

# Population-based prevalence and incidence study of NMOSD among Malays (an Austronesian group) in Terengganu state, Malaysia

Chee Keong Wong<sup>1</sup>, Jyh Yung Hor<sup>2</sup> \*, Yin Pin Loo<sup>2</sup>, Daniel Yi Jie Wong<sup>1</sup>, Yen Theng Chin<sup>1</sup>, Hazfadzila Mohd Unit<sup>1</sup>, Mazlina Husin<sup>1</sup>, Khairul Azmi Ibrahim<sup>1</sup>, Zariah Abdul Aziz<sup>1</sup>, Kazuo Fujihara<sup>3,4</sup>

<sup>1</sup> Neurology Unit, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Malaysia;

<sup>2</sup> Department of Neurology, Penang General Hospital, Penang, Malaysia;

<sup>3</sup> Department of Multiple Sclerosis Therapeutics, Fukushima Medical University School of Medicine, Koriyama, Japan;

<sup>4</sup> Multiple Sclerosis and Neuromyelitis Optica Center, Southern TOHOKU Research Institute for Neuroscience, Koriyama, Japan.

\* email: horjy@yahoo.com

## BACKGROUND

Neuromyelitis optica spectrum disorder (NMOSD) is more prevalent in certain racial groups. The prevalence among Whites / Caucasians is ~1 / 100,000, and among Blacks, the prevalence can be up to 10 / 100,000.

In Asia, the prevalence is higher among East Asians (Chinese, Japanese, Koreans): ~3.5 / 100,000.

Austronesians are the predominant inhabitants of the South East Asian islands and archipelagos, the Pacific islands, and also form the indigenous populations of Taiwan and New Zealand (Figure 1).

This population-based study was undertaken to clarify the prevalence and incidence of NMOSD among Malays, an Austronesian group residing in Peninsular Malaysia.

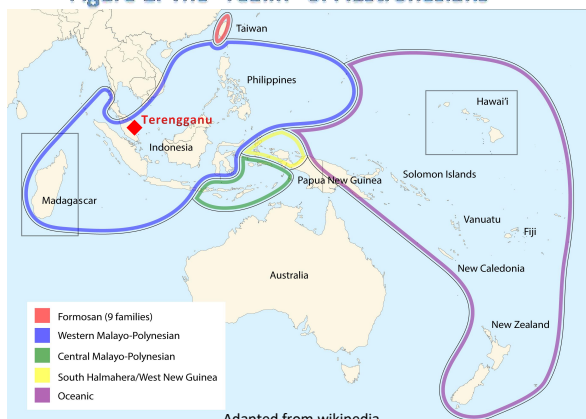
## METHODS

Terengganu state is located at the east coast of Peninsular Malaysia, with a population of 1.2 million, where 95% are Malays.

Hospital Sultanah Nur Zahirah (HSNZ) which is located at the state capital (Kuala Terengganu) is the sole neurological referral centre for the entire state.

The NMOSD registry of HSNZ and the medical records of these NMOSD patients were retrieved and reviewed. The 2015 diagnostic criteria of the International Panel of NMO Diagnosis were used for case ascertainment.

Figure 1: The "realm" of Austronesians



## RESULTS

A total of 15 NMOSD patients were identified: 13 females, 2 males

All were aquaporin 4 (AQP4) antibody positive

All patients were Malays

Mean age at onset: 33.7 years

On prevalence day (30th September 2020), there were 13 living patients.

**Prevalence: 1.09 / 100,000 (95% CI: 0.59 - 1.78)**

There was also a total of 13 incident cases over the 7-year period (October 2013 - September 2020).

**Annual Incidence: 1.63 / million (95% CI: 0.87 - 2.78)**

## DISCUSSION

Study	Austronesian group	Geographical location	Prevalence (per 100,000)
Current study	Malays	Terengganu, Malaysia	1.09
Hor <i>et al.</i> , 2018 (updated 2020)	Malays	Penang Island, Malaysia	~1.25
Bukhari <i>et al.</i> , Pactrims 2019	Māoris	New Zealand	~1.50

This study shows that the prevalence of NMOSD among Malays is comparable to that of Māoris (another Austronesian group).

The prevalence of NMOSD among Austronesians is lower than that reported among East Asians.

This study also reported for the first time the incidence of NMOSD in an Austronesian population.

Genetic and racial factors are potentially implicated in NMOSD pathogenesis.