deep sense of whakamā for the violation of his head, the disruption to his hauora, and the impact this was having on the mana and wairua of his whānau. This example illustrates how TBI is experienced as a spiritual and relational rupture, not only a neurological event, and therefore why wairua-focused approaches are fundamental to Māori conceptions of recovery.

Ruru shared a similar kōrero adding that the impact concussion has on ones wairua, and mauri can manifest as confusion, withdrawal or as a sense of disconnection from whakapapa, whānau, whenua or oneself.

> The fatigue, the dizziness. For some of my whaiora (person seeking health) they feel disconnected from, who they are ā-wairua and whakapapa because they don't feel like themselves. They're not themselves. They feel isolated. I guess because of that sense of disconnect.

In this account the sense of disconnection, of feeling "not themselves" illustrates how post-concussive confusion may be viewed as an ontological disruption to mauri and wairua rather than only interpreted as a cognitive deficit. Ruru continued to describe how healing grounded in

mātauranga-a-wairua can be beneficial when incorporated into cognitive neurorehabilitation through karakia, pūrākau and atua narratives. In this way, it could be argued that healing wairua is essential alongside the physical and cognitive neurorehabilitation practices.

Within these same narratives, wairua was also positioned as a powerful modality of healing in its own right. Participants described wairua as an active, guiding presence in one's healing journey. Kererū, explained that "wairua rescues a lot of our whānau", noting that when the tinana and the hinengaro are severely damaged, it can be the act of healing the wairua that provides them with the ability to understand and manage their brain injury and neurorehabilitation. Practices such as karakia, waiata, whakapapa kōrero and connection to whenua were identified as essential to restoring spiritual balance after a TBI.

These findings highlight that wairua healing is not separate from the neurological or psychological recovery process but is deeply interwoven with it. The participants' perspectives affirm that wairua functions as both a diagnostic and therapeutic element of TBI recovery, guiding approaches that align with Māori understandings of hauora as a dynamic and relational balance between tinana, hinengaro, wairua, and whānau. Such an understanding is consistent with Māori healing philosophies that view wairua as the gateway through which balance, meaning, and restoration are achieved.

## Rongoā

Rongoā is understood as a holistic system grounded in relationships with the natural world, Māori cosmology, ngā Atua, wairua, ancestral connections, and tikanga (Mark et al., 2022). Participants described rongoā as an integral practice for healing and recovery following a TBI, emphasising that rongoā is not confined to the treatment of physical ailments alone, just as TBI rehabilitation is not limited to the physical body. Rather, they described its primary purpose as a process of restoring spiritual and relational harmony and strengthening wairua, mauri and whānau hauora. Kiwi noted:

> Rongoā is about giving your body back its balance so that it can heal itself…. You can't just heal one part of things, well you can but you won't get that proper holistic healing and benefit.

Participants described rongoā as a living practice that draws upon natural elements, ancestral knowledge and spiritual guidance. The connection with the land and the principle of reciprocity with Papatūānuku reflect both a deep respect for the interdependence between people and the natural environment, and the facilitation of embodied healing (Mark et al., 2022). To explain, participants drew on the traditional rongoā practices of karakia, rongoā rākau (native healing plants), and immersion in the taiao to describe how rongoā practices enable individuals to reconnect with their authentic selves, awaken the body and stimulate neural and energetic flow to restore balance, process trauma and enhance mauri. Tūī described wairua leading her and her kiritaki (client) to the ocean, recalling how she suggested, "let's go down to the beach and see how your balance is doing". She explained; that as they arrived, and upon seeing the water her kiritaki began speaking and sharing, "we had this lengthy kōrero". As their time together evolved the kiritaki revealed he had whakapapa to the area:

> That reconnection to Papatūānuku, the wai it's where he needed [to be], and it opened up a whole lot of stuff about his whakapapa. As we were driving back to his whare he was like, oh that's my marae (traditional meeting area). I said shall we go have a wee titiro (look), a wee look. We went in and there was a GP practice next to the marae and there was a gym in there as well. He signed up….

This illustrates that rongoā is not a discrete intervention but a wairua-led process of returning the person to their whenua, whakapapa, and embodied sense of self.

Rongoā practice was also described as a means of restoring wairua, tapu and mana following a head injury. Given the sacredness of the upoko, participants explained that rongoā helps to realign spiritual and physical dimensions, easing feelings of spiritual dissonance that can accompany brain

injury. When reflecting on the disruption head injury trauma causes as one navigates recovery and healing, Kiwi explained:

> …that is what happens with those trauma injuries in your head, when your body gets stressed, they come back again, it awakens that pain. But it is not something physical that has caused it, it's the mental. Cos you still have that memory in your head.

Drawing on his personal experience of head trauma, Kiwi continued to describe how his knowledge of rongoā pani (rongoā balm) assisted his recovery when physical pain manifested as a result of memory trauma from his head injury accident:

> I went hunting in [location redacted], and a pain in my leg came out from being crushed in the tractor. It was excruciating pain, and I knew it wasn't cramp. I did try to use pārore [a rongoā balm] which is what I use for cramp, but it didn't touch it at all. But then I used pukatea [a rongoā balm], and that's when I realised that's what it was.

In this context, rongoā served not only as a method of treatment but also as an act of self-empowerment and a return to traditional ways of knowing that honour both the individual and cultural reclamation. When describing the benefits of referring to a kaimirimiri (body healer) and incorporating rongoā alongside clinical work, Ruru added, "it's that beautiful, interaction between working with their tinana, but also ā-wairua and helping them to feel some of that connection".

For TBI whānau, rongoā extends far beyond physical treatment; it is a deeply spiritual, relational and cultural practice. Rongoā enables embodied healing, and the restoration and (re)connection between oneself, their whānau, wairua, taiao and tūpuna.

## Whakapapa Kōrero

A prominent theme that was identified from participants' kōrero was the use of whakapapa kōrero (storying ancestral connections) as a means of healing following a TBI. Whakapapa kōrero are narratives that are regarded by Māori as vital expressions that define one's identity (Smith, 2000). As

Smith (2000) asserts, whakapapa kōrero are taonga preserved by individuals or experts who draw upon them during important occasions to affirm the mana and identity of the group, and they are essential to the survival and wellbeing of the collective. He explains, the term whakapapa kōrero does not refer simply to genealogy, rather, it encompasses discourse that explains existence through interconnectedness and the recognition of the relationships among all entities that are acknowledged as part of being.

When Kererū began sharing insights into the importance of whakapapa kōrero for whānau in neurorehabilitation settings, the spiritual energy and ambience of the room changed. From my position as a Māori researcher in that space, it felt as though her tūpuna were speaking through her, and as though the whānau she supports were standing right there beside her. She shared:

> Te kōrero tahi o te whakapapa is huge, so when you start talking to them about their tūpuna, and you start, you know, getting them to try and recall things around, who were your favourite people back in the days, those things are like, like lollipops to them. They're this sweetness, it's like a sweet kōrero, and they can talk to you about that. But getting them to remember where they put their book or their phone in the last couple of hours, you know, it's a mission. Some of them can recall stuff, historically, and that kōrero is for a purpose - and the purpose is for healing, the purpose is for reconnecting, the purpose is for restoring. Restoring their wairua, reconnecting their whakapapa, restoring their mana.

Whakapapa kōrero is understood as a therapeutic tool that restores balance by aligning ira tangata (human essence) with ira atua (divine essence) (Smith, 2000). In revisiting genealogical stories, individuals are reminded of their intrinsic connection to ngā atua and to Papatūānuku, reawakening a sense of belonging and spiritual protection. Whakapapa kōrero provides both metaphysical and emotional grounding.

When discussing whakapapa kōrero within neurorehabilitation praxis, it was described as both a process and a practice that could enable individuals and whānau to make sense of injury

through the lens of lineage, memory, and spiritual continuity. Participants articulated that when a TBI occurs, it is not seen as an isolated or random event, but as one that is embedded within the broader genealogy of experiences, connecting to ancestral narratives, intergenerational trauma, and collective resilience. From this perspective, the TBI may awaken deeper layers of trauma that may resonate through whakapapa. Ruru described an example when the connection between trauma and brain injury was not immediately apparent, emphasising that whaiora (people seeking health) bring with them lived experiences that deserve to be met with trust, openness, and curiosity rather than clinical detachment. In this instance, the whaiora innately knew that his healing pathway required whakapapa connection and exploration. Ruru recounts:

> He didn't really know his dad's side, but he could sense that there was something there that he needed to explore. It just so happened that on his dad's side I knew that marae and kaumātua so I could put him in touch with them to have that kōrero.
>
> There didn't seem like a concussion thing [connection]. It was something that he needed for his healing journey. The whaiora come to you, and they've lived a full life, and they've got all of these experiences. And a concussion is just one part of that right. So, we're just being mindful of those connections and helping him to heal because there was a lot of trauma there because of the relationship with his dad who'd passed on".

When whaiora express a desire to explore their whakapapa as part of their recovery journey, this should be supported as a critical act of self-determination and meaning-making, one that can guide both the direction and depth of healing. Following the client's lead in these explorations affirms their autonomy and honours the interconnected nature of whakapapa, wairua, and hauora within Māori worldviews.

Several participants reflected that engaging with whakapapa kōrero created space for dialogue with tūpuna, allowing guidance and insight to emerge through wairua. This not only reaffirmed their connection to their ancestral identities but also lessened feelings of isolation and

whakamā, transforming the injury from a source of shame into an opportunity for reconnection and growth. Moreover, participants noted that the process of engaging in whakapapa kōrero was inherently collective. Healing through whakapapa was not an individual act, but one carried out within whānau contexts, where stories were shared, reflected upon, and reinterpreted together. This intergenerational exchange reinforced whānau cohesion and strengthened collective identity, both of which are crucial for recovery following trauma.

Ultimately, whakapapa kōrero functions as a culturally grounded approach that reframes TBI as part of a living genealogy of experience. This aligns with earlier discussions of trauma, positioning whakapapa kōrero as a distinctly Māori modality for processing and transforming trauma rather than simply recalling ancestral stories. By situating brain injury within whakapapa, Māori whānau can reassert agency over their narratives of illness and recovery, transforming the focus from pathology to continuity, and from injury to interconnected healing.

## Whānau

In Te Ao Māori, whānau is a fundamental element of health and wellbeing, functioning as the primary source of support, offering care, guidance, connection to culture, and emotional nourishment (Durie, 1998). Across all the participants kōrero, whānau was consistently spoken about as the foundation of healing and recovery following a TBI. Rather than viewing recovery as an individual journey, participants described it as a collective process grounded in whanaungatanga, aroha (love), and mutual responsibility. Whānau were not only providers of physical care but were also vital to emotional, spiritual, and cultural restoration. Their presence and engagement were understood as essential for remaining connected to cultural and spiritual identity, re-establishing balance within the affected person's hauora and for upholding the interconnected wellbeing of the entire whānau unit. Healing of the hinengaro and wairua is nurtured and strengthened through the collective support and unity of whānau.

Tūī spoke about the isolation caused by whakamā and how this reverberates across relationships, often exacerbating trauma and shaping future generations, highlighting its impact on both the present day and on generations to come:

> Actually, I'm working with someone who, his sons don't even know he's had an injury. I'm like far out, how do you get support from them? Like trying to protect them or something. Yeah, you know, they're just thinking dads grumpy. And because they don't know, they don't know anything about brain injury. So, if they ever have a brain injury, they may not know how to manage it. They could potentially be learning.

Participants described how, in the face of TBI, whānau often found themselves stepping into unfamiliar medical and rehabilitation spaces, learning to advocate for their injured loved one despite limited prior knowledge or support. As the kōrero evolved, participants shared that often this advocacy stemmed from a lack of knowledge as whānau had never been provided with clear explanations of TBI or what was occurring within the brain, which heightened confusion and emotional strain during recovery.

Many noted that whānau were unaccustomed to receiving help and instead relied on a long-held cultural tendency to "get on with it," reflecting a form of resilience born from generations of self-reliance and collective care. For many whānau, resilience is deeply rooted in intergenerational practices of endurance, adaptability, and collective responsibility. Values that have sustained Māori through successive waves of social and historical adversity. As Tūī described:

> Whānau have always had to 'get on with it' and, sometimes when I'm working with whānau, they're quite surprised to have the offer, you know, for someone to come in and explain, 'do you understand what's going on with the brain? And this is why they are behaving that way.' So, for me, from what I've observed is that they're just getting on with it. Because that's what they've always done.

This kōrero suggests that whānau resilience often operates in the absence of meaningful clinical explanation. Without accessible discussion about the roro and how its functions may be altered following TBI, whānau are left to interpret behavioural and cognitive changes on their own. Providing intentional, culturally grounded conversations about the brain therefore become essential not only to enhance understanding, but to reduce confusion and relational strain within the whānau system.

Participants continued to explain, when whānau were excluded or marginalised in medical decision-making, healing was disrupted, and disempowerment ensued. Conversely, on the rare occasion when their knowledge, tikanga, and perspectives were valued, the recovery process became more holistic and meaningful. Through these experiences, whānau demonstrated not only perseverance but also a profound capacity to advocate, adapt, and maintain their cultural integrity within systems that often failed to recognise their needs or perspectives.

Participants described inherited knowledge systems specific to each whānau as central to processes of healing and recovery following TBI. This mātauranga-a-whānau reflects the lived experiences, intergenerational wisdom, and cultural practices that guide whānau in responding to the complex emotional, physical, and spiritual impacts of TBI. These whānau-based knowledges are often expressed through whakapapa kōrero, karakia, and rongoā that draw upon ancestral guidance and traditional healing philosophies. Importantly, participants emphasised that mātauranga-a-whānau is dynamic and adaptive shaped by both inherited wisdom and the unique circumstances surrounding each TBI experience.

Kererū shared an example of the whānau of a young boy who, “implement all of the important things that they believe help their young boy daily. . . they utilise karakia, kōrero, mirimiri (massage)… they have a whānau group setup”. This whānau wrapped around their tama (boy) and nourished him with whānau mātauranga, demonstrating the capacity of whānau to mobilise their own culturally grounded resources and to reclaim traditional ways of knowing as pathways to

recovery and resilience. However, the participants stressed that while being supported to include whānau mātauranga by the health and rehabilitation system is critical, this must not be misconstrued as whānau having to resort to their own systems because services are unavailable or inadequate.

Participants also expressed the deep emotional toll that TBI can have on whānau particularly the relational distress experienced as whānau navigate sudden and often dramatic changes in their loved one's behaviour, cognition, and personality. Others shared insights of how whānau members were often traumatised by the event that caused the TBI, particularly when conflict, violence, or substance use were involved. This could leave whānau carrying guilt, helplessness, unresolved tension or responsibility when their own actions, or those within the whānau contributed to the injury. These experiences highlight that TBI recovery must address not only the physical and psychological dimensions of the injured person but also the collective trauma carried by the whānau. As Kiwi reflected:

> Sometimes when you are healing you need to also heal all the other people that are around you. Get them in the right headspace too. That's very important too. Because they are suffering, not as much, but in a different way.

When a loved one sustains a brain injury, it is not only the individual who is affected, the trauma ripples outward altering relationships, roles, and collective dynamics. Participants emphasised that whānau healing requires open kōrero, shared reflection, and cultural practices that reinstated tapu and mana to both the injured person and the wider collective.

These findings highlight that whānau are not peripheral to healing; they are the healing. For Māori, TBI is experienced not in isolation, but within a network of relationships that sustain identity, belonging, and wairua. Recognising how trauma reverberates through whānau, and supporting the collective restoration of balance, is therefore essential to any culturally grounded approach to recovery and rehabilitation. Furthermore, these accounts challenge individualised, biomedical

models of neurorehabilitation, highlighting instead a whānau-centred approach should inform service design and policy.

## Chapter Summary

This chapter explored mātauranga Māori knowledges, practices, and healing approaches that support brain health and recovery from TBI, as understood by the Māori health professionals who work alongside TBI whānau. Their insights reveal that mātauranga Māori conceptualisations of TBI are viewed multidimensionally, affecting wairua, whakapapa, relational balance, and whānau wellbeing.

Wairua was a central dimension of TBI rehabilitation through which participants described wairua as both vulnerable to disruption and essential in the process of recovery. This reflects a Māori worldview in which wairua is inseparable from tinana, hinengaro, and mauri meaning that an injury to the brain is never confined to the physical organ alone. Their insights also demonstrated that healing grounded in mātauranga-a-wairua can be the key that enables individuals to make sense of their injury, (re)connect to what is important to them, and re-engage with the rehabilitative process. In this view, restoring wairua becomes both a therapeutic priority and an essential foundation for holistic recovery following TBI.

Rongoā was identified as a vital healing practice that extends far beyond treating physical symptoms. Through karakia, rongoā rākau, mirimiri, and immersion in the taiao, participants highlighted how rongoā restores wairua, strengthens mauri, and reconnects individuals with ancestral grounding. These practices were described as both therapeutic and empowering, supporting cultural reclamation alongside neurological and emotional recovery.

Whakapapa kōrero also played a significant role in supporting healing. Participants emphasised that reconnecting with ancestral narratives reawakens identity, belonging, and supports pathways for healing and trauma processing. Through storying their lineage and revisiting

foundational relationships with atua and whenua, individuals were able to make sense of their injury in ways that reduced isolation, reframed whakamā, and strengthened their pathways forward.

Whānau were consistently positioned as the foundation of recovery, embodying collective resilience, intergenerational knowledge, and cultural continuity. Participants described whānau as key advocates within unfamiliar and often inequitable clinical environments, and as central to restoring wairua, reinstating tapu and mana, and sustaining emotional and practical support. Healing was framed as a collective journey which whānau navigate together, drawing upon mātauranga-a-whānau, shared reflections and cultural practices of care.

Collectively, these findings show that Māori health professionals draw upon a rich tapestry of mātauranga Māori to support brain health and TBI recovery which are knowledge systems that privilege relationality, spirituality, identity, and collective resilience. They demonstrate that effective healing pathways for Māori must honour wairua, rongoā, whakapapa, and whānau as interdependent elements that address not only neurological damage but the wider spiritual and cultural impacts of trauma.

The next chapter will build on these insights by looking more directly into current TBI rehabilitation practices and consider implications for practice, service delivery, and Indigenous-led approaches within Aotearoa's neurorehabilitation landscape.

# Chapter Six: Ngā Pūrākau o ngā Kaimahi Roro | Voices from the Frontline

**Ma te kotahitanga e whai kaha ai tātau**

**In unity we have strength**

## Introduction

This chapter presents the findings of the third research question which asked: 'To what extent do Māori health experts perceive mātauranga Māori understandings of head injury trauma reflected in contemporary TBI rehabilitation practices in Aotearoa New Zealand?' The opening whakataukī, ma te kotahitanga e whai kaha ai tātau - in unity we have strength, was present repeatedly throughout the participants' kōrero. I felt its resonance most strongly during moments when the depth of kōrero carried the weight of collective experiences, and when the presence of ngā tūpuna o TBI whānau seemed to gather and stir around me. Rather than allowing the findings to fall into a deficit-framed narrative, this whakataukī held the kaupapa firmly to an aspirational lens, one that asserts that kotahitanga can and must prevail.

The findings in the chapter are organised around three themes that reflect both the current realities and the transformative possibilities of embedding mātauranga Māori within TBI rehabilitation in Aotearoa. The first theme, emerging pathways of inclusion, explores how Māori clinicians and whānau are navigating existing systems to advocate for greater recognition and integration of mātauranga approaches in neurorehabilitation. The second theme, reclaiming knowledge, repositions the conceptualisations of tapu, wairua and the upoko as central to understanding and healing TBI. The third theme, towards a dual pathway of healing, envisions a future in which a mātauranga Māori-informed model of care operates alongside Western rehabilitation frameworks, ensuring that both knowledge systems are valued and can co-exist in balance to support Māori wellbeing and recovery.

## Emerging Pathways of Inclusion

All participants overwhelmingly expressed that at present, the current system offers very limited input or acceptance of mātauranga Māori-informed approaches within contemporary TBI rehabilitation services. They observed that, while there is growing recognition of Māori health models at the policy level, and that some health providers have made efforts to integrate cultural elements, these are often superficial or procedural rather than embedded at the conceptual or systemic level. Cultural inclusion is often reduced to surface-level gestures such as opening a session with karakia, without embedding Māori frameworks of healing, understanding, or recovery into the clinical process itself. As Kererū observed:

> It's a struggle. You know, if I say yes [to the research question asking, do you see mātauranga Māori informed healing approaches in current TBI rehabilitation services], I'll say yes, from my perspective, because I utilise it, I implement it. It's just a natural thing for me to implement. But I would rather say, no. I'd say if there is any type of mātauranga Māori or any Māori models of health that are implemented within this arena, within this space - it's very, very limited.

This directly reflects participants' perception that mātauranga Māori understandings of head injury trauma are only marginally visible, if at all, in current neurorehabilitation practice. Along with highlighting a deeper epistemological divide: while mātauranga Māori understands healing as relational, embodied, and spiritually interconnected, the current system continues to operate from a reductionist biomedical paradigm that isolates symptoms from the wider context of whānau, wairua, and whakapapa.

Participants described this exclusion as symptomatic of a broader structural inequity, where Māori knowledge continues to be positioned as supplementary to, rather than constitutive of, legitimate health practice. Korimako noted that the neuropsychological rehabilitation system continues to privilege biomedical knowledge as the only legitimate foundation for treatment.

> Where does mātauranga Māori show up in making sense of brain development? It doesn't really show up much in the Western medical systems, it doesn't really show up much in the mahi that I do or in the other spaces in which we are referring out to, for our whānau.

Even when Māori perspectives are invited, they are expected to conform to the language and logic of Western evidence-based practice. As a result, mātauranga Māori is positioned as supplementary or symbolic, rather than as a substantive, guiding framework. This limited inclusion reflects deeper structural issues within the health system, where Western epistemologies define what counts as knowledge, evidence, and treatment (Heffernan et al., 2024; Veenstra et al.,2024). Korimako continued to share:

> The difficulty with the TBI neuropsych space is the way in which assessments are administered. The psychometrics that are used and the standardised approach that is internationally recognised as how you assess impact to brain functioning as a result of the TBI. It'd be amazing if some of the measures that we're using were more tailored to a New Zealand demographic. Is there scope and place for this to be more responsive to Māori – absolutely!

Here, Western neuropsychological tools reflect an individualised, measurement-driven model of cognition, whereas Māori models locate cognition within whakapapa, relationality, and wairua. This kōrero also extends beyond the instruments themselves to the manner in which the assessments are administered. The emphasis on “the way” assessments are administered draws attention to issues of power and cultural positioning. When assessment processes proceed without adequate whakawhanaungatanga and attention to tikanga, the assessment space may lack the relational safety necessary for authentic cognitive expression. This not only affects engagement but may also shape performance and outcomes. From a Māori perspective, the validity of an assessment is therefore inseparable from the quality of the relational process through which it is conducted.

Participants also highlighted that the lack of acceptance of mātauranga Māori-informed understandings of brain injury has a direct and detrimental impact on whānau education and recovery journeys. Community-based clinicians observed that whānau often receive very little information about TBI or concussion services following discharge. When information is provided, it is typically framed through a Western biomedical lens, emphasising anatomical and functional aspects of the brain while overlooking Māori perspectives such as wairua, hinengaro, and whakapapa connections. As a result, many whānau struggle to relate to the information or see its relevance to their lived experience. As Korimako explained:

> Whānau don't understand what the heck you're talking about. When you talk about brains, when you use really complex neuroscience jargon, you do these big comprehensive assessment reports, you spout out all this information that means nothing to them. They have no metaphor or nothing to hang it on.

This indicates that current educational and information sharing practices are operating from an epistemic and ontological framework that does not align with Māori ways of knowing. Therefore, leaving whānau without meaningful anchors to interpret their experience.

Similarly, Kereru shared:

> Their whānau have no knowledge of how to manage their whānau member. Honestly, that's where it all bellies up. And yet you would expect that when they've been in rehab for 3 months or whatever it is after the trauma, after the accident. You think that they would give them enough information when they take their whānau member home to be able to know how to manage them and cope with the situation, and that's where I see a massive gap. [There is] a lack of understanding, a disconnect. Not having that ability to understand from that level. The best way they cope is they just use their own instincts, and sometimes that’s not always right.

This account highlights that without meaningful expectations grounded in both biomedical and cultural frames, whānau instead draw on instinct and inherited patterns of coping that may not always align with the realities of brain injury. Participants also noted that this disconnect leads to confusion and service disengagement, as whānau are expected to navigate complex medical systems and make critical care decisions without sufficient understanding. This lack of culturally grounded education places whānau at a significant disadvantage, reducing their capacity for self-advocacy and limiting their ability to provide informed care for their injured loved one. This absence of understanding can quietly widen the gap between whānau intention and effective support, reinforcing isolation at precisely the moment when connection is most needed.

Throughout the kōrero it was clear that Māori health practitioners are actively navigating the current neurorehabilitation landscape. Participants highlighted the extra load carried by Māori workers as they navigate the current neurorehabilitation system and absorb the limitations of mātauranga Māori informed care. For example, Māori clinicians often find themselves doing significant advocacy work for whānau alongside their clinical workload. This advocacy role can involve ensuring that whānau voices are heard, explaining cultural values to clinical teams, acting as mediators between whānau and non-Māori health professionals or ACC case managers, and creating culturally safe spaces. Tūī described being called upon by a whānau who after six months were struggling to receive patient-centred communication with ACC:

> This whānau have come through and he's not eating, he's lost all this weight. This is what I do, I go and speak to whānau when there's been that horrible, gap, they've been left to their own devices…. They are like we need help, we need help. This big gap in his treatment was exacerbating his symptoms. Now because of all that he'll take longer to recover.

This reflects a broader pattern where system fragmentation and delayed care compound the impacts of TBI, undermining both clinical recovery and whānau wellbeing.

Kererū shared an initiative where she worked to integrate culturally informed practice into neurorehabilitation:

> I was talking to whānau, I captured their testimonies. Evaluations from therapists within my team, and I also captured evidence through ACC case managers. Then I put it all together in a presentation, and I did all this at my own cost. I was really proud of myself for that because I could see the floodgates open for whānau to be able to access cultural therapy that they've wanted for years and years and years, and man did it work!

Her kōrero highlights the transformative impact of advocacy in improving outcomes for Māori. Yet, it also exposes the cost of such work particularly when its success did not insulate it from structural vulnerability. When funding was removed and policies changed, the strategy Kererū implemented was ultimately ceased. I observed a change in the participants tone of voice and heaviness descend upon their being when they spoke and paused in quiet reflection after sharing these stories. At times participants appeared emotional about the need to continually justify the relevance of Māori approaches within mainstream settings. They spoke of the frustration that comes from witnessing the detriment to whānau caused by a lack of understanding of the importance of mātauranga Māori informed healing approaches within TBI neurorehabilitation.

Collectively, this theme demonstrates that the exclusion of mātauranga Māori from TBI services reflects epistemological hierarchies that privilege biomedical ways of knowing and structural bias that privilege whose knowledge is legitimised and operationalised. This exclusion has tangible consequences for whānau, who are left to interpret TBI through frameworks that do not speak to their realities and undermine their recovery. Yet, despite the limitations identified, participants continue to embed cultural knowledge and practices within TBI rehabilitation, refusing to let system barriers prevent culturally grounded care. Their efforts represent not only resilience but also steps towards the evolution of a system that is more inclusive of Māori worldviews.

## Reclaiming Scared Knowledge

This theme highlights the central place of wairua, whakapapa and the sacredness of the upoko in Māori understandings of healing, and how these foundations are critical within contemporary TBI rehabilitation settings. This Indigenous framing is not unique to Māori. Native American and First Nations Indigenous healers emphasise that healing brain injury requires attending not only to the physical aspect of injury but also to the psychological and spiritual dimensions, including recognising when imbalance arises between these three domains (Bassett et al., 2012; Keightley et al., 2011). Often the spiritual domain is dismissed by Western trained health professionals; however, ignoring this dimension may exacerbate the trauma response and prolong recovery time for both the patient and their whānau (Bassett et al., 2012; Keightley et al., 2011).

Participants articulated that current neurorehabilitation practices, with their focus on neuroanatomy, cognitive testing, and behavioural modification, overlook the deeper spiritual and cultural dimensions essential to Māori understandings of healing. They noted that the upoko and roro, as sites of profound tapu, are not meaningfully integrated into assessments or treatment, and that this absence extends to the neglect of wairua and limited recognition of whakapapa in the context of TBI recovery. As Kererū explained, in her years of practice she has often observed that attending to wairua is what liberates whānau, yet it is rare to see wairua meaningfully addressed:

> Do I see it happen [wairua being addressed], not really. We might have little pockets of capturing it, with specific expert practitioners like the kairongoā's, and people like that. And I've definitely seen progress for those ones, definitely. You can see the light again, it's like a light switches on, it's like, 'I get to have hope'.

In this reflection, Kererū does not describe a complete absence of wairua in neurorehabilitation; rather, she speaks of fleeting but powerful encounters where mātauranga Māori-informed care is present. In these instances, she observed a visible shift, whānau appear hopeful, (re)connected, and that healing feels possible again. These insights demonstrate what

culturally attuned rehabilitation can achieve. Yet, the intermittent and peripheral nature of wairua in neurorehabilitation suggests that mainstream systems continue to operate within frameworks that separate mind, body, and spirit, creating conditions where care is dependent on whānau initiative rather than systemic commitment.

Several participants recounted cases where whānau had shared with them how they felt dismissed or misunderstood when trying to discuss wairua, dreams, or signs from tūpuna with non-Māori health professionals within neurorehabilitation settings. Kiwi recalled a personal experience from a number of years ago, when he received a TBI:

> I used to wake up on the ceiling, looking down on my body the next day. That was astral projection. So, the first time it happened I thought, 'oh shit I must be dead'. And then next thing you are back in your body again. When that happened again and again, I wasn't concerned about it anymore. Cause I knew I was going to end up back there [in my body] again. I'm very careful who I talk to about that sort of thing. Some of them think you are a bit woo woo. It's a bridge to far for them.

Such experiences demonstrate how Māori interpretations of trauma, memory, and wairua are often invalidated within contemporary services, reinforcing participants' view that mātauranga Māori is not meaningfully incorporated into TBI care. However, participants envisioned that by restoring the centrality of wairua and recognising the sanctity of the upoko and roro, neurorehabilitation could move beyond symptom management and cultural dissonance toward a more integrated process of balance and wholeness for their kiritaki and whānau. This shift signals not only a clinical change, but a wider transformation in how the system recognises and responds to the holistic realities of Māori healing.

At the same time, participants spoke with humility about their own evolving understanding of mātauranga Māori and the responsibilities that came from engaging in this space. Many acknowledged that while they were confident in their clinical expertise, they remained 'forever'

learners in the depth and breadth of mātauranga. To uphold the integrity of mātauranga Māori within their practice, participants described the importance of staying within their professional and cultural scope. For example, seeking guidance from kaumātua, tohunga or kairongoā when spiritual or cultural matters extended beyond their own knowledge. This humility also extended to practice, where participants emphasised the value of stepping back and allowing whānau to take the lead, trusting in their own mātauranga -a-whānau and lived experiences. As Tūī quietly reflected when considering mātauranga-a-roro with whānau:

> It's kiritaki led, I'll let them indicate where they're at. And I'll also tell them I don't know if I don't know. I've had a lot of supervision, and I've also had some really cool teachers like [name of tohunga].

Importantly, participants emphasised that understandings of tapu, wairua, mauri and whakapapa are not exclusive to Māori but are forms of knowledge that can be shared and should be taught to all health professionals. They argued that clinical and allied health training across Aotearoa should include mātauranga Māori grounded in tikanga and relational ethics. This would enable practitioners, both Māori and non-Māori, to engage with Māori worldviews in ways that are authentic, respectful, and culturally grounded. As Ruru expresses:

> All of our clinical training should be grounded in our mātauranga first and then you teach the Western. Start with our traditional mātauranga around the roro. In our clinical training all that we are taught is to say a karakia to start and end your sessions, and so if it comes up, my colleagues are like 'what do I do, do I just ask if they want a karakia?' I reply, 'well what karakia would you do?' It's not their fault. They just don't know that wairua is more than karakia. And I think that is why we get so many Māori insisting on, we'll requesting a Māori psychologist. I think having those kōrero around their tūpuna and their whakapapa, is that connection to something that is bigger than yourself. Because whakapapa is wairua. And I think you can teach that, they just don't.

This account calls for a shift in educational priorities, positioning mātauranga Māori as foundational. While practices such as karakia may signal cultural recognition, they do not in themselves constitute an understanding of wairua. What is required, is education that enables health professionals to comprehend the ontological significance of concepts such as wairua within Māori understandings of health and personhood.

Each of these examples indicate that practitioners are actively countering the colonial tendency to centralise Western-informed clinical authority, instead reinstating cultural knowledge holders as essential agents in TBI recovery. The participants envisioned a neurorehabilitation landscape where Indigenous knowledge is not an adjunct to Western practices, but rather a respected and living system through which both Māori and non-Māori practitioners can contribute to the reclamation of cultural integrity and to enhance health and recovery outcomes for TBI whānau. Ultimately, reclaiming sacred knowledge is not only a cultural correction but a necessary transformation for a system seeking to respond authentically and ethically to Māori experiences of TBI.

## Towards a Dual Pathway of Healing

In response to the themes described above, participants expressed a strong desire for the establishment of a dual system of care in TBI rehabilitation. They envisioned a model where TBI care is grounded first and foremost in mātauranga Māori, enabling a distinct Māori-informed neurorehabilitation framework to operate alongside the current Western model rather than being constrained within it. Experts emphasised that while there is value in, and a need for biomedical approaches, the structures and philosophies that underpin them are often incompatible with Māori worldviews. They pointed out that if the integration of mātauranga Māori approaches were ‘put into’ current Western informed frameworks, this would reduce mātauranga Māori to an addition rather than recognising it as a knowledge system in its own right with its own processes, and measures. As

Tūī very clearly articulated, “why are we thinking that we need to add Māori to a Pākehā concept. Nah! We need a Māori system.”

Her assertion reflects a broader theme within the findings: that participants perceive current services do not adequately reflect Māori understandings of head injury trauma, which necessitates a parallel system rather than minor cultural additions to the existing one. This dual approach honours both epistemologies, allowing Māori to choose a rehabilitation journey that aligns with their cultural, spiritual, and clinical needs. As Kererū shared:

> We're not pushing non-Māori away, we welcome you. We want to be able to express what we believe are our values for healing versus what you believe are your values for healing. We're not saying well your values are rubbish. That's not what we're saying. We are saying, give us the opportunity to implement our values. Let's partner up. That's what the treaty is all about partnership.

Within such a model, Māori-led pathways of healing would be defined by Māori values, knowledge, and processes, allowing whānau to choose the form of care that best aligns with their cultural and spiritual realities. Participants emphasised that this approach must be resourced equitably and supported by policy that recognises mātauranga Māori as an authoritative body of clinical and spiritual knowledge. The kōrero around a dual system was not proposed as a rejection of biomedical science, but as an enactment of tino rangatiratanga and epistemic sovereignty in healthcare. As Korimako described:

> If I was dreaming, we would have our own psychometric assessment. Reports would be written in a mana-enhancing way that incorporates who the person actually is as opposed to all the problems. We would take an intergenerational lens of how we view TBI, how we make sense of it. We would fall back on the teachings of our tūpuna to understand how to heal. The Western system has shown us time and time again that you can't meet the needs of our people.

Participants stressed that a dual system would enable Māori to work from a place of tino-rangatiratanga with self-determination and authority over their own knowledge systems and practices. Such an approach would create room for mātauranga Māori to exist as legitimate forms of rehabilitation, acknowledging a system grounded in centuries of empirical observation, reflection and intergenerational transmission. As Ruru highlighted tūpuna understandings of the roro and its relationship to wairua and hinengaro reveal a deep awareness of brain function and development:

> Before we had all of this technology that tells us how the brain developed. There are some kōrero from our tūpuna that is reflected in the language and the stories that are passed down, that show that they had some sort of sense of how the brain works.
>
> Especially how our brain develops in our tamariki (children) in those early years. The needs of a tamaiti (child) and how they can be met. Things like what we call attachment, and attunement, and coregulation, and swaddling and all of those sorts of things. They didn't have MRI machines and PET scans and all of those things. Within our kōrero pūrākau there are all of these understandings of the brain. We use those understandings to explain it to whānau.

This proposed dual system reflects not only practical restructuring, but a shift from patient-centred care which treats the individual as the primary unit of analysis, to whānau-based healing, where relationships, obligations, and collective identity form the foundation of recovery. This framework would then allow whānau to engage more actively in the recovery process, recognising them not as passive recipients of care but as holders of essential healing knowledge and relational power. In creating space to privilege mātauranga-a-whānau, whānau are repositioned as co-healers; whose understanding of the injured person's wairua and whakapapa can guide recovery in culturally meaningful ways.

Participants reflected on the challenges of working within a neurorehabilitation system largely structured and regulated by ACC, which is the primary gateway to TBI neurorehabilitation in

Aotearoa. Participants spoke candidly about the subservience of both practitioners and whānau within this current system, describing the ACC framework as rigid, with insurance-led policies and procedures that define and constitute what is injury and legitimate treatment practices. Tūī said, “we have to kowtow to the system. You have to go through ACC.” Korimakō explained further:

> They're the ones that decide whether you get access to services or not. They're also the ones that decide what services you can have access too once you’re in the door. So, there would be a significant amount of power and control that they have over, the assessment process and how it feeds into interventions and supports.

This illustrates how power is exercised through systems in ways that can constrain or limit culturally grounded approaches that fall outside institutionalised systems. While participants acknowledged the recent inclusion of rongoā funding, they noted a substantial gap between policy and genuine engagement with Māori realities or the relational foundations of mātauranga Māori healing. This includes ongoing issues around ACC’s definitions of a kairongoā and who is recognised as qualified to provide rongoā services. As Kiwi shared, “well in order for us to pass [through ACC] we have to fit into their boxes.”

Notably, when participants spoke of their own experiences working within the confines of ACC, their tone carried a sense of measured frustration. But as they recounted stories of whānau navigating ACC processes; witnessing their struggles, health setbacks and regressions in recovery; the restraint gave way to kōrero marked by heartfelt expressions of pain, anger and sadness. As Kererū shared:

> The biggest let down is that you'll get them [whānau] so far in terms of their recovery and their healing, you know, and you're saying to ACC they just need that little bit more of a step up and ACC go cut!

This response illustrates the inequities produced when health systems prioritise procedural compliance over flexible, culturally aligned care, often resulting in preventable setbacks for Māori whānau.

It was also identified that the relationship between practitioner and ACC, whānau access to services, and the timeliness of that access were all heavily influenced by geographical region. As Ruru shared, “usually with psychology for the concussion service, you've only got 5 sessions”, explaining that when there is clear treatment rationale, “ACC is pretty good at approving further support.” She noted that in her locality, there are accessible and “amazing” rongoā practitioners. However, many of the other participants offered kōrero that reflected significant barriers to engaging with ACC. “It is a really hard battle” Tūī described when recalling attempts to communicate whānau needs to ACC, adding that “it's that fitting Māori into a Pākehā system…even though there's a hāpai team”. These ACC-related barriers further illustrate participants’ perceptions that mātauranga Māori understandings of trauma are constrained, regulated, or sidelined within current rehabilitation structures.

This theme reveals that meaningful TBI recovery for Māori cannot occur within a system that continues to centre Western epistemologies as the sole authority on brain injury. A parallel system would allow mātauranga Māori to flourish on its own terms and truly reflect the depth and diversity of Māori understandings of trauma, healing, and recovery. With authentic partnership and structural reform, the system could evolve to genuinely champion mātauranga Māori-informed frameworks of neurorehabilitation as essential to equitable TBI outcomes. Ultimately, this theme demonstrates that restructuring service delivery is not merely an operational adjustment but a necessary rebalancing of power, enabling Māori knowledge systems to stand alongside, rather than beneath, Western clinical practice.

## Chapter Summary

This chapter examined the extent to which Māori health experts perceive mātauranga Māori understandings of head injury trauma reflected within contemporary TBI rehabilitation practices. Across the three themes, analysis identified a consistent picture: while pockets of culturally grounded practice exist, the current system continues to marginalise mātauranga Māori resulting in care pathways that often fail to meet the needs of TBI whānau.

The first theme revealed that the limited inclusion of mātauranga Māori in mainstream TBI services is not incidental but reflects longstanding epistemological hierarchies that privilege biomedical knowledge while rendering Indigenous understandings peripheral. This absence has practical implications for whānau, who are forced to navigate complex injuries through frameworks misaligned with their cultural, spiritual, and relational realities. Similarly, Māori health practitioners are doing additional advocacy work to create culturally safe spaces. Yet despite these constraints, Māori health practitioners continue to weave cultural practice, tikanga, and relational ethics into care, signalling their intent to shift towards a more inclusive and culturally anchored landscape of neurorehabilitation.

The second theme demonstrated that when wairua, whakapapa, and the tapu of the upoko are neglected, TBI rehabilitation becomes fragmented, culturally unsafe, and misaligned from how Māori experience trauma and recovery. Participants highlighted that true healing requires acknowledging the spiritual and cosmological dimensions of the roro and upholding the sanctity of the person. Their vision extends beyond adding cultural elements to Western models; it calls for a transformation in which mātauranga Māori is restored as a legitimate and vital body of knowledge able to guide practice for both Māori and non-Māori practitioners. Reclaiming this sacred knowledge is thus not only a matter of cultural integrity but a necessary shift toward ethical and effective TBI care.

The third theme underscored that equitable neurorehabilitation for Māori cannot be achieved within the constraints of a system that centres Western epistemologies as the singular authority on brain injury. Participants articulated a compelling vision for a dual system of care in which mātauranga Māori frameworks operate alongside, rather than within, Western clinical structures. Achieving this requires structural reform, authentic partnership, and a rebalancing of power so that Māori approaches to brain health, trauma, and recovery are not supplementary but foundational to TBI care in Aotearoa.

The next chapter is the final discussion and concluding chapter, where the main findings and future implications are presented.

# Chapter Seven: He Ara Whakaora | Pathways for TBI Recovery

**E huri tō aroaro ki te rā, tukuna tō ātārangi ki muri ia koe**

**Turn and face the sun and let your shadow fall behind you**

## Introduction

This thesis has drawn on archival research from ngā tūpuna alongside kōrero from Māori health practitioners to examine mātauranga Māori understandings of injury trauma, the brain, and brain health in relation to TBI. The analytical findings presented in Chapters Four, Five, and Six illustrate how Māori conceptualisations of trauma and hauora offer distinctive pathways of healing for Māori with TBI, whilst also revealing the extent to which these understandings are currently reflected within contemporary neurorehabilitation services.

Guided by the overarching research question, '*How do mātauranga Māori understandings of injury trauma and brain health inform healing pathways for Māori recovering from traumatic brain injury?*,' this study explored three sub-questions: (a) how trauma is understood within mātauranga Māori in relation to brain health and recovery; (b) what mātauranga Māori knowledge, practices, and healing approaches support TBI recovery; and (c) the extent to which these understandings are visible or enacted within current rehabilitation practices in Aotearoa.

This chapter synthesises the study's findings with existing scholarship to illuminate how Indigenous knowledge shapes Māori experiences of injury, recovery, and healing. By situating the findings within wider literature, Māori epistemologies, and the structural realities of neurorehabilitation in Aotearoa, the discussion articulates the contributions this research makes to both mātauranga Māori knowledge bases and contemporary TBI practice. Drawing together these taonga, this chapter theorises three interconnected propositions that have the potential to reorient neurorehabilitation toward a more culturally grounded, Māori-informed environment.

First, the findings propose that effective TBI rehabilitation for Māori must be grounded in an understanding of tapu, wairua and mauri, and that healing pathways are strengthened when these dimensions are attended to alongside physical and cognitive rehabilitation. Second, the findings advance the proposition that the brain holds whakapapa, connecting individuals to their ancestors, to intergenerational knowledge, and to broader historical and societal lineages that shape injury, recovery, and resilience. Third, the findings offer an aspirational proposition that positions health professionals as pivotal advocates and kaitiaki, who can champion and protect spaces where these knowledges and practices can flourish within clinical contexts. These propositions are not presented as fixed or definitive, but as theoretical contributions grounded in mātauranga Māori and in the lived realities of Māori navigating TBI.

Together, they constitute a call to restore balance between Western neurorehabilitation frameworks and the epistemological foundations of mātauranga Māori, enabling recovery pathways that more genuinely honour Māori ways of experiencing, understanding, and healing from brain injury.

## Main Findings

### *He Tapu, He Wairua, He Mauri: Re-centring the Sacred Dimensions of the Upoko in TBI Care*

The findings within this research make clear that Māori conceptualisations of the human body position the upoko and roro as sites of profound tapu (Elder, 2012), where identity (Sullivan & Hakopa, 2017), wairua (Marsden, 2003) and ancestral and cosmological connection (Smith, 2019) are concentrated. This understanding reflects an epistemological view where the protection of what is most sacred is central to maintaining balance and wellbeing (Mead, 2003; Tate, 2021). Accordingly, the roro is not viewed simply as an anatomical organ; rather it is recognised as a taonga imbued with wairua, whakapapa and mana.

Aside from the pioneering contributions of Dr Hinemoa Elder (2012, 2013a, 2013b, 2017, 2024) examining TBI with Māori, literature in this area remains notably sparse. The findings of this study therefore help address this significant knowledge gap by highlighting how trauma is amplified because within Te Ao Māori, brain injury directly intersects with the domains of tapu and wairua. The violation of tapu through brain injury represents a breach of the most sacred site of the body. The disruption to tapu manifests most clearly through its effects on wairua, which participants described as both the primary site where injury is felt and healing is initiated. When the roro is injured, wairua can become unsettled, dimmed, or misaligned, and this spiritual disturbance is often experienced as whakamā, confusion, emotional heaviness, or as a sense of spiritual displacement. For example, participants described observing kiritaki or whaiora feeling disconnected from themselves and whānau. This was not interpreted as merely neuropsychological impairment, but as evidence of wairua having been compromised through trauma to the upoko. This breach can destabilise whakapapa connections, challenge one's sense of identity, and undermine the integrity of mana and mauri. In this way, TBI threatens not only the tinana and hinengaro, but also the ancestral and cosmological structures that anchor a person in Te Ao Māori.

These findings also highlight how disruption of wairua is intimately connected to the disturbance of mauri, the vital life force that regulates energy, vitality, relational balance, and overall wellbeing. Participants described how TBI delivers a kind of patu ngākau, a blow not only to the physical brain but to the mauri of the person and their whānau. When mauri is weakened, individuals may experience diminished energy, emotional dysregulation, disconnection from others, and difficulty participating in the everyday rhythms that once anchored them. These observations are significant for two reasons. First, they align with the conceptualisations of trauma by Mātua Takirirangi Smith (2019) as a disruption to the interconnected flow of wairua, hinengaro, tinana, and mauri. Second, they offer, clinically relevant insights into how such disruptions manifest for Māori; insights that are largely absent in contemporary psychology and neurorehabilitation practice (Bennett, 2018; Valentine, 2016). The examples discussed across the chapters demonstrate not only

how mauri becomes compromised following TBI, but also how mātauranga Māori–informed approaches such as wairua-centred practices, engagement with the taiao, and (re)connection to whakapapa and whenua actively support the restoration of mauri. Recognising these dynamics is crucial for clinicians, as it highlights culturally grounded mechanisms of recovery that remain underutilised in current models of care.

Lastly, aligning with the work of Hanara (2020) and McLachlan et al. (2023), framing the brain through the realm of atua adds an essential epistemological layer to interpreting both normal neural functioning and the effects of trauma. Various pūrākau illustrate that cognitive and spiritual capacities are understood as gifts from specific atua, linking the roro to primordial genealogies and cosmological origins. This framing positions the brain as a conduit through which ancestral intelligence, intuition, creativity, and memory flow. Understanding that a brain injury is interwoven with the dimensions of tapu, wairua, and mauri illustrates why TBI may be inadequately understood or treated through biomedical frameworks alone. This concern is also echoed internationally: First Nation Elders in Keightley and colleagues (2011) research stressed the necessity of attending to spirit in TBI healing, while recent neuroscience scholarship by Illes et al. (2025) advocates for the ethical and clinical imperative of integrating Indigenous knowledges within biomedical practice. Collectively, these perspectives underscore that neurorehabilitation must move beyond symptom-based models toward approaches that actively restore spiritual balance, strengthen mauri, and uphold the tapu of the upoko and roro.

### *Te Whakapapa o ngā Roro: Understanding the Ancestral Lineage of the Brain*

An insightful finding of this study was that Māori understandings of the brain do not begin with neuroanatomy but with genealogy. This finding is significant for several reasons. First, understanding TBI through a Māori worldview requires more than describing physiological disruption; it invites an exploration of the brain as a vessel shaped by whakapapa. Whakapapa locates the brain as part of a lineage that stretches from ngā atua to present generations, carrying

ancestral memory, purpose, and potential. Viewed through this lens, the brain is not merely a neurological organ but a living repository of inherited knowledge, intergenerational memory and identity. The well-being of the roro depends upon harmonious alignment with its genealogical origins. This includes the stories, values, and cosmological principles that have shaped Māori understandings of mind, behaviour, and wairua for centuries. This understanding is aligned with Elder's (2012) Wairua Theory of Mokopuna TBI, which conceptualises the effects of trauma as transmitted through whakapapa, backward into the past and forward into future generations. From this perspective, a TBI awakens ancestral memory and calls upon mātauranga tuku iho within the whānau to facilitate recovery. In this way, the brain is an expression of embodied whakapapa and the impact of TBI is felt not only at the level of individual dysfunction but across the relational networks that give life cultural coherence.

Second, alongside the transmission of ancestral knowledge, the whakapapa of the brain also carries the intergenerational residues of trauma. Participants' kōrero reflected an understanding of TBI as situated within inherited experiences of both trauma and resilience. From this perspective, the cumulative impacts of historical and intergenerational trauma (Pihama et al., 2017), and the socioeconomic conditions they have produced (Chauhan, 2023), shape Māori vulnerability to TBI, as well as the contexts and pathways of rehabilitation.

Neurobiological research increasingly acknowledges that experiences, patterns of stress, and relational environments can be carried across generations through cognitive conditioning and epigenetic inheritance (Conching & Thayer, 2019). At the same time, neuroscience has demonstrated that persistent exposure to stress, violence, or socioeconomic deprivation can imprint epigenetic markers that influence emotional regulation, threat perception, and neurological functioning (Pfeiffer et al., 2018). These converging findings lend support to Māori understandings of whakapapa in brain health, highlighting trauma as relational, accumulative, and historically situated processes rather than an isolated individual event.

It is also important to highlight that whakapapa carries not only inherited trauma but also inherited strengths, including intergenerational resilience, adaptive capacities, collective problem-solving, and cultural practices that support psychological and spiritual endurance (Wirihana & Smith, 2019; Cavino, 2019). Thus, the brain holds not only the scars of historical trauma but the legacies of survival, healing, and resistance that have sustained Māori across generations.

Third, the findings suggest that disruptions to the brain are simultaneously disruptions to whakapapa-informed functioning. This reflects a distinctly Māori relational ontology in which neurobiological processes cannot be separated from genealogical, spiritual, and relational worlds. Within this worldview, whakapapa is a foundational organising principle that shapes cognitive, emotional, and spiritual functioning. The archival teachings of ngā atua o ngā roro in Chapter Four and contemporary mātauranga-based brain models from Hanara (2020) and McLachlan et al. (2023) illustrate that neural processes emerge within, and are guided by, inherited lines of connection between ancestors, the natural world, and the self. The participants in this study echoed this ontology when they described TBI-related changes not only as cognitive impairments but as disruptions to relational balance, ancestral alignment, and the energetic flow that sustains wellbeing. Such accounts reposition TBI as more than a biological event; it becomes a disturbance in the continuity of whakapapa that reverberates across wairua, hinengaro, tinana, and whānau. Recognising whakapapa as a legitimate psychological and biological framework therefore reframes neurorehabilitation where healing requires both the restoration of neural function, and the restoration of relational networks spiritually, genealogically, and communally to make cognitive life possible.

Collectively, the whakapapa of the roro demonstrates that if the brain is understood as a vessel interwoven with whakapapa, then neurorehabilitation practices must take care not to treat it as a universal, culturally neutral system. Failing to recognise the brain's genealogical positioning can inadvertently marginalise culturally grounded interpretations of injury, potentially leading to clinical

responses that overlook essential relational and spiritual needs. Approaching TBI through a lens that respects the whakapapa of the brain calls for ethically responsible practice that values the cultural context of cognition as much as its biological substrate.

### *Health Professionals as Kaitiaki of Neurorehabilitation Futures*

The final finding speaks to the notion of ethical, responsible and culturally safe practice that has been aspirationally woven throughout this entire thesis, from its methodological foundations to the participant findings.

Embodying mātauranga Māori in neurorehabilitation practice requires more than intellectual familiarity; it demands a decolonising approach grounded in the ethics of relationality, humility, and cultural courage. Participants described how the meaningful inclusion of Indigenous knowledge cannot rest solely on cultural competence workshops or the individual goodwill of clinicians but must instead be cultivated through a deep epistemic grounding in mātauranga Māori from the earliest stages of professional formation (Perreault et al., 2025; Severinsen et al., 2024). This necessitates that undergraduate and postgraduate clinical training programmes embed Māori conceptualisations of tapu, wairua, mauri, whakapapa, and hinengaro as fundamental theoretical foundations of health practice in Aotearoa. Such pedagogical shifts would enable future clinicians to recognise Indigenous knowledge not as an adjunct to biomedical models, but as a legitimate, rigorous, and relational framework for understanding and responding to brain injury.

Beyond education, health professionals must be able to operationalise mātauranga in ways that are authentic, contextually grounded, and guided by tikanga, whether through whanaungatanga-led engagement, wairua-attuned assessment practices, or advocacy for whānau-defined care pathways (Pitama et al., 2017; Wilson et al., 2022). Central to this is the wider neuro health system taking responsibility to genuinely understand Māori conceptualisations for the profound tapu of the brain and the reverence this hold within Te Ao Māori. Without such understanding, clinicians risk practising in ways that inadvertently undermine cultural safety and

relational trust. From reverence flows the ethical obligation of protection, to safeguard a person's dignity, identity and to understand them from within their cultural contexts (Huygens & Nairn, 2016; Tassell et al., 2012). Conversely, a lack of awareness risks not only cultural misunderstandings but ethical harm (Dudley et al., 2014; Haitana et al., 2022; Wilson et al., 2022). Research indicates that when Māori are offered interventions grounded in Kaupapa Māori values and Māori-informed approaches (Kopua et al., 2020; McLachlan et al., 2017; Standing & Kahu, 2021), rehabilitation experiences can be aspirational, empowering, and culturally sustaining. Accordingly, championing mātauranga Māori within neurorehabilitation requires practitioners to act as advocates who challenge systemic inertia in order to uphold culturally grounded, ethical, and holistic care.

Lastly, the findings underscore the need for structural transformation. Participants described how the current ACC-driven rehabilitation system is policy-led rather than health-led and that these policies restrict what counts as 'treatment', which narrows the scope of practice in ways that render Māori approaches peripheral or invisible. There have been various examples of cultural invisibility and the systemic obstruction of Māori by ACC (Bourke et al., 2023; Dudley, 2016; Wren & Jansen, 2023), like the findings in this study, efforts to deliver culturally aligned care often remain constrained, uncertain, or absent. Participants therefore argued that genuine tino rangatiratanga in neurorehabilitation requires the establishment of dual pathways: one grounded in mātauranga Māori and led by Māori expertise, and the other operating within the existing biomedical system. Such a model would allow Māori health professionals to practise without epistemic compromise, ensuring that mātauranga Māori stands alongside rather than subordinate to Western clinical paradigms.

Ultimately, this finding affirms that health professionals hold transformative potential to reshape the neurorehabilitation landscape, but only if they are supported by systems that honour Māori authority, uphold relational ethics, and enable mātauranga Māori to flourish on its own terms. By cultivating practitioners who are equipped with Indigenous knowledge, committed to cultural advocacy, and empowered to challenge structural inequities, neurorehabilitation in Aotearoa can

move toward a future that recognises Māori ways of healing not as accommodations within existing systems, but as essential foundations for equitable care and meaningful recovery for TBI whānau.

## Implications

### *Implications for Practice*

The findings in this study illustrate the need for neurorehabilitation practices in Aotearoa to expand beyond biomedical paradigms and instead toward approaches that are grounded in mātauranga Māori. First, assessment processes must explicitly attend to wairua, tapu and mauri, acknowledging that disruptions to spiritual balance, ancestral relationships, and the sacredness of the upoko are integral features of TBI for Māori. Incorporating these dimensions at the point of assessment rather than retrofitting them later as add-ons would enable clinicians to more accurately identify the relational, emotional, and spiritual impacts of injury that participants described as central to their experiences.

Second, this study adds to the literature that champions the recognition of rongoā as a legitimate and clinically relevant component of neurorehabilitation. Participants illustrated how practices such as rongoā rākau, karakia, and engagement with the taiao supported cognitive clarity, emotional grounding, and spiritual recalibration. Formally legitimising rongoā within clinical pathways would improve access and allow Māori to draw upon modalities that resonate with their whakapapa and understandings of wellbeing. However, integrating rongoā into TBI services must extend beyond referral pathways. It requires structural commitment to growing the rongoā workforce and ensuring that mātauranga Māori practitioners are positioned not as adjuncts to biomedical care, but as equal contributors to rehabilitation planning and delivery.

Third, meaningful change requires health professionals are substantively educated in mātauranga Māori. Participants indicated that the most harmful gaps in care arose not from malicious intent, but from clinicians' lack of understanding regarding tapu, wairua, whakapapa, and

mauri. Embedding mātauranga within all undergraduate and postgraduate clinical programmes, rather than relying on post-qualification workshops, would better equip the workforce to recognise Māori conceptualisations of trauma, understand relational forms of cognition and recovery, and confidently integrate Indigenous knowledge alongside biomedical expertise.

### *Implications for Policy*

Implications extend beyond clinical encounters to structural issues within Aotearoa's rehabilitation system. Foremost, participants' experiences point to the need for structural reform within ACC. As a system shaped by policy rather than hauora principles, ACC's rigidity reinforces narrow eligibility and intervention criteria. Such constraints undermine holistic recovery for Māori and perpetuate inequities in access, timeliness, and cultural appropriateness of care.

Second, policy frameworks must recognise Māori evidence as valid and authoritative, rather than privileging biomedical research as the sole determinant of clinical legitimacy. The narratives from this study, the archival mātauranga of ngā atua, and contemporary Indigenous scholarship together constitute rigorous evidence of how Māori understand injury, recovery, and the brain. Genuine equity requires that such knowledges inform policy design, service pathways, and funding decisions.

Third, the findings highlight the need for dual system care pathways, where individuals can access both biomedical neurorehabilitation and mātauranga Māori approaches without encountering bureaucratic barriers or needing to justify cultural preferences. Dual pathways would allow Māori to receive care that is not only clinically effective but also culturally coherent, spiritually safe, and grounded in their whakapapa.

### *Implications for Māori Communities*

For Māori communities, the findings affirm that reclaiming mātauranga is itself a form of healing. Participants described how engaging with whakapapa kōrero, atua narratives, and rongoā

practices restored balance, fostered hope, and reframed injury in ways that upheld dignity and identity. Strengthening access to this knowledge within communities empowers whānau to recognise early signs of wairua and mauri disruption and to apply culturally grounded strategies to support recovery.

The study also points toward the importance of strengthening intergenerational knowledge transmission and mātauranga-a-whānau. As participants reflected, reconnecting with ancestral teachings, the whenua and whakapapa provided “sweetness” and cultural coherence within the rehabilitation journey. Sustaining these forms of knowledge across generations fosters resilience and enhances community capacity to respond to neurological injury in ways that are culturally expansive rather than constrained by Western norms.

Third, the findings point to the importance of providing Māori-centred education for whānau following TBI. Participants described how limited understanding of brain injury often left families navigating profound change without culturally meaningful frameworks. Developing Māori-centred kōrero about brain injury, which integrates biomedical knowledge with mātauranga Māori, delivered in ways that honour whakapapa and collective identity, would enable whānau to contextualise symptoms, restore interpretive authority to whānau and reduce the sense of disconnection described by participants. Such approaches move beyond information delivery toward shared meaning-making.

## Strength and Limitations

This study includes several methodological strengths alongside limitations that inform how the findings should be interpreted. First, a key strength lies in the intentional inclusion of Māori experts working within neurorehabilitation, whose perspectives offered depth, cultural specificity, and practice-informed insight into the spiritual and relational dimensions of TBI. Although the number of participants was small, this was consistent with a qualitative design oriented toward

depth rather than breadth. The resulting data were richly textured and enabled careful, relational analysis that foregrounded mātauranga Māori within a field where it is often marginalised.

The integration of archival material with contemporary participant kōrero further strengthened the study. Bringing together lived professional experience and mātauranga sources allowed for a layered analysis that situated current practice within broader cosmological and epistemological frameworks. This methodological weaving supported the study's aim to articulate ngā tūpuna and ngā Atua understandings in ways that extended beyond purely clinical discourse.

There are several limitations that warrant consideration. The expert participants represented specialised roles within neurorehabilitation, therefore, the insights presented reflect specific forms of professional expertise rather than the full spectrum of Māori experiences with TBI across the country. The archival material, while integral to the mātauranga Māori component of this study, was limited to sources that were accessible and available at the time of research. Other manuscripts, oral histories, or tribal-specific teachings may have generated additional nuance.

Finally, my positionality played a dual role in this project: it enriched the interpretive process by enabling culturally grounded, relational analysis; yet it also inevitably influenced how participant kōrero and archival teachings were read, prioritised, and woven together. Ongoing reflexive practice sought to ensure that this influence enhanced rather than constrained interpretive integrity.

These limitations do not diminish the contribution of the study, rather, they signal the need for further research that broadens participation, deepens archival engagement, and continues to explore methodological approaches.

## Concluding Thoughts

This research affirms that Māori understandings of trauma and brain health are rich, multidimensional, and grounded in the spiritual, relational, and ancestral foundations that shape Māori experiences of healing. These knowledge systems already provide robust pathways for

recovery, yet their full potential remains constrained by structural exclusion and epistemic inequity within contemporary neurorehabilitation. The future of TBI care in Aotearoa lies not in integrating Māori knowledge into existing frameworks, but in re-centring mātauranga Māori and enabling dual pathways where Indigenous approaches can flourish on their own terms. By restoring this balance, practitioners, services, and systems can move toward a form of neurorehabilitation that honours tino rangatiratanga, upholds cultural integrity, and supports the wellbeing of Māori whānau for generations to come.

As I close this thesis, I return to the question posed in the writings of Te Ahukaramū Charles Royal (2009, p.6), *"I te ahatia e koe taku taonga?"* I hope that I have upheld the mana of the many taonga throughout this thesis, honouring their whakapapa, carefully activating their potential, and respectfully contributing to a future in which mātauranga Māori stands at the centre of healing for our TBI whānau.

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# Appendices

## Appendix A: Ethics Approval

MASSEY UNIVERSITY
TE KUNENGA KI PUREHUROA
UNIVERSITY OF NEW ZEALAND

25/05/2025

Dear: Tania Kahika-Foote

**Re: Ethics Application - OM2 25/26 - How do mātauranga Māori understandings of head injury trauma and brain health inform healing pathways for Māori recovering from traumatic brain injury?**

Thank you for the above application that was considered by the Massey University Human Ethics Committee:

**Ohu Matatika 2** at their meeting held on **Thursday, 17 April 2025**

On behalf of the Committee I am pleased to advise you that the ethics of your application are approved.

Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Professor Tracy Riley,
Acting Chair, Research Ethics Chair's Committee

Research Ethics Office, Research and Enterprise
Massey University, Private Bag 11 222, Palmerston North, 4442, New Zealand T 06 951 6841; 06 95106840
E humanethics@massey.ac.nz; animalethics@massey.ac.nz; gtc@massey.ac.nz

# Appendix B: Participant Information Sheet

**INFORMATION SHEET FOR PARTICIPANTS**

Tēnā koe,

Thank you for showing interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate, we thank you. If you decide not to take part, there will be no disadvantage to you, and we thank you for considering our request.

**What is the Aim of the Project?**

Tania is a Massey University student completing a master's degree in psychology. The aim of her project is to explore how mātauranga Māori understandings of injury trauma, the brain and brain health inform healing pathways for Māori recovering from traumatic brain injury.

Tania is interested in hearing your kōrero and your perspectives to better understand how mātauranga Māori understandings of injury trauma and brain health currently inform neurorehabilitation practices in Aotearoa New Zealand.

**What will Participants be asked to do?**

Should you agree to take part in this project, you will be asked to engage in a kanohi ki te kanohi (one on one face to face) interview with Tania. Tania will arrange a location that is convenient and comfortable for you. The interview will take between 60- 90 minutes.

Participation in this research is voluntary. Therefore, you will not be expected to continue answering questions if you no longer wish to. You may ask to withdraw shared information from this project at any time.

After the interview, the audio-recording will be transcribed by Tania. You will be given a copy of the transcript for you to read and confirm that you are still happy for the information to be used. When the thesis is completed and marked you will be given a copy of the project findings if you would like to receive this.

**What Data or Information will be collected and what use will be made of it?**

The interview will be confidential and will be audio-recorded with your permission. No material that could personally identify you will be used in any reports on this study. Results of this research may be published. This project will be publicly archived so that it may be used by other researchers made available in the Massey University Library.

The data collected will be securely stored in such a way that only Tania has access to it. Data obtained as a result of the research will be retained for at least 3 years in secure storage. Any personal information held may be destroyed at the completion of the research even though the data derived from the research will, in most cases, be kept for much longer or possibly indefinitely.

# Appendix C: Participant Consent Form

**Participant Consent Form**

I have read the Information Sheet concerning this project and have had all the details of this study explained to me. All my questions have been answered to my satisfaction, and I understand that I am free to request further information at any stage.

I know that:

1. My participation in the project is entirely voluntary;
2. I am free to withdraw from the project at any time without any disadvantage;
3. Our conversation will be audio recorded, but I can ask for the recorder to be turned off at any time;
4. Personal identifying information from audio recording will be destroyed at the conclusion of the project but any raw data on which the results of the project depend will be retained in secure storage for at least three years;
4. This project involves an open-questioning technique. If I feel hesitant or uncomfortable I can decline to answer any question(s) and/or stop the interview at any time;
5. The results of the project may be published and will be available in the Massey University Library, but every attempt will be made to preserve my anonymity.

Please circle: I agree / I do not agree to the interview being sound recorded

I agree / I do not agree to participate in this project.

Signature of Participant: .....

Full Printed Name of Participant: .....

Date: .....

Signature of Researcher: .....

This project has been reviewed and approved by the Massey University Human Ethics Ohu Matatika 2, Application OM2 25/26. If you have any concerns about the conduct of this research, please contact the Chairperson, Massey University Human Ethics Ohu Matatika 2, email humanethics1@massey.ac.nz.