

Risks of traumatic brain injury

HAVE you ever fallen off your bike as a kid? There was probably a chance you had a head bump as it hit the ground. This bump may sometimes be referred to as a head injury. However, if this bump causes a jolt to the brain, it will be referred to as a traumatic brain injury (TBI).

TBI affects nearly 64 to 74 million people worldwide, with road traffic accidents

comprising most of the TBI cases reported in hospitals. In Malaysia, about 500,000 road traffic accidents occur annually, indicating a high number of possible TBI cases alone. When combined with TBI cases caused by falls, domestic violence and sports injury, the number of cases may even be higher. But why is this alarming?

“TBI has been considered one of the

biggest contributors to global death, disability and health burden. It has been classified as a persistent disease which may increase the risk of various long-term outcomes in the form of neurological disorders such as Alzheimer’s disease, Parkinson’s disease, epilepsy, depression and others. Thus, the term ‘silent epidemic’ was coined by a 2018 paper in the *Journal of Neurosurgery*,” says Dr Alina Arulsamy from the Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia.

According to Dr Alina, there’s tissue damage, axonal shearing, haemorrhage, blood-brain barrier disruption and possible skull fracture at the point of impact. This is followed by brain oedema, hypoxia and increased brain swelling seconds to minutes later.

“As time passes (minutes to days), brain inflammation is triggered due to immune system activation which helps to recover the damaged tissue and heal the site of injury. However, when these responses end up being prolonged (weeks to years), it may trigger brain toxicity, chemical imbalance and degeneration of the brain, leading to an increased risk towards a range of neurological outcomes, particularly at the chronic stages post-TBI,” she shares.

The risk varies with the severity of the TBI, increasing and sometimes doubling between mild to severe TBI. While not everyone who has sustained a TBI will develop these long-term outcomes, Dr Alina mentions that the risks have been proven to be significant enough that they should not be overlooked.

“Despite TBI’s debilitating long-term outcomes, there are currently no effective therapeutic strategies available to prevent or treat them, especially given the heterogeneity of the brain damage leading to these outcomes,” Dr Alina states.

Dr Alina has taken up the challenge to find a way to ease the health burden faced by TBI patients and improve their quality of life by understanding the basis of TBI and related brain inflammation. Her research focuses on three key aspects of traumatic brain injury – understanding the pathological interaction of TBI and its outcomes, determining the therapeutic targets for post-TBI interventions and elucidating the status of TBI in South-East Asia. She hopes to create significant awareness, which may promote the help-seeking behaviour (treatment and rehabilitation) in TBI patients in these low- to middle-income countries.

The fundamental studies on TBI in the country are scarce, which led Dr Alina to be a part of a niche group of TBI researchers in Malaysia. She intends to collaborate with these researchers to bridge the gap in TBI knowledge and hasten the pace toward preventing and improving long-term outcomes.

“TBI is a highly heterogeneous disorder that varies from person to person and has many factors such as age, gender and lifestyle that may influence it. It is no easy task for just one person to solve this problem but requires a village of researchers from across the country, region and world. Let’s share, collaborate, and reach the therapeutic goal for patients with TBI,” says Dr Alina, who graduated with a PhD from the University of Adelaide, Australia.

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Dr Alina Arulsamy

Dr Alina is the lead researcher of the TBI arm under the Neuropharmacology Research Strength (NPRS) at Monash University Malaysia. Lead of NPRS, Assoc Prof Mohamad Farooq Shaikh, Dr Alina and their team are currently running various translational TBI projects involving a multidisciplinary approach, such as understanding the dynamic relationship between neuroinflammation, the gut microbiota and TBI-related epilepsy (post-traumatic epilepsy) and neuropsychiatric comorbidities.

“Accurately mimicking clinical TBI in preclinical settings has proven to be difficult given the multifaceted nature of TBI. Many types of preclinical models are required to understand each facet. We have established one type of model in our lab, but we are actively seeking collaboration with other labs that have different models to answer some of our questions. It’s all about teamwork now,” Dr Alina states.

If you are interested in TBI research or working in the field, email Dr Alina Arulsamy at alina.arulsamy@monash.edu.





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CHIROPRACTORS are primary healthcare professionals concerned with the diagnosis, treatment and prevention of disorders of the neuromusculoskeletal system and the effects of these disorders on general health. In order to be a qualified chiropractor, you will need to pursue a degree in chiropractic.

One of the most exciting times while pursuing a chiropractic degree will be during your internship. One of IMU's chiropractic students, Timothy Ngeow Yit Ming, shares his experience during the internship.

A wholesome working experience

My internship as a chiropractic intern in both IMU chiropractic clinics at Setiawalk and Bukit Jalil has been one of the most eye-opening and rewarding experiences I have ever had as a chiropractic student. The sole reason behind an internship programme is to help students prepare for what to expect from the real working world, and in my opinion, it has done just that.

One of the hardest pills for me to swallow when I first started my internship was the fact that I would be treating real-life patients for the first time. To be honest, the first few weeks were incredibly frustrating and since I was going into a clinical setting with zero experience, it was quite nerve-wracking.

What really kept me going were my groupmates, as we were all pretty much in the same boat. Adapting to a new setting takes time, patience as well as lots of effort. At the end of the day, I would say it all turned out great.

Throughout the internship, I was introduced to many different supervising clinicians who helped shape me into the person I am today. However, dealing with the differences in technique and philosophy of different clinicians does have its fair share of difficulties. Being in this kind of environment made

An insight into the world of a chiropractor

“Chiropractors are first-contact practitioners, and it means that it is our job to diagnose and know when and where to refer patients when it is not within our job scope.”

Timothy Ngeow Yit Ming

me truly understand the phrase ‘Adapt, Adjust and Overcome’. For some people, this could be somewhat overwhelming, but for me, it was an opportunity of a lifetime to hear varying opinions and feedback from different clinicians.

Fast-forward to today, being in Semester Eight, in the last few weeks of my internship and after seeing quite a number of patients, I am pleasantly surprised about the impact chiropractic can have on people's lives. Being in a clinic was a humbling experience as it taught me that chiropractic is bigger than just being a good adjuster. Chiropractors are first-contact practitioners, and it means that it is our job to diagnose and know when and where to refer patients when it is not within our job scope.

To conclude, I would say that being an intern for the past year provided great insight as to what

working in a real clinic feels like. After seeing the impact I could bring upon my patients' lives, from seeing them in agonising pain the first time they came in, to leaving with a smile on their faces after a few visits, the experience motivates me to keep doing what I do.

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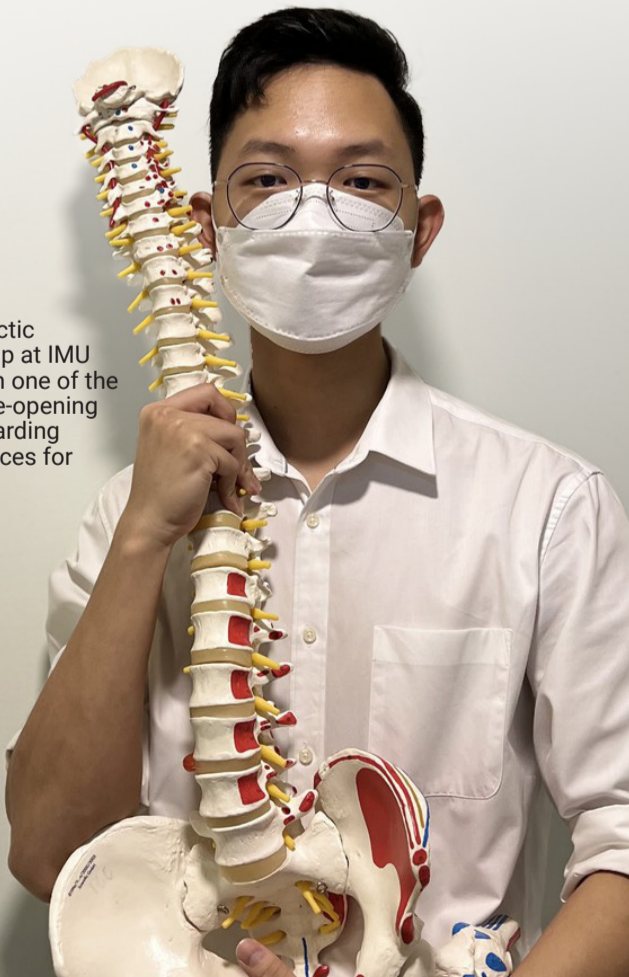
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Ngeow's chiropractic internship at IMU has been one of the most eye-opening and rewarding experiences for him.



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