Behaviours and beliefs about pain and treatment among Chinese immigrants and New Zealand Europeans

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Abstract

Aims To investigate how pain is construed and managed across Western and Chinese cultures.

Methods Adults from the general public completed an anonymous survey developed for this study. Participants responded to recruitment posters and handouts that were distributed to Auckland community centres, libraries and relevant social organisations.

Results 165 participants were recruited with slightly more Chinese respondents (57.0%). 128 participants (77.5%) reported having experienced persistent pain which did not recover within expected periods in the last 5 years, and occurred more among Chinese (60.2%) than New Zealand Europeans (39.8%). Pain behaviours and coping strategies were found to be significantly different between Europeans and Chinese. However, differences in perceptions regarding pain and treatment were not substantial. Interestingly, for both cultures some participants reported behaving differently than expected according to their perceptions. Acculturation levels, however, did not show any great impact on Chinese immigrants. The high incidence of persistent pain reported in the study compared to random population surveys suggest individuals who had pain experiences were more likely to respond to the study.

Conclusions It is evident that culture plays an important role in determining various aspects of pain experience and response, although further investigation using randomised samples instead of self-selected survey populations is required to clarify the picture. The effect of acculturation levels particularly should be further investigated.

It is now well accepted that the unpleasant physical experience we call pain incorporates psychological, social and cultural influences.1-3 It is also likely to be the case that these influences, unless understood and incorporated into assessment and treatment of painful conditions, will perturb patient management.

Literature shows that different cultural backgrounds influence attitudes towards pain medication and patients’ beliefs and expectations of other pain treatments.4,5 This in turn may affect pain managing behaviours, and at times cause barriers to effective pain management if medical professionals do not incorporate awareness of cultural values and beliefs in relation to their patients’ pain experiences.
Thus, understanding the beliefs about pain and illness that are embedded in different cultures may be vital to provide effective intervention. Culture is defined as beliefs, values, practices and social behaviours shared by members of a certain group. It helps people to construct basic assumptions about reality that closely interrelate to identity, social life, as well as health care. The literature consistently indicates that the perception and management of illnesses are different across cultures, and that good health is constructed via diverse assumptions from different ethnicities.

The Western culture

The Biomedical model is the predominant medical model used in the Western world. In this model symptoms, in the absence of identifiable pathophysiology, are often attributed to psychological dysfunction. Western medicine has been largely concerned with anatomical and biological constructs with human bodies viewed as comparable to working machines. Pain is therefore conceived as indicating defective body parts, and medical practitioners are expected to relieve pain by mending or replacing the broken ‘machine’. Physicians practicing from the biomechanical perspective often consider mentioning psychological or emotional wellbeing inappropriate, a standpoint also held by much of the general public. People visit their primary care physicians when they believe they require medical consultation for their symptoms, and expect a diagnosis and remedies after physical examination.

Patients are often unsatisfied when medical practitioners cannot find pathological reasons for ill health and become particularly upset if physicians suggest their illnesses are psychologically based.

The Chinese culture

Traditional Chinese Medicine (TCM) on the other hand perceives that an illness is a common outcome of both pathogenetic factors and internal maladjustments within the body. The Chinese viewpoint of health is based upon harmony within the macrocosm—which implies human beings living between heaven and earth—as well as balance inside the microcosm, a miniature universe within an individual. These different philosophies of aetiology and pathology from Western medicine provide different approaches to pathology. Health is achieved by maintaining the harmony of external and internal values such as psychosocial and ecological factors. The overall functional wellbeing of a person is especially focused on the bodily response to pathogenetic factors, rather than diseases characterised by pathological changes and mechanisms.

The concept of ‘yin’ and ‘yang’ is one of the primary health paradigms in the Chinese culture. It describes the mutual correlation between contrasting phenomena in which a healthy individual will have a balanced yin-yang maintained by an energy flow within their own small universe. An imbalance occurs when one phenomenon is deficient and triggers the surplus of the other.
Traditionally, this is how Chinese people categorise illnesses and malaise. An invasion of excess yin energy such as cold and dampness will obstruct the yang energy causing aches and movement difficulties. This is known as the Painful Obstruction Syndrome.\(^{16}\)

It is believed such force disrupts the harmony of the microcosm and causes energy blockage at certain parts of the body, which therefore triggers physical suffering. As a result, the correction of internal maladjustments and the restoring of self-regulatory capacity of the body are major principles for TCM.\(^{15}\)

**Immigrants and acculturation**

The phenomenon of change in the cultural behaviour and thinking of a person or a population through contact with another culture is known as ‘acculturation’; a term that was introduced by anthropologists to refer to the occurrence of intercultural contact.\(^{17}\) Acculturation might occur through gradual acceptance of host-society norms, or it could be the frequent exposure to shared factors in the physical environment or both.

Acculturation, as reflected in awareness of different lifestyles, food options and medical resources after settlement by immigrants is also influential on health maintenance.\(^{18}\) The possibility that pain perception and expectations about pain management are influenced by acculturation has also been suggested,\(^{19}\) yet no clear conclusion has been drawn.

Bates, Edwards and Anderson\(^{1}\) consider ethnocultural effects might influence pain responses through social learning and social comparison. These mechanisms are similar to processes of acculturation where behaviours and emotional expressions are learned through observing and through social interaction with others.

**Study rationale and aims**

Western views of the aetiology of pain are more biomechanical and tend to have specific physiological diagnoses as well as considering the body and mind as separate entities. In contrast, Chinese people tend to have a more holistic perception towards health. Separate treatments and coping strategies have been developed according to these perceptions and beliefs.

This study aims to investigate cross-cultural aspects of pain, specifically how pain is construed and managed across Western and Chinese cultures by individuals that have experienced a pain condition that persists longer than expected to recover which is not easy to explain (persistent pain). Since the New Zealand resident Chinese sample in the study will be variously acculturated, it is also important that the impact of acculturation on pain beliefs and behaviours is investigated.

**Method**

Adults from the general public within the Auckland region participated in the current study by responding to recruitment posters and handouts that were distributed to Auckland community centres, libraries and relevant social organisations. Two groups were defined for cultural comparison: New Zealand Europeans and Chinese people. There were 7 surveys completed and returned by New Zealand
born Chinese; as the number was too low to create an additional group, these 7 participants were included in the Chinese group rather than excluded. 179 of the 310 sent surveys were returned, giving a response rate of 57.74%. However, 14 surveys were excluded due to insufficient demographic data and late arrivals.

The study materials consisted of a questionnaire developed for this study measuring the following characteristics: demographics, experiences of persistent pain, use of pain management and alternative treatment, as well as pain attitudes and beliefs.

There were two parallel versions of the questionnaires, one for New Zealanders and one for Chinese. For the Chinese questionnaires, an additional 12 items regarding levels of acculturation were included. The development of these items were informed by an acculturation study reported by Matsudaaira.20

The items are on a Likert scale from 1 to 10, where 10 indicates strongly agree. Items included Chinese participants’ identification with New Zealand culture and their own culture, the adoption of New Zealand culture and lifestyles, the use of language and status of current social life and overall satisfaction level living in New Zealand. The minimum and maximum score the participants can obtain is 12 and 120 respectively.

Data were first screened to explore the normal distributions of the scores. All variables, except for the items examining levels of acculturation, were not normally distributed since there was evidence of skewing and kurtosis. Data transformation failed to resolve these problems. Non-parametric tests were therefore applied for most analyses with parametric tests applied when possible. An alpha level of 0.05 was used for all statistical analyses.

Demographic characteristics were analysed by one-sample Chi-square tests. A two-way contingency table analysis was conducted on pain behaviours. Mann-Whitney tests were conducted to investigate other pain experiences—pain intensity, disability and impact—as well as pain perceptions and beliefs between cultures.

A Spearman’s correlation was performed to explore the association between levels of acculturation and pain perceptions. A series of independent samples t-tests were conducted to assess the relationship between levels of acculturation and choices of pain management.

Results

There were more Chinese respondents (n=94, 57.0%) than New Zealand Europeans (n=71, 43.0%). The mean age for the study sample was 35.5. The youngest participant was 18, and the oldest 66.

128 participants (77.5%) had experienced any form of persistent pain which did not recover within expected periods in the past 5 years. Of these, 51 (39.8%) were New Zealand Europeans and 77 (60.2%) were Chinese although pain experience was not different between the groups, \( \chi^2 (1, N=128) = .126, p > 0.05 \).

The mean age for these 128 participants was 36.19; with the New Zealand Europeans (39.73) being slightly older than the Chinese (33.91). There were more female participants than males for both cultural groups; 18 males and 33 females for New Zealand Europeans and 30 males and 47 females for Chinese.

Figure 1 shows there was no significant difference between cultures in reported frequencies of persistent pain either. Acculturation levels did not reveal any substantial impact on the pain frequencies when further analyses were performed, \( F(3, 71) = 0.24, p = 0.995 \). The main results of the study will be based on participants who have reported persistent pain.
Figure 1. The frequencies of any persistent pain experience between New Zealand Europeans and Chinese in the past 5 years

Of the 128 participants reporting persistent pain, 47.7% (n=61) reported having disability associated with their pain, where the pain experience disabled, stopped or prevented them from doing other things; but again no significant differences were found between the two cultures, z=1.691, p=0.091 (Table 1).

On the 10-point Likert scale, the mean reported pain intensity of the most severe persistent pain condition for sufferers was 4.86, indicating moderate pain experience. A mean of 4.05 was reported for the impact of pain on their lives, where the survey asked how significantly their pain condition has impacted their lives, suggesting a moderate influence. There were no differences between the two ethnicities for either pain intensity, z=-0.258, p=0.796 or the impact of pain on life, z=-1.159, p=0.246.

Table 1. Comparison of impacts of pain between New Zealand Europeans and Chinese who reported persistent pain in the past 5 years.

<table>
<thead>
<tr>
<th>Variables</th>
<th>New Zealand Europeans (n=51) Mean Rank</th>
<th>Chinese People (n=77) Mean Rank</th>
<th>z</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain disability</td>
<td>70.39</td>
<td>60.60</td>
<td>-1.691</td>
<td>0.091</td>
</tr>
<tr>
<td>Pain intensity</td>
<td>65.53</td>
<td>63.82</td>
<td>-0.258</td>
<td>0.796</td>
</tr>
<tr>
<td>Impact in Life</td>
<td>69.11</td>
<td>61.45</td>
<td>-1.159</td>
<td>0.246</td>
</tr>
</tbody>
</table>

Table 2 indicates the most frequent pain management and behaviours were obtaining a diagnosis for their pain (58.6%), receiving alternative treatments (57.0%), seeing their general practitioners (GPs: 46.9%), and taking medication (46.9%).
The results indicated New Zealand Europeans acted to manage their pain more than the Chinese in various ways: they were more likely to see health professionals, ask family and friends for help, take medication, obtain a prescription for medication, seek physical therapy, seek other alternatives, and obtain diagnoses for the pain conditions. Interestingly, acupuncture as a treatment option was not significantly different between the two groups although acupuncture is a Chinese traditional treatment.

Table 2. The numbers and percentages of participants who reported engaging in pain management and behaviours for their persistent pain condition

<table>
<thead>
<tr>
<th>Variables</th>
<th>New Zealand Europeans (n=51)</th>
<th>Chinese People (n=77)</th>
<th>Total (n=128)</th>
<th>χ²</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>I ignored it</td>
<td>17 (33.3%)</td>
<td>36 (46.8%)</td>
<td>53 (41.4%)</td>
<td>0.133</td>
<td>0.131</td>
</tr>
<tr>
<td>I saw my GP</td>
<td>32 (62.7%)</td>
<td>28 (36.4%)</td>
<td>60 (46.9%)</td>
<td>-0.259</td>
<td>0.003</td>
</tr>
<tr>
<td>I saw a specialist</td>
<td>22 (43.1%)</td>
<td>11 (14.3%)</td>
<td>33 (25.8%)</td>
<td>-0.323</td>
<td>0.000</td>
</tr>
<tr>
<td>I asked family and friends for help</td>
<td>10 (19.6%)</td>
<td>5 (6.5%)</td>
<td>15 (11.7%)</td>
<td>-0.200</td>
<td>0.024</td>
</tr>
<tr>
<td>I took medication to relieve pain</td>
<td>28 (54.9%)</td>
<td>27 (35.1%)</td>
<td>55 (43.0%)</td>
<td>-0.196</td>
<td>0.026</td>
</tr>
<tr>
<td>– Prescribed medication</td>
<td>17 (33.3%)</td>
<td>12 (15.6%)</td>
<td>29 (22.7%)</td>
<td>-0.208</td>
<td>0.019</td>
</tr>
<tr>
<td>I prayed</td>
<td>2 (3.9%)</td>
<td>9 (11.7%)</td>
<td>11 (8.6%)</td>
<td>0.136</td>
<td>0.125</td>
</tr>
<tr>
<td>I sought alternative treatment</td>
<td>29 (56.9%)</td>
<td>44 (57.1%)</td>
<td>73 (57.0%)</td>
<td>0.003</td>
<td>0.975</td>
</tr>
<tr>
<td>– Massage</td>
<td>8 (15.7%)</td>
<td>23 (29.9%)</td>
<td>31 (24.2%)</td>
<td>0.162</td>
<td>0.067</td>
</tr>
<tr>
<td>– Acupuncture</td>
<td>6 (11.8%)</td>
<td>18 (23.4%)</td>
<td>24 (18.8%)</td>
<td>0.146</td>
<td>0.099</td>
</tr>
<tr>
<td>– Physical therapy</td>
<td>14 (27.5%)</td>
<td>8 (10.4%)</td>
<td>22 (17.2%)</td>
<td>-0.221</td>
<td>0.012</td>
</tr>
<tr>
<td>– Traditional healing</td>
<td>1 (2.0%)</td>
<td>3 (3.9%)</td>
<td>4 (3.1%)</td>
<td>0.054</td>
<td>0.538</td>
</tr>
<tr>
<td>– Herbal healing</td>
<td>1 (2.0%)</td>
<td>8 (10.4%)</td>
<td>9 (7.0%)</td>
<td>0.161</td>
<td>0.068</td>
</tr>
<tr>
<td>– Yoga</td>
<td>3 (5.9%)</td>
<td>4 (5.2%)</td>
<td>7 (5.5%)</td>
<td>-0.015</td>
<td>0.867</td>
</tr>
<tr>
<td>Other alternatives</td>
<td>15 (29.4%)</td>
<td>7 (9.1%)</td>
<td>22 (17.2%)</td>
<td>-0.264</td>
<td>0.003</td>
</tr>
<tr>
<td>Diagnosis for the pain condition</td>
<td>36 (70.6%)</td>
<td>39 (50.6%)</td>
<td>75 (58.6%)</td>
<td>-0.198</td>
<td>0.025</td>
</tr>
</tbody>
</table>

Eleven of the 16 items assessing pain attitudes and beliefs were different between the two groups, with the Chinese sample holding stronger beliefs in each case (Table 3).
Table 3. Comparison of pain attitudes and beliefs between New Zealand Europeans and Chinese who reported persistent pain in the past 5 years

<table>
<thead>
<tr>
<th>Questionnaire items and numbers</th>
<th>New Zealand Europeans (n=51) Mean Rank</th>
<th>Chinese People (n=77) Mean Rank</th>
<th>z</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Pain can only be managed by medication.</td>
<td>54.36</td>
<td>71.21</td>
<td>-2.578</td>
<td>0.010</td>
</tr>
<tr>
<td>C4 If the doctors cannot tell me what is causing the pain, I believe it is punishment for some things I have done wrong.</td>
<td>56.01</td>
<td>70.12</td>
<td>-2.778</td>
<td>0.005</td>
</tr>
<tr>
<td>C5 Other than physical damage, disruption of the harmony among elements within the body can also cause pain.</td>
<td>56.72</td>
<td>67.81</td>
<td>-1.683</td>
<td>0.092</td>
</tr>
<tr>
<td>C6 I believe family disruption is the main cause of my pain.</td>
<td>61.50</td>
<td>66.49</td>
<td>-0.790</td>
<td>0.429</td>
</tr>
<tr>
<td>C7 There must be a clear diagnosis for pain.</td>
<td>50.69</td>
<td>72.64</td>
<td>-3.325</td>
<td>0.001</td>
</tr>
<tr>
<td>D1 Seeing doctors for a clear diagnosis and treatment is the best way to manage pain.</td>
<td>58.20</td>
<td>68.68</td>
<td>-1.592</td>
<td>0.111</td>
</tr>
<tr>
<td>D2 I expect that when I visit my doctor, there is hope the doctor will cure my pain condition.</td>
<td>59.46</td>
<td>67.84</td>
<td>-1.276</td>
<td>0.202</td>
</tr>
<tr>
<td>D4 I am disappointed when doctors cannot find out what is causing my pain.</td>
<td>53.77</td>
<td>70.64</td>
<td>-2.567</td>
<td>0.010</td>
</tr>
<tr>
<td>D5 I believe there is always a cure for pain.</td>
<td>46.64</td>
<td>70.73</td>
<td>-4.491</td>
<td>0.000</td>
</tr>
<tr>
<td>D6 When doctors tell me that there is nothing they can do to make the pain go away, it is because they do not try hard enough.</td>
<td>55.10</td>
<td>70.73</td>
<td>-2.378</td>
<td>0.017</td>
</tr>
<tr>
<td>D7 I believe managing pain with my family is more powerful and helpful.</td>
<td>46.65</td>
<td>76.32</td>
<td>-4.500</td>
<td>0.000</td>
</tr>
<tr>
<td>D8 I dislike how physical discomfort and pain is diagnosed and treated in New Zealand</td>
<td>52.87</td>
<td>72.20</td>
<td>-3.005</td>
<td>0.003</td>
</tr>
<tr>
<td>D10 Understanding my culture is an important part of understanding my physical illness and pain.</td>
<td>61.75</td>
<td>66.32</td>
<td>-.701</td>
<td>0.483</td>
</tr>
<tr>
<td>E2 If Western medicine does not seem to work, I would seek out traditional medicine.</td>
<td>50.51</td>
<td>72.76</td>
<td>-3.389</td>
<td>0.001</td>
</tr>
<tr>
<td>E4 I value traditional treatment more than Western medicine</td>
<td>51.21</td>
<td>71.32</td>
<td>-3.096</td>
<td>0.002</td>
</tr>
<tr>
<td>E6 The reason I choose traditional medicine over Western medicine is because of communication and language difficulties</td>
<td>51.67</td>
<td>65.61</td>
<td>-2.221</td>
<td>0.026</td>
</tr>
</tbody>
</table>

Acculturation level in relation to pain management and beliefs

Out of the 77 Chinese participants who reported persistent pain in the past 5 years, 75 (97.4%) fully completed the additional acculturation items. The mean level was 64.40 with a minimum of 26 and a maximum of 94. Most participants scored between 60 and 70, indicating the study had sampled more acculturated participants. This is not surprising since, other than the 7 New Zealand born Chinese, 58.1% of the Chinese
participants reported they have lived in New Zealand for over 10 years; 30.2% lived in between 4 to 6 years and 11.6% just under three years.

A series of Independent Sample T-Tests were conducted to compare Chinese participants in relation to pain management and behaviours at different acculturation levels. Only one item revealed significant difference where more acculturated participants were less likely to take the traditional healing approach, \( t(73) = -2.929, p<0.05 \).

Spearman’s correlations were conducted to investigate correlations between acculturation levels and pain attitudes. Table 4 shows the 4 (of 23) items that were significantly correlated with acculturation levels. More acculturated participants believed non-physical factors influenced pain while less acculturated participants preferred to see a culturally similar doctor.

Table 4. Spearman’s rho correlations for pain beliefs significantly correlated with acculturation levels

<table>
<thead>
<tr>
<th>Questionnaire items and numbers</th>
<th>Acculturation Level</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3 I believe there is a psychological factor leading to may pain, such as tension and stress.</td>
<td>0.360</td>
<td>0.002</td>
</tr>
<tr>
<td>C5 Other than physical damage, disruption of the harmony among elements within the body can also cause pain.</td>
<td>0.241</td>
<td>0.038</td>
</tr>
<tr>
<td>D10 Understanding my culture is an important part of understanding my physical illness and pain.</td>
<td>0.350</td>
<td>0.002</td>
</tr>
<tr>
<td>E3 Regardless of traditional or Western medicine, I prefer to have a doctor who is of the same culture and speaks the same language as I do.</td>
<td>-0.286</td>
<td>0.013</td>
</tr>
</tbody>
</table>

Discussion

The present study found 77.5% of the participants had experienced persistent pain in the past five years. The percentage reported was much higher than the findings of Frohlich, Jacobi, and Wittchen, 8.1%;\(^{21}\) or Gureje, Von Korff, Simon, and Gater, 22%.\(^{22}\) Additionally, the 2006/7 New Zealand Health Survey, a nationally representative cross-sectional survey, reported that 16.9% experienced chronic pain.\(^{23}\) The dramatic differences in the percentages of persistent pain reported in these studies probably means either the various research populations are not comparable or the definitions of persistent pain are different, or both. Our study defined persistent pain as “a pain condition in the past 5 years that has persisted when you expected it to recover” while the definition used for the NZ Health Survey was “pain that is present almost every day …that has lasted or is expected to last 6 months or more.” Frohlich et al applied the even more stringent DSM-IV diagnostic criteria.\(^{21}\) Also, it seems likely that because it was about pain, our study attracted more people who have persistent pain in contrast to Gureje et al who recruited consecutive patients from health centres.\(^{22}\) It was difficult to compare the rate with other studies in China since they tend to look at specific pain conditions and hardly ever conduct nationwide
prevalence research. The most recent study conducted on the prevalence of chronic pain was amongst Hong Kong adults where 10.8% of the sample reported pain.\textsuperscript{24} Overall, it was found that cultural differences were not evident regarding pain experiences but dissimilarities were found in responses to pain, such as more New Zealand Europeans would seek diagnoses than Chinese people. Rhodes et al., report that pain patients often expect a pain examination in order to discover evidence of biogenic cause, localisation and possible medical remedies.\textsuperscript{25}

The finding in the current study suggests that this is the case for New Zealand Europeans who sought diagnoses more and also had more visits to health professionals for pain. This is in accord with the literature that indicates that Westerners have more physically-oriented perceptions of health and tend to attribute their sickness to biological factors.\textsuperscript{11,12}

Taking medication is perceived as the most common and easiest way to manage pain in Western societies.\textsuperscript{26,27} The study participants reported moderate medication use with more New Zealand Europeans reporting taking medication—both prescription and other medications, confirming earlier research that suggests that Western patients frequently obtain prescriptions and use various analgesics for pain.\textsuperscript{28,29}

Although there were no cultural differences between groups in seeking alternative treatments, the rate of this pain behaviour nevertheless supported previous findings in New Zealand studies as over half of the study population reported seeking alternative treatment. For example, GPs’ referral rate to alternative therapies in Auckland 20 years ago was 68.7%, where chronic pain syndromes and musculoskeletal disorders were most frequently treated.\textsuperscript{30} Two years later, a study reported 52.4% of chronic pain patients consulted complementary therapists in the same region.\textsuperscript{31} More recently, it was found 95% of GPs had referred their patients to one or more alternative medicine sources in a nationwide cross-sectional study.\textsuperscript{32} These findings reveal increasing recognition and acceptance of CAM in New Zealand society, and the high overall rate may also explain why there were no cultural variances in seeking alternative treatments between the two cultures.

Because acupuncture is a traditional Chinese treatment it was surprising that there was no significant difference between cultures in the endorsement of this as a treatment. Again this probably reflects the general acceptance of CAM in New Zealand society and possibly also the availability of funding for acupuncture through the Accident Compensation Corporation (ACC). In contrast, physical therapy, also funded through ACC, was more endorsed by the European sample, perhaps reflecting a more active approach to managing pain.

Although the Chinese sample seemed less challenged by the impact of pain in their lives, they reported higher means for all perception items. In this context it was unexpected to find items suggesting family disruption may be a trigger for pain, or disharmony of bodily elements might cause pain, or the understanding of one’s culture is important to understand pain, were not more highly endorsed by the Chinese participants as these appear to be in accord with traditional beliefs.

The findings indicated that New Zealand Europeans hold some pain perceptions that are different from their actual pain behaviours. While they were more likely to take medication to control pain and to request diagnoses, this group actually agreed less
with the perception items stating pain can be managed by medication and that there must be diagnoses for pain.

These findings contradict reports from other studies that indicated Westerners tended to believe analgesics were an effective way to relieve pain but agree with evidence they obtain more prescriptions and have higher medication usage.\textsuperscript{11,25,28,29} This is perhaps another example where people’s behaviours are not in accord with their beliefs. At times people behave in a way that would be less beneficial to themselves such as not doing enough exercises or eating properly despite having the knowledge of how to live a healthy life.

The cost of seeking medical care as well as its accessibility may also play a role in how people manage their pain. In addition, it is possible that people are genuinely ready to seek medical assistance in spite of lacking knowledge and confirmation of how effective the medications are. More investigation is required to further explore and determine the underlying mechanisms that lead to such conflicting outcomes.

Conversely, results found Chinese participants strongly believed that there is always a cure for pain, when it is suggested only Westerners would hold such strong attitudes.\textsuperscript{11,13} These findings do not indicate that the studied Chinese participants are less holistic according to the Chinese health model, rather, degrees of holistic health perceptions vary across different Chinese people and in this study were not substantially affected by acculturation, perhaps because the sample were relatively acculturated overall. Future studies will be required to identify actual factors.

It is possible for less acculturated Chinese to hold extensive knowledge and attitudes which lead to responses similar to those who are highly acculturated. It is found in China, medical students during their clinical years tended to show negative attitudes toward TCM and more faith in Western medicine than the pre-clinical students.\textsuperscript{33} This somewhat contradicts previous assumptions suggesting immigrants need to become habituated to the society and lifestyles of their host country in order to be acculturated and leaves open the possibility that immigrants are ‘preacculturated’ to some extent.

Yijala and Jasinkskaja-Lahti proposed acculturation to a new culture can occur prior to migration, based on the potential migrants’ perceptions of the preferences of the future hosts and the level of contacts with the hosts.\textsuperscript{34} If this is the case the lack of substantial differences between the two groups found in our study might be expected.

**Conclusion**

Cultural differences did not appear significant for pain experiences, but did influence perceptions about pain as well as how people manage their pain. While acculturation levels were explored in relation to pain behaviours and attitudes, no substantial impact was reported.

An unanticipated finding was revealed when people reported managing and responding to pain differently from the way their perceptions would seem to predict. Given the wealth of evidence that health behaviours are not always in accord with the health beliefs,\textsuperscript{35-37} This result, although unexpected, is not surprising; and the inconsistency may offer useful information for health professionals to better understand and help people who experience persistent pain.
Currently, the Ministry of Health in New Zealand aims to improve consideration of the social and cultural determinants in health, in order to strengthen the cultural base of health interventions and reduce health inequalities. In addition, meeting people’s needs regarding chronic conditions including chronic pain has been deemed important.

Clearly, recognising patient’s “cultural cues” will ensure cultural or ethnic differences are not overlooked in considering treatment options, and will facilitate effective clinician-patient communication and optimal uptake of healthcare resources.

In conclusion, the study has identified numerous cultural differences among New Zealand Europeans and Chinese immigrants in terms beliefs about persistent pain and its treatment. As far as we are aware this is the first cross-cultural study in New Zealand regarding persistent pain, and it has indicated the importance of providing resources and support for people who experience unexplained persistent pain with an understanding of their cultural background.

Future investigations are required to further understand the unexpected findings. Additionally, seeking similar information from a random sample might indicate the extent that the present findings are unique to Chinese and European New Zealanders who have experienced persistent pain.

**Competing interests:** Nil.

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