

# Ethnic disparities in attendance at New Zealand's chronic pain services

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## ABSTRACT

**AIMS:** It is unknown how well New Zealand's chronic pain services serve the country's diverse ethnic population. The goal of the study was to determine the attendance rates and clinical presentation of patients presenting at district health board (DHB) chronic pain services across the main ethnicities.

**METHODS:** Demographic data of patients attending for an initial assessment in 2015 were requested from all DHBs that offered a multidisciplinary chronic pain service. Actual and expected attendance rates for European, Māori, Pasifika, Asian and Other ethnicities were determined based on census data. In addition, baseline clinical assessment data were obtained from two large DHBs for all patients attending over a two-year period and compared among ethnicities.

**RESULTS:** Across all services that provided data, Europeans were over-represented by 9%, while Pasifika and Asians were under-represented by 58% and 49%, respectively. Māori patients scored significantly worse than Europeans in all clinical assessment measures, while Pasifika and Asian patients scored worse on the majority of measures.

**CONCLUSIONS:** Ethnic disparities in access to chronic pain services are evident by the marked under-attendance of Pasifika and Asian ethnicities. Māori, in particular, also have a greater need for healthcare related to pain.

Chronic pain is one of the most prevalent long-term health conditions in New Zealand and internationally. The 2015/16 New Zealand Health Survey reported the prevalence of chronic pain at almost 21% in adults over 15 years, with little variation across the main ethnicities.<sup>1</sup> The impact of chronic pain is multi-dimensional, affecting the individual physically, socially, psychologically and spiritually.<sup>2</sup> This impact is not only on the individuals who experience chronic pain, but also on family, friends and the community. It is widely accepted that the best-practice management of chronic pain involves a multidisciplinary approach incorporating a biopsychosocial model of care.<sup>3,4</sup> This approach generally involves medical doctors, physiotherapists, psychologists and nurses, among others, working together with patients to improve their physical, psychological, work and social function.

In New Zealand, the majority of multidisciplinary chronic pain services are provided by district health boards (DHBs) and are primarily accessed by referral from a general practitioner (GP). Guidelines as to how multidisciplinary chronic pain services should function and the services they provide are provided by the International Association for the Study of Pain (IASP), but these recommendations are largely based on Western views and understanding of pain and how it should be managed. There are known cultural influences on the interpretation, expression and management of pain.<sup>5,6</sup> These factors may influence reporting of pain, treatment seeking or engagement with treatment providers. Relevant to New Zealand, both Māori and Pasifika cultures have a holistic view of health with a larger emphasis on family and spiritual aspects than traditional Western models. There is little research on how these

different cultural lenses may influence the impact and management of chronic pain in these populations. For example, Māori may avoid disclosing health concerns beyond whānau (family), and speaking about pain to people outside the whānau may be associated with shame.<sup>7</sup>

There is limited international research on the attendance at or outcomes from pain management services based on ethnicity. A recent report found that 90% of published randomised controlled trials investigating the efficacy of multidisciplinary management for chronic pain were based in Western countries.<sup>8</sup> The few trials in non-Western countries (predominantly China and the Middle East) did show positive outcomes, demonstrating the efficacy of the multidisciplinary approach when the dominant ethnicity of practitioners and patients is non-Western. The findings were not as positive when studies involved minority ethnic populations or migrants, with the authors concluding that the effectiveness of multidisciplinary pain management was yet to be demonstrated in these groups. In New Zealand, the prevalence of chronic pain varies slightly across the predominant ethnic groups (European: 22%; Māori: 22%; Pasifika: 15%; Asian: 13%), but the ethnic distribution of those attending chronic pain services is unknown.

Given the diverse cultural mix, the known health disparities among ethnicities and the high prevalence of chronic pain in New Zealand, it seems pertinent to examine if our current chronic pain services are meeting the needs of the New Zealand population. For example, it is known that Māori have a lower life expectancy at birth,<sup>9</sup> a greater unmet need for primary healthcare<sup>1</sup> and higher mortality rates for cancer, ischaemic heart disease and suicide<sup>10</sup> compared to non-Māori. The goal of the current study was to determine if access to chronic pain services in New Zealand is equitable among our major ethnicities, and if there are any differences in baseline presenting characteristics of patients attending the clinics.

## Methods

All DHBs in New Zealand were contacted to determine if they offered a chronic pain service involving a comprehensive multidisciplinary team approach that utilised

a combination of physical, psychological and medicinal treatment methods. For all services that met these requirements, we requested a de-identified list of patients who completed an initial assessment with the service in the 2015 calendar year. Specifically, we asked for information on patient age, gender and ethnicity.

For two large DHB services that used the same clinical assessments, we also obtained baseline clinical data of patients seen in two years spanning 2015–16. This dataset included: numerical rating scale (NRS; 0–10) values for lowest, highest and usual pain; Brief Pain Inventory-Pain Interference Scale (BPI-PIS); Depression, Anxiety and Stress Scale - 21 (DASS-21); Pain Self-Efficacy Questionnaire (PSEQ); TAMP Scale for Kinesiophobia Short Version (TSK-11); and the Pain Catastrophising Scale (PCS). The BPI-PIS is a valid and reliable<sup>11</sup> tool to assess the impact of pain on physical function, mood, relations and enjoyment of life. The DASS-21 separately measures negative emotional states of depression, anxiety and stress, and is valid and reliable in clinical and non-clinical populations.<sup>12</sup> The PSEQ assesses self-efficacy beliefs in the context of chronic pain and is valid and reliable across many chronic pain conditions.<sup>13</sup> The TSK-11 is a shortened form of a scale originally designed to assess pain-related fear of movement in people with chronic low back pain. It is reliable, valid and sensitive across a variety of chronic pain conditions. The PCS assesses catastrophic thinking related to past painful experiences, providing separate scores in the areas of rumination, magnification and helplessness. It has high reliability and validity across chronic pain populations.<sup>14</sup>

## Data processing and analysis

Patient data obtained from DHBs were classified into ethnicities based on New Zealand census categories. Specifically, these were European, Māori, Pasifika, Asian and Other. In some cases, the data provided by the DHBs already used these categories; however, data from other DHBs included a larger number of ethnicities, eg, more specific Asian/Pasifika ethnicities. Where this occurred, the ethnicities provided were classified into the five categories above, as appropriate. Where ethnicity was uncertain, eg, 'New Zealander' was written,

data were removed from the analyses. The expected number of patients from each DHB attending a chronic pain service was determined for each of these ethnicities based on 2013 census data (20–80-year-olds) classified by DHB and New Zealand chronic pain prevalence rates classified by ethnicity.<sup>1</sup> That is, the ethnicity prevalence in the DHB and the ethnicity-specific chronic pain prevalence rates were used to determine the proportion of people within each DHB of each ethnicity who were expected to have chronic pain. This was then multiplied by the number of people from each DHB who attended a chronic pain service, to provide an estimate of expected attendance numbers for each ethnicity for that DHB. These data were used to compare the expected and actual attendance numbers for each ethnicity using the Chi square test. Some of the pain services saw patients from multiple DHBs. Classification of actual attendance numbers was based on the DHB that the patient resided in, rather than the DHB the service was located in. That is, when people who resided in one DHB attended a pain service located in another DHB, their data were included in the statistics for the DHB in which they resided. Data from DHBs where <40 people attended a pain service were excluded due a high probability of a non-representative sample of ethnicities. This resulted in the exclusion of data from 39 individuals.

Baseline clinical measures were compared among the five ethnicity groups using a multivariate ANCOVA with age, gender and duration of pain entered as covariates. Significant effects were followed up with planned contrasts comparing each ethnicity to European (as the dominant ethnicity). Age and pain duration were compared among ethnicities using a one-way ANOVA, while a Chi-square test was used to compare gender. An alpha level of 0.05 was adopted for statistical significance.

**Table 1:** The actual and expected number of patients attending chronic pain services in 2015 classified by ethnicity. The expected numbers are based on district health board population statistics and chronic pain prevalence for each ethnicity.

	European	Māori	Pasifika	Asian	Other
<b>Actual</b>	1,518 (76%)	167 (8%)	85 (4%)	164 (8%)	69 (3%)
<b>Expected</b>	1,384 (72%)	178 (9%)	134 (6%)	244 (11%)	63 (3%)
<b>Difference</b>	+134 (+9%)*	-11 (-7%)	-49 (-58%)*	-80 (-49%)*	+6 (+9%)

\* = significant difference between actual and expected numbers ( $P < 0.05$ ).

## Results

### Attendance rates

Eleven chronic pain services were identified across the country that met the criteria of a multidisciplinary team approach. Of these 11, data were obtained from five services (four North Island) that saw patients from seven DHBs, covering approximately 59% of the New Zealand population.

Information was obtained on 2,002 patients (65% female, mean age  $48 \pm 16$  years). The actual and expected attendance statistics for each ethnicity are shown in Table 1. Across all DHBs, there were a significantly higher number of Europeans attending a chronic pain service than expected ( $P < 0.001$ ) and a significantly lower number of Pasifika and Asian patients (both  $P < 0.001$ ). The attendance of Māori ( $P = 0.4$ ) and Other ethnicities ( $P = 0.4$ ) were no different to expected overall. For the individual seven DHBs, all had more Europeans attend a chronic pain service than expected and all had fewer Pasifika and Asian patients attend a chronic pain service than expected. In contrast, the attendance rates of Māori and Other ethnicities was mixed across the DHBs.

### Baseline clinical data

Summary statistics of baseline clinical data for each ethnicity are presented in Table 2. Information was obtained from 2,296 patients who attended two DHB services in a large, multi-cultural city. Data from 232 patients were removed as they were missing information from at least two of the clinical assessment scales, leaving data from 2,064 patients.

The multivariate ANCOVA revealed significant differences in all outcome measures among ethnicities (all  $P < 0.02$ ). Further analyses indicated that Māori had significantly poorer scores for all outcome

**Table 2:** Baseline clinical information on 2,064 patients attending two chronic pain services in 2015–2016. Data are mean ± standard deviation.

	European (N=1,302)	Māori (N=124)	Pasifika (N=62)	Asian (N=138)	Other (N=438)	P-value
Age (years)	50±18	47±13	50±14	49±13	48±16	0.07
Gender female (%)	64%	59%	52%	62%	60%	0.16
Duration of pain (months)	88±104	85±91	68±61	54±75*	70±88*	<0.001
Low pain (0–10)	3.6±2.2	5.1±2.4*	5.4±2.5*	4.8±2.3*	3.9±2.3*	<0.001
High pain (0–10)	8.3±1.5	9.0±1.1*	8.7±1.4	8.6±1.8	8.4±1.5	<0.001
Usual pain (0–10)	5.7±1.9	6.7±1.9*	6.7±2.0*	6.3±2.1*	5.8±2.0	<0.001
BPI-PIS	44.1±14.7	51.2±13.7*	49.9±14.1*	47.7±14.7	45.7±13.9	0.002
DASS-21 Anxiety	5.7±4.9	9.2±5.4*	9.8±6.6*	7.5±5.5*	6.3±5.1	<0.001
DASS-21 Depression	8.1±6.0	11.1±6.5*	10.9±7.3*	9.4±6.4	8.5±5.9	<0.001
DASS-21 Stress	9.2±5.7	11.5±5.9*	11.5±6.8*	10.5±5.8	9.6±5.6	0.01
PSEQ	24.9±13.0	20.0±12.5*	20.7±15.0	22.6±14.0	23.9±13.2	0.02
TSK-11	27.0±7.8	31.7±7.3*	33.0±7.7*	30.5±7.8*	28.3±7.9*	<0.001
PCS total	24.9±13.5	32.8±13.2*	36.8±13.7*	34.9±13.0*	27.7±13.4*	<0.001
PCS rumination	8.4±4.9	10.8±4.4*	12.5±4.0*	11.5±4.3*	9.3±4.8*	<0.001
PCS magnification	4.5±3.3	6.6±3.7*	7.9±3.9*	7.4±3.5*	5.2±3.6*	<0.001
PCS helplessness	11.9±6.4	15.2±6.3*	16.4±6.6*	15.7±6.2*	13.2±6.1*	<0.001

BPI-PIS = Brief Pain Inventory-Pain Interference Scale; DASS-21 = Depression, Anxiety, and Stress Scale – 21; PSEQ = Pain Self-Efficacy Questionnaire; TSK-11 = TAMPA Scale for Kinesiophobia Short Version; PCS = Pain Catastrophising Scale. \* = significant difference from European.

measures compared to European (all  $P < 0.01$ ). Pasifika had poorer scores for all outcome measures compared to European (all  $P < 0.03$ ) except the NRS for highest pain ( $P = 0.08$ ) and the PSEQ ( $P = 0.1$ ). Patients of Asian ethnicity had significantly poorer scores for NRS lowest ( $P < 0.001$ ) and usual pain ( $P = 0.009$ ), DASS-21 anxiety ( $P = 0.02$ ), TSK-11 ( $P < 0.001$ ) and the total and individual subcomponents of the PCS (all  $P < 0.001$ ). There were no significant differences for the remaining clinical variables (all  $P > 0.09$ ) although the Asian ethnicity also had a significantly shorter pain duration ( $P = 0.001$ ). People classified as the Other ethnicity had poorer scores on the NRS lowest pain ( $P = 0.007$ ), TSK-11 ( $P = 0.002$ ) and the PCS total score and all PCS subcomponents (all  $P < 0.02$ ), as well as a shorter pain duration ( $P = 0.007$ ). There were no other significant differences (all  $P > 0.05$ ).

## Discussion

We identified ethnic disparities in access to DHB chronic pain services across New Zealand. Specifically, Pasifika and people of Asian descent were less likely to attend

a pain service, while those of the dominant European ethnicity were over-represented. There were also marked differences in the presenting clinical characteristics of those who attended the services. In comparison to Europeans, Māori, Pasifika and, to a lesser extent, people of Asian descent had significantly more pain, greater psychosocial impairment and had a larger impact of pain on their life.

The 2015/16 New Zealand Health Survey indicated inequalities in health and access to healthcare among ethnicities for other chronic conditions. For example, Māori and Pasifika are more likely to have cardiovascular disease, obesity and diabetes, and are more likely to forgo a GP visit or have an unfulfilled prescription due to cost or transport issues.<sup>1</sup> Previous studies reporting on health disparities have recommended promoting services led by minority ethnicities as well as enhancing cultural awareness at mainstream services.<sup>15</sup> Thus, ethnic disparities in healthcare are not isolated to chronic pain; however, there are some aspects of pain and pain management that may influence access to and engagement with treatment by specific ethnicities within New Zealand.

The disparity in attendance at the pain clinics suggests that the GP referral system is failing for some, which may be due to disparities in referral by the GP, referral acceptance by the pain service or attendance at the pain service by the patient. Our data revealed that Pasifika were substantially under-represented at the pain clinics. It has been previously identified that language and communication, rushed consultations, appointment availability, unwelcoming reception and a lack of Pacific presence influence the availability and acceptability of primary health services for Pasifika.<sup>16</sup> These factors restricting access to GPs may therefore be limiting referral to the DHB chronic pain services. There is also evidence that clinicians interpret pain through their own cultural lens, and stereotyping or a lack of understanding of different cultural views may influence the likelihood that a GP will refer a patient for further treatment.<sup>17</sup> In the US, African-American patients with low back pain were rated as having less severe pain by clinicians and were less likely than those of European descent to receive robust diagnostic and management approaches.<sup>18</sup> Healthcare providers may also have presumptions regarding patients' interest in or acceptance of certain forms of treatment, so may not offer these services to everyone.<sup>19</sup> Thus, a subconscious bias by practitioners may be restricting referral of Pasifika to chronic pain services.

In terms of patients themselves, racial discrimination in the community can impact the likelihood of accessing healthcare and trust in clinicians. For example, US data indicates that Hispanics found chronic pain clinicians more difficult to access and were more likely to report that clinicians did not believe they had pain, while African Americans felt discriminated against more than whites in their ability to obtain treatment for pain.<sup>20</sup> In New Zealand, Māori, Pasifika and Asians are more likely to report discrimination than Europeans.<sup>21</sup> In particular, Māori and Pasifika are more likely to report unfair treatment in healthcare, and such racial discrimination has been associated with poorer health outcomes.<sup>21</sup> Cultural influences on pain coping styles, support systems and beliefs about pain or pain management may also influence the acceptability of attending a pain clinic. For

example, African Americans and Hispanics are more likely to use spiritual or family-based approaches to pain management than white Americans.<sup>22</sup> This resonates with the Pasifika Fonofale model of health proposed by Fuimaono Karl Pulotu-Endemann,<sup>23</sup> which also has a large influence of family, culture, and spirituality. In addition, in order to attend the pain clinics, some clinics require patients complete a series of assessment questionnaires, which may be a barrier itself. Finally, financial costs associated with transport and parking may limit attendance of those on low incomes, and the Pasifika have the lowest socioeconomic index in New Zealand.<sup>24</sup>

Māori, Pasifika and Asian patients who did attend the chronic pain services had a significantly higher need for healthcare compared to Europeans. For Māori particularly, the difference from Europeans in many of the outcome measures was clinically meaningful. As well as having higher pain, Māori had greater disability, higher levels of depression, anxiety, and stress, lower self-efficacy to manage pain, higher levels of pain-related fear and more catastrophic thoughts related to pain. Cultural influences may make Māori, Pasifika and Asians less likely to reveal pain to others, and potentially they will ignore or endure pain for longer before seeking treatment. The duration of pain data do not support a delay in treatment seeking in our cohort, but the increased severity of symptoms indicates that Māori and Pasifika, in particular, are in greater need of treatment. Alternatively, Māori and Pasifika with less severe pain may not be referred. These findings support international data showing minority ethnicities at chronic pain clinics present with a higher impact of pain. In fact, ethnicity has been shown to be one of the best predictors of pain intensity in those presenting at pain management clinics.<sup>25</sup> In the US, several studies have reported that African Americans and Hispanics attending pain clinics have more pain and/or disability compared to whites.<sup>26–29</sup> Notably, these groups tended to have more symptoms related to depression, stress, and less control over their pain. Similarly, studies in the UK have indicated that minority ethnicities have higher levels of pain and a stronger association with depression.<sup>30,31</sup> Ethnicity tends to have a

greater impact on the motivational-affective dimension of pain<sup>32,33</sup> and minority ethnicities may be less likely to seek treatment for co-morbid mental health conditions.<sup>34</sup> This is supported in our data by the substantially poorer scores in psychosocial measures in Māori and Pasifika patients, perhaps arising from a lack of engagement in healthcare for these associated mental health issues, greater levels of pain and disability, or from other factors such as increased deprivation or previous experiences of discrimination.

Our study also revealed a large under-representation of the Asian ethnicity at the pain clinics. This supports two previous studies investigating attendance rates at pain management clinics in Canada and Sweden, which both reported that Chinese/Asian ethnicities were under-represented.<sup>35,36</sup> A further study found that Chinese immigrants in New Zealand were less likely to seek healthcare for persistent pain than Europeans, although the immigrants did not necessarily hold views that were strongly congruent with traditional Chinese health models.<sup>37</sup> The Asian ethnicity classification includes a broad range of ethnic groups, but in New Zealand it is dominated by people of Chinese and Indian descent, accounting for 36% and 33% of the group, respectively.<sup>38</sup> It is part of Chinese philosophy to bear suffering from a young age, which may result in a reluctance of Chinese to complain about pain or seek treatment for it. Additionally, traditional Chinese medicine centres around acupuncture, massage, manipulation and herbal supplements.<sup>39</sup> Such passive treatments are not congruent with standard multidisciplinary pain management. Similarly, in Indian philosophy, it is a sign of low character to be distracted by pain or suffering. Instead, pain is often viewed as having a constructive purpose, and the focus is on finding a meaning for pain rather than removing it. Families are also seen as a great source of strength and support for Indians with chronic pain.<sup>40</sup> These philosophies likely contribute to the markedly reduced Asian representation at pain clinics, and also explain the relative shorter duration of pain for the Asian ethnicity, as dating the onset of pain may be difficult in cultures where people are used to living with the experience of pain.<sup>40</sup>

## Clinical implications

Both Mason Durie's Te Whare Tapa Whā<sup>41</sup> and the Fonofale models of health resonate well with the multidisciplinary model of care recommended for chronic pain management, but current clinical guidelines on pain management have less emphasis on the spiritual and family components that are integral in Māori, Pasifika and a number of Asian cultures. Responsibility to whānau could provide motivation for adherence to treatment, including that associated with pain management.<sup>7</sup> Therefore, the support of family or other health advocates could be proactively recommended early in the referral process. Pain service clinicians may need to take more time to form relationships and develop trust with people of minority ethnicities, perhaps incorporating extra sessions into programmes or allowing extra consultation time. The presence and promotion of people of the same ethnicity among clinical or support staff may also be beneficial. Patient education, a key component of chronic pain management programmes, could focus on aspects of pain and pain management that may conflict with cultural practices or beliefs, as well as highlight those that are concordant. Consideration could also be made of incorporating traditional medical practices in a way that is not contradictory to pain management guidelines. Alternatively, current therapy options could be adapted to be more culturally meaningful. For example, art therapy has previously been used in New Zealand pain clinics, and adapting this to specific Māori, Pasifika or Asian arts, such as carving, weaving, story-telling or martial arts could be considered.

Limitations of our study included a lack of data from several DHBs with chronic pain services. The New Zealand Health Survey, from which prevalence data were obtained, does not provide information on pain intensity or the impact of pain, which are both likely to influence the need to receive healthcare and therefore our 'expected' values for attendance at a pain service. We were not able to collect long-term outcome data from the pain services and are therefore unable to determine if there are disparities in the efficacy of the services. Interpreting data from the 'Other' ethnicity classification was problematic

given that a number of people of European descent identify as 'New Zealanders' rather than European; therefore, we restricted discussion of this ethnic category. Completion of the baseline clinical questionnaires may also be influenced by language or literacy factors affecting the patient's

interpretation or understanding of the questions, or a desire to exaggerate symptoms if patients believe this will increase their likelihood of receiving treatment. The questionnaires also have not been specifically validated in Māori and Pasifika populations.

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