

Cognitive Neuropsychological Functioning in Māori Diagnosed

Dr Tai Kake



Tai is of Ngāpuhi, Ngāti Hine/ Ngāti Hau descent. He grew up in South Auckland and his marae is Pehiaweri at Tikipunga, Whangarei.

Tai completed a PhD at Otago University which examined neurocognitive functioning in people diagnosed with schizophrenia, with a particular focus on Māori. His background is mainly in mental health research, however he has also been involved in the evaluation of primary care, traumatic brain injury, and rheumatic fever programmes.

Previously Tai has worked in research and evaluation with the International Cochrane Collaboration, the Alcohol Liquor Advisory Council, and the Accident Compensation Corporation. He has also worked in the community with people with intellectual and mental health disabilities.

Tai has put his plans on hold for clinical psychology and is currently working fulltime as a Senior Research Advisor within the Ministry of Health in the Mental Health Service Improvement Group and Gambling Harm.

Tai enjoys working with health services. He believes that researchers and health service providers can work together to develop innovative and culturally responsive solutions to the complex challenges faced in the sector.

Dr Tai Kake was awarded the Karahipi Tumuaki -President's Scholarship in 2013.

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Tēnā koutou katoa

Nga mihi nunui ki a koutou

Ko Parahaki te maunga

Ko Hatea te awa

Ko Ngāpuhi nui tonu te iwi

Ko Pehiaweri te marae

Ko Kabu Kuri te tangata

Ko Wiremu rāua ko Kataraina ōku tupuna ki te taha o tōku matua

Ko Ray rāua ko Essie ōku tupuna ki te taha o tōku whaea

Ko Ariki rāua ko Jill ōku mātua

Ko Kake tōku whānau

Ko Tai Riki tōku ingoa

No reira tēnā koutou, tēnā koutou, tēnā koutou katoa

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Objectives:

The primary focus of the present study was on examining cognitive neuropsychological functioning in Māori diagnosed with schizophrenia. This study also examined associations between cognition, medication, substance abuse, duration of illness, duration of untreated psychosis, and symptoms of psychosis in the schizophrenia group.

Background:

A series of New Zealand studies indicate that Māori may have an elevated rate of schizophrenia (Bridgman & Dyal, 1996; Kake et al, 2008; Linscott et al, 2006). Such findings highlight the importance of having a strong evidence base on schizophrenia in the Māori population, however there is very limited evidence on key clinical features of schizophrenia in this ethnic group to inform decision-

with Schizophrenia

making.

International studies (Heinrichs & Zakzanis, 1998; Kahn & Keefe, 2013) report significant cognitive impairment in people with schizophrenia across several cognitive functions. The cognitive impairment found in schizophrenia is considered a primary feature of the illness (Heinrichs, 2005; Kahn & Keefe, 2013) and is associated with poorer community, social, and vocational outcomes. However, very few of the above studies have involved indigenous populations and ethnic minority groups. This gap in the evidence base is especially concerning for groups such as Māori who have an elevated rate of diagnosis of schizophrenia, delayed access to treatment, and poorer outcomes. The primary objective of the present study was to provide evidence on cognitive neuropsychological functioning in Māori diagnosed with schizophrenia using clinical measures that assess a range of cognitive functions.

The present study also examined associations between cognitive impairment and medications used in the Māori group diagnosed with schizophrenia. International studies have found that higher doses of antipsychotic and anticholinergic medications routinely prescribed to people with schizophrenia are associated with lower cognitive performance in this group (Keefe et al, 2007; Minzenberg et al, 2004; Ogino et al, 2014). It is important to examine such associations in ethnic groups such as Māori because of concerns that members of such groups diagnosed with schizophrenia may be prescribed higher doses of such medications (Guilera et al, 2009; Kuno et al, 2002; Walkup et al, 2000). There is little published evidence on the average doses of antipsychotic and anticholinergic medications prescribed to Māori diagnosed with schizophrenia in New Zealand. One study (Wheeler et al, 2008) found Māori with schizophrenia were prescribed significantly higher doses of antipsychotic medications than European people with the illness, although the average dose was within the clinically acceptable range.

The present study also examined associations between duration of illness, duration of untreated psychosis, and cognitive functioning in the Māori group diagnosed with schizophrenia. Current neurodevelopmental models of schizophrenia (Davis et al, 2014) propose a neurodegenerative phase with worsening cognitive functioning over time as the illness duration increases. The 'Neurotoxic Hypothesis' (Rund, 2014) suggests that

prolonged exposure to repeated psychotic episodes without adequate antipsychotic treatment can cause damage to the brain and impaired cognition. Consistent with this hypothesis, some studies have found evidence of worsening cognitive performance as the duration of illness or the duration of untreated psychosis increases (Fuller et al, 2002; Reichenberg et al, 2005). However, other studies have found no evidence (Barder et al, 2015; Heinrichs & Zakzanis, 1998; Rund, 2014). It is important to examine such associations in Māori diagnosed with schizophrenia because this ethnic group may be at greater risk for delayed access to adequate treatment for mental health disorders such as schizophrenia (Bridgman & Dyal, 1996; Oakley Browne, Wells & Scott, 2006).

The present study also examined the association between substance abuse and cognition in Māori diagnosed with schizophrenia. International studies (Henquet et al, 2005) indicate a strong association between schizophrenia and the misuse of substances such as alcohol, cannabis, nicotine and illegal drugs. The effect of these substances on cognition in schizophrenia appears to range from beneficial to detrimental (Bahorik et al, 2014; James et al, 2013; Potvin et al, 2008). Currently there are no published studies on substance abuse amongst Māori diagnosed with schizophrenia.

Finally, the present study examined the associations between the positive and negative symptoms of schizophrenia and cognition in Māori diagnosed with schizophrenia. International evidence (Dibben et al, 2009; Savilla et al, 2008) indicates negative psychotic symptoms have a small degree of association with cognitive impairment in schizophrenia, but in general cognitive impairment is relatively independent of psychotic symptoms (Nieuwenstein et al, 2001). There have been very few attempts (Ihara et al, 2003) to examine psychotic symptom-cognition relationships in different ethnic groups diagnosed with schizophrenia, and there have been no such studies involving Māori participants.

Method: An initial consultation process involving *kuia*, *kaumātua*, *tangata whaiora* representatives, and staff from Māori mental health services in South Auckland and Porirua/Wellington took place before any research procedures were carried out. The participants with a diagnosis of schizophrenia were recruited from mental health services while the 'control' participants (without

a diagnosis of schizophrenia) were recruited from the above regions using the Māori electoral roll, or from Te Wananga o Aotearoa, or the Anglican Church (tikanga Māori branch). As far as practicable, the participants were matched on age, cultural identity, gender, handedness, premorbid cognitive ability (NART), socio-demographic variables, substance use, and years of education. All participants were assessed on eight neuropsychological tests of attention, executive ability, motor, premorbid ability, verbal/non-verbal memory, and verbal fluency (English/Māori versions; Cooper, 1997). The Positive and Negative Syndrome Scale (PANSS) was used to assess symptoms of psychosis in the schizophrenia group. Information on cultural identity (Te Hoe Nuku Roa; Durie et al, 1995), duration of illness, duration of untreated psychosis, medication, and substance abuse was also collected from participants.

Results: 54 adult Māori diagnosed with schizophrenia and 54 adult Māori 'controls' participated in the study. The proportions of iwi affiliations of the participants in both groups were similar, and were representative of the general Māori population.

The average scores for the schizophrenia group were significantly lower than the control group on all the neuropsychological tests, except on one measure of attention. The effect sizes were moderate to large, 0.78 for motor function; 1.3 for executive ability, verbal fluency, and visual memory; 1.6 for verbal learning; and 1.8 for verbal memory. These differences remained after adjustment for multiple comparisons and covariates. A higher dose of antipsychotic medication, and a higher anticholinergic load were associated with greater verbal memory impairment ($r = -0.38$). A longer

duration of illness was associated with greater impairment of verbal memory ($\rho = -0.48$), verbal learning ($\rho = -0.41$), and visual memory ($\rho = -0.44$).

Conclusions: The results for the group with a diagnosis of schizophrenia indicate a profile of generalized cognitive impairment, and with greater impairment of verbal memory. The cognitive impairment in the schizophrenia group was independent of psychotic symptoms, but was associated with a higher antipsychotic dose, higher anticholinergic load, and longer duration of illness. These findings have implications for clinical prescribing practices, service provision, and rehabilitation for Māori diagnosed with schizophrenia.

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