

# Twelve-month prevalence, severity, and treatment contact of mental disorders in New Zealand born and migrant Pacific participants in Te Rau Hinengaro: The New Zealand Mental Health Survey

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## Abstract

**Objective:** To investigate differences in 12-month prevalences of mental disorders and 12-month treatment contact among New Zealand born and migrants in separate ethnic groups in Te Rau Hinengaro: The New Zealand Mental Health Survey (NZMHS).

**Data:** The NZMHS is a nationally representative face-to-face household survey, carried out in 2003-2004 with a response rate of 73.3%. It surveyed 12,992 New Zealand adults aged 16 and over. Pacific people were over sampled. This paper focuses on the 2374 Pacific participants but includes for comparison 8160 non-Maori-non-Pacific participants (Others).

**Method:** Multiple logistic regression models were used to produce estimates weighted to account for different probabilities of selection and taking account of the complex survey design.

**Results:** The prevalence of mental disorder was lowest among those who migrated as adults compared with those who migrated as young children (child migrants) or New Zealand-born (NZ born) migrant descendants in both Pacific and other ethnic groups. While Pacific people have higher rates of disorder than Others, many of the observed differences between Pacific and Others were explained by population differences in age and sex.

Service use in the last 12 months by people with a disorder was low among Pacific peoples overall, but specifically among older migrants. Older Pacific migrants with a disorder had particularly low use of specialist mental health services.

**Conclusion:** An interesting picture has emerged regarding need for and use of mental health services. The burden of mental disorder is highest while service use was lower among Pacific peoples generally. Those born in or who migrated as children to New Zealand had higher levels of disorder but were also more likely to use services than older migrants.

**Key words:** cross-sectional studies, epidemiology, mental disorders, migration, Pacific, ethnicity.

## Introduction

The social and cultural fabric of Pacific peoples in New Zealand society is diverse, complex and heterogenous. There are differences between cultural groups and also within cultural groups in terms of norms, customs, language, cultural values and behaviours.

Since the early 1950's demand for workers in the

manufacturing and service industries culminated in increasing numbers of Pacific peoples emigrating to urban centres of New Zealand. This accelerated dramatically with the economic boom of the 1960's and early 1970's<sup>1, 2</sup>. The establishment of South Pacific Work Schemes recruited labourers from Fiji, Samoa, Tonga, Tuvalu and Kiribati throughout the 1970's. However the economic downturn in

that started in the 1970's and characterised New Zealand's economy in the 1980's and 90's led many Pacific peoples in the manufacturing industries to be laid off or in underemployment.

This created adverse consequences in general living conditions for many Pacific migrants and their families. This alongside pressures of adjustment and acculturation has been speculated to have had a negative impact on the mental health of Pacific peoples living in New Zealand. In addition two distinctive sub-cultures have emerged; a younger New Zealand born and raised population and an older Island Born and raised<sup>3</sup>. This has fostered issues such as shifts and tensions in traditional customs, norms, beliefs and values, which affects individuals' sense of belonging and identity, and social cohesion. Issues of identity for young Pacific peoples are significant, in a bicultural and multicultural environment, balancing the desires to retain a cultural heritage while living in a contemporary society.

There is general recognition that the transition from Island culture to urban and largely palagi (European) dominated cultural norms in New Zealand is difficult and issues of successful adjustment and adaptation to the New Zealand environment and culture need to be considered more thoroughly.

There has been much international evidence of an association between migration and psychiatric disorder or mental wellbeing. These include separate analyses of refugees as well as immigrant worker populations.<sup>4-7</sup>

In addition, there is the emerging notion of a "healthy migrant" in spite of apparent high risk as observed initially among Hispanic or Mexican migrants to the US<sup>8</sup>. This is counter to results from some other studies that pointed to worse mental health among migrants. In a meta-analysis of schizophrenia<sup>9</sup> showed that first generation migrants had high rates but 2<sup>nd</sup> generation migrants were higher. Higher rates among migrants were influenced by risk factors prevalent in the communities from which individuals had migrated and the ease of their transition into their host country.

Bhugra<sup>10-12</sup> also observed that prevalence of mental disorder was associated with migration but these differences were dependent upon the predisposition of the individual to stress as well as the cultural and social factors from which they came from and arrived to. The European experience tends to highlight the heterogeneity of the groups broadly called migrants<sup>6</sup>.

There is a lack of information and research on Pacific peoples' immigration experiences and mental health

although there has been some social and historical analysis.<sup>13, 14</sup> Most research has been undertaken on the immigration experiences of refugees, which does not include Pacific peoples.

Only a few Australian or New Zealand based migration studies have been undertaken on the prevalence of mental disorders among immigrants. The Australian experience is different from that of New Zealand Pacific peoples as many publications deal with early European,<sup>15</sup> recent middle eastern immigrants<sup>16, 17</sup> or recent issues among those detained under Australian migration regulations.<sup>18</sup> Within New Zealand, one study focused upon Chinese immigrants<sup>19</sup> and another on a general population comparison which included a small Pacific sample<sup>20</sup>. These focused on general mental disorder or feelings of anxiety or depression with a non clinical rating and seemed to point to aspects of migration as the main influences on disorders, more so than ethnic differences as pointed out in the latter paper. A commentary on the mental health of Tongan migrants<sup>21</sup> pointed to growing concerns about increasing mental illness and substance issues compared with those resident in the Kingdom of Tonga.

**Among New Zealand-born Pacific people, 31.4% had a mental disorder which was twice as that of people who migrated at age 18 and over (15.1%).**

Prior to the New Zealand Mental Health Survey (NZMHS) estimates about the prevalence of mental disorders among Pacific people in New Zealand had been drawn from the few prevalence studies performed in the Island nations<sup>22</sup> or from Pacific people's use of mental health services in New Zealand.<sup>23,24</sup>

In 2006, using NZMHS data, Foliaki et al<sup>25, 26</sup> reported the 12 month prevalence of mental disorder among Pacific people by age at migration and showed that among New Zealand-born Pacific people, 31.4% had a mental disorder which was twice as that of people who migrated at age 18 and over (15.1%). That observation supported international studies that pointed towards migrants having a lower lifetime prevalence of mental disorders.<sup>27-29</sup>

In this paper we compare the 12 month prevalence, severity and treatment contact of mental disorders among New Zealand's Pacific migrant population with their New Zealand born counterparts.

## Method

### Sample

The NZMHS was a nationally representative household survey of 12 992 adults aged 16 years and over, with a stratified multistage clustered sample design. Face-to-face interviews were carried out between October 2003 and December 2004 by specially trained interviewers, in English. The response rate achieved was 73.3%. More detail regarding survey methods is provided elsewhere.<sup>30</sup>

Pacific people were oversampled. In total, there were 2374 Pacific people, of whom 138 reported both Pacific and Maori ethnicity. This paper includes all 2374 Pacific participants. Some comparisons are made with the 8160 'Others' (non-Maori non-Pacific). All participants answered questions relating to service use as well as mood, substance and some anxiety disorders while a subset of participants went on the answer questions about other anxiety disorders in the long form of the interview.<sup>31, 32: section 13.4.2</sup>

**Definitions**

Socio-demographic correlates include age at interview, sex and ethnicity and are assessed using 2001 Census of Population and Dwellings questions when possible.

Questions about age at arrival and years since migrating to New Zealand were asked of those who were born outside New Zealand. In earlier analyses<sup>25</sup> age at migration was grouped into four categories: those who migrated to New Zealand at ages less than 12, between 12 and 18 years and 18 years and older and those who did not migrate to New Zealand (NZ born). In this paper, three groups have been used combining those who migrated at 12-18 years and those who migrated at 18 years and older, thus forming one group who migrated at age 12 or more (older migrants). This was to increase the numbers of respondents aged under 45 years of age who migrated at older ages. The other migrant group were those also born in the islands that migrated to New Zealand at age below 12 years (young migrants).

Mental disorders were defined in terms of 12 month prevalence, using the Composite International Diagnostic Interview (CIDI) version 3.0, a widely used computer assisted structured interview that produces valid and reliable psychiatric diagnoses. The CIDI generates DSM IV diagnoses by determining whether the respondent has ever in their lifetime met the criteria for the disorder, then determines the last time the person had an episode or key symptoms of the disorder (irrespective of treatment). If this was within 12 months of interview, this is classified as a 12 month disorder. Prevalence of rare conditions such as schizophrenia and other psychotic disorders could not be reliably estimated from this household survey. Organic brain syndromes such as dementia were also excluded from data collection.<sup>30</sup>

Serious mental disorder was assigned if in the past 12 months there was either: an episode of

bipolar I disorder; substance dependence with serious role impairment; a suicide attempt and any mental disorder; at least two areas of severe role impairment due to a mental disorder in the Sheehan Disability Scale domains; or overall functional impairment found in the National Comorbidity Study Replication<sup>33</sup> to be associated with a Global Assessment of Functioning<sup>34</sup> score of 50 or less in conjunction with a mental disorder.<sup>30</sup>

**Analyses**

Data were weighted to account for the clustered sample design, different probabilities of selection and differential non-response and post-stratified to the 2001 New Zealand Census of Population and Dwellings by age sex and ethnicity. All prevalence estimates reported are the population-weighted estimates. Multivariable models were analysed by multiple logistic regression using SUDAAN and SAS (version 9.1.2).

The first 'unadjusted' model regresses the logit of the (prevalence or service) variable of interest on ethnicity (Pacific and Other) and migration (NZ born, young and older migrants). The second, 'adjusted' model is the same as the 'unadjusted' model but also includes age at interview (16-24, 25-44, 45-64, 65+ years) and sex alongside ethnicity and migration.

**Results**

**Age at Migration of those sampled**

**Table 1. Place of birth or age at migration for Pacific and Others by age group: percentage (95%CI).**

| Pacific             | Age Group (Years) | NZ Born n=889       | Young migrants n=307 | Older migrants n=1178 |
|---------------------|-------------------|---------------------|----------------------|-----------------------|
|                     | 16 to 24          | 69.0<br>(62.5,75.5) | 16.8<br>(12.2,21.4)  | 14.2<br>(9.0,19.4)    |
|                     | 25 to 44          | 44.8<br>(40,49.6)   | 15.7<br>(12.5,18.9)  | 39.5<br>(34.7,44.3)   |
|                     | 45 to 64          | 12.2<br>(8.8,15.7)  | 7.3<br>(4.6,10.0)    | 80.4<br>(76.3,84.6)   |
|                     | 65+               | 2.4<br>(0.0,5.1)    | 3.2<br>(0.6,5.7)     | 94.4<br>(90.6,98.2)   |
|                     | Total             | 42.1<br>(38.6,45.6) | 13.5<br>(11.5,15.6)  | 44.3<br>(40.7,48)     |
| Others <sup>1</sup> | Age Group (Years) | NZ Born n=6182      | Young migrants n=402 | Older migrants n=1576 |
|                     | 16 to 24          | 70.2<br>(66.1,74.3) | 11.1<br>(8.5,13.6)   | 18.8<br>(15.2,22.4)   |
|                     | 25 to 44          | 73.1<br>(70.9,75.3) | 5.4<br>(4.5,6.3)     | 21.5<br>(19.4,23.7)   |
|                     | 45 to 64          | 76.9<br>(74.9,79)   | 4.5<br>(3.7,5.4)     | 18.5<br>(16.7,20.4)   |
|                     | 65+               | 74.5<br>(72.2,76.8) | 2.5<br>(1.7,3.3)     | 23.0<br>(20.8,25.2)   |
|                     | Total             | 74.1<br>(72.6,75.6) | 5.4<br>(4.8,6.0)     | 20.5<br>(19.1,21.8)   |

<sup>1</sup> Non-Maori Non-Pacific

Table 1 is the weighted percentage in different age

groups for Pacific and Other' participants, by place of birth and age at migration. For Pacific participants, 42.1% (n=889) were born in New Zealand (NZ born), 13.5% (n=307) migrated under 12 years of age (young migrants) and 44.3% (n=1178) migrated to New Zealand when they were 12+ years and older (older migrants). Other participants comprised of people from non-Maori and non-Pacific ethnic groups of whom three quarters (74.1%), were born in New Zealand (n=6182), 5.4% (n=402) migrated under 12 years of age (young migrants), and 20.5% (n=1576) migrated to New Zealand when they were 12+ years and older (older migrants).

Among Pacific participants, much higher proportions of people in the two younger age groups were NZ born. On the other hand a higher proportion (74.1%), of Other participants were born in New Zealand compared with 42.1% of Pacific participants, which reflects our recent migration history. Interestingly, only 5.4% of Other participants were young migrants compared with 13.5% in Pacific participants. Both however are small compared with the other two categories in both ethnic groups.

### Twelve month prevalence and severity of mental disorders in migrant and New Zealand born Pacific people

Table 2 shows the twelve month prevalence and severity of diagnosed mental disorders for Pacific and Other participants by place of birth and age at migration. The prevalence of any mental disorder among Pacific participants, not adjusted for age or sex, was 31.9% for NZ born, 31.0% for young migrants and 16.6% for older migrants. Among Other participants the prevalences for any mental disorder were; 20.6% for NZ born, 18.9% for young migrants and 14.7% for older migrants.

Overall, for Pacific participants, the prevalence of mental disorder was higher for NZ born, followed by their young migrants and than their older migrants counterparts. These differences were dependent on age and sex as when they

were adjusted or controlled for, the differences were much reduced and often were no longer statistically significant. Other participants showed the same pattern as Pacific participants whereby the NZ born showed higher prevalence of mental disorders, followed by the young migrants then older migrants. As for Pacific participants, these differences were reduced following adjustment for age and sex but with larger sample sizes in the Other participants group they remained statistically significant.

A similar overall pattern was shown for severity of mental disorders. However the difference among NZ born and the migrant groups changed little with adjustment for age and sex.

Table 3 is the odds ratios for mental disorders by

**Table 2. 12-month prevalence and severity of diagnosed mental disorders<sup>†</sup> among Pacific and 'Other' participants by place of birth and age at migration.**

|                                      | Pacific              |                      |                      | Other                |                      |                      |
|--------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                      | NZ Born              | Young migrants       | Older migrants       | NZ Born              | Young migrants       | Older migrants       |
|                                      | %<br>(95%Ci)         | %<br>(95%Ci)         | %<br>(95%Ci)         | %<br>(95%Ci)         | %<br>(95%Ci)         | %<br>(95%Ci)         |
| <b>Mental Disorder</b>               |                      |                      |                      |                      |                      |                      |
| Any mental disorder <sup>‡</sup>     |                      |                      |                      |                      |                      |                      |
| <b>Unadjusted</b>                    | 31.9<br>(26.3, 37.6) | 31.0<br>(21.4, 40.6) | 16.6<br>(13.3, 19.9) | 20.6<br>(19.1, 22.1) | 18.9<br>(13.9, 23.8) | 14.7<br>(12.2, 17.3) |
| <b>Adjusted for Age and Sex</b>      | 24.1<br>(19.1, 29.1) | 24.7<br>(16.2, 33.3) | 17.2<br>(13.7, 20.7) | 20.8<br>(19.3, 22.3) | 17.0<br>(12.5, 21.5) | 15.4<br>(12.8, 18.0) |
| Any mood disorder                    |                      |                      |                      |                      |                      |                      |
| <b>Unadjusted</b>                    | 11.6<br>(7.8, 15.4)  | 13.3<br>(8.3, 18.4)  | 4.6<br>(3.3, 5.9)    | 7.7<br>(6.9, 8.5)    | 10.5<br>(7.2, 13.8)  | 6.0<br>(4.4, 7.5)    |
| <b>Adjusted for Age and Sex</b>      | 8.3<br>(5.5, 11.0)   | 10.3<br>(6.3, 14.2)  | 4.8<br>(3.4, 6.2)    | 7.8<br>(7.0, 8.6)    | 9.3<br>(6.3, 12.2)   | 6.2<br>(4.6, 7.8)    |
| Any Anxiety disorder <sup>‡</sup>    |                      |                      |                      |                      |                      |                      |
| <b>Unadjusted</b>                    | 20.5<br>(16.2, 24.8) | 17.9<br>(11.2, 24.6) | 11.7<br>(8.8, 14.5)  | 15.1<br>(13.9, 16.3) | 12.8<br>(9.0, 16.6)  | 10.8<br>(8.7, 12.9)  |
| <b>Adjusted for Age and Sex</b>      | 16.6<br>(12.7, 20.6) | 14.4<br>(8.7, 20.1)  | 11.8<br>(8.9, 14.7)  | 15.2<br>(13.9, 16.4) | 12.0<br>(8.4, 15.6)  | 11.3<br>(9.1, 13.5)  |
| Any Substance disorder               |                      |                      |                      |                      |                      |                      |
| <b>Unadjusted</b>                    | 8.1<br>(5.9, 10.4)   | 4.2<br>(1.7, 6.7)    | 3.0<br>(1.4, 4.6)    | 3.0<br>(2.5, 3.6)    | 4.5<br>(2.0, 7.1)    | 1.2<br>(0.5, 1.9)    |
| <b>Adjusted for Age and Sex</b>      | 4.1<br>(2.9, 5.3)    | 2.6<br>(1.1, 4.2)    | 3.5<br>(1.6, 5.4)    | 3.2<br>(2.6, 3.8)    | 3.3<br>(1.4, 5.1)    | 1.2<br>(0.5, 1.9)    |
| <b>Severity</b>                      |                      |                      |                      |                      |                      |                      |
| Serious mental disorder <sup>‡</sup> |                      |                      |                      |                      |                      |                      |
| <b>Unadjusted</b>                    | 7.0<br>(4.6, 9.4)    | 7.9<br>(3.9, 11.8)   | 4.2<br>(2.7, 5.6)    | 4.4<br>(3.8, 5.0)    | 4.4<br>(2.3, 6.5)    | 2.9<br>(1.9, 3.9)    |
| <b>Adjusted for Age and Sex</b>      | 4.9<br>(3.1, 6.6)    | 6.0<br>(2.9, 9.2)    | 4.3<br>(2.8, 5.9)    | 4.5<br>(3.8, 5.1)    | 3.8<br>(2.0, 5.7)    | 3.0<br>(2.0, 4.1)    |
| 2 or more disorders <sup>‡</sup>     |                      |                      |                      |                      |                      |                      |
| <b>Unadjusted</b>                    | 4.7<br>(3.1, 6.2)    | 5.4<br>(2.3, 8.5)    | 1.8<br>(1.0, 2.6)    | 4.1<br>(3.5, 4.6)    | 5.1<br>(2.7, 7.5)    | 2.5<br>(1.6, 3.4)    |
| <b>Adjusted for Age and Sex</b>      | 3.4<br>(2.1, 4.6)    | 4.1<br>(1.6, 6.6)    | 1.9<br>(1.1, 2.7)    | 4.1<br>(3.5, 4.7)    | 4.6<br>(2.4, 6.8)    | 2.6<br>(1.7, 3.6)    |

<sup>†</sup>DSM-IV CIDI 3.0 disorders with hierarchy [32: section 13.4.1]; <sup>‡</sup>Assessed in the subsample who did the long form interview [32: section 13.4.2];

**Table 3. Odds ratios and the severity of mental disorders<sup>†</sup> by ethnicity, place of birth and age at migration.**

|  | Pacific vs Other <sup>††</sup><br>(Reference Group) | Pacific only   |   |
|--|---|--|---|
|  |   | NZ Born vs Older migrants <sup>††</sup><br>(Reference Group) | Young migrants vs Older migrants <sup>††</sup><br>(Reference Group) |
|  |   | OR (95% CI)<br>p-value                                       | OR (95% CI)<br>p-value  |
| <b>Mental Disorder</b>                         |   |  |   |
| <b>Any mental disorder<sup>†</sup></b>         |   |  |   |
| <b>Unadjusted</b>                              | 1.2 (1.0, 1.5)<br>0.04                              | 2.4 (1.6,3.4)<br><0.0001                                     | 2.3 (1.4,3.7)<br>0.001  |
| <b>Adjusted for Age and Sex</b>                | 1.1 (0.9, 1.4)<br>0.4                               | 2.2 (1.5,3.3)<br>0.0001                                      | 2.1 (1.2,3.4)<br>0.005  |
| <b>Any mood disorder</b>                       |   |  |   |
| <b>Unadjusted</b>                              | 1.0 (0.8, 1.3)<br>0.9                               | 2.7 (1.7,4.4)<br><0.0001                                     | 3.2 (1.9,5.4)<br><0.0001  |
| <b>Adjusted for Age and Sex</b>                | 0.9 (0.7, 1.1)<br>0.3                               | 2.6 (1.6,4.3)<br>0.0001                                      | 3.1 (1.8,5.2)<br><0.0001  |
| <b>Any anxiety disorder<sup>†</sup></b>        |   |  |   |
| <b>Unadjusted</b>                              | 1.1 (0.9, 1.4)<br>0.4                               | 2.0 (1.3,2.9)<br>0.0006                                      | 1.7 (1.2,8)<br>0.07   |
| <b>Adjusted for Age and Sex</b>                | 1.0 (0.8, 1.2)<br>0.8                               | 1.9 (1.2,3.1)<br>0.006                                       | 1.5 (0.9,2.7)<br>0.2  |
| <b>Any Substance disorder</b>                  |   |  |   |
| <b>Unadjusted</b>                              | 1.4 (1.0, 2.0)<br>0.04                              | 2.9 (1.5,5.4)<br>0.001                                       | 1.4 (0.6,3.3)<br>0.4  |
| <b>Adjusted for Age and Sex</b>                | 1.2 (0.8, 1.7)<br>0.4                               | 1.7 (0.9,3.5)<br>0.1   | 1 (0.4,2.3)<br>0.9  |
| <b>Severity</b>                                |   |  |   |
| <b>Any serious mental disorder<sup>†</sup></b> |   |  |   |
| <b>Unadjusted</b>                              | 1.3 (0.9, 1.7)<br>0.1                               | 1.7 (1.2,9)<br>0.04  | 2.0 (1.3,8)<br>0.04   |
| <b>Adjusted for Age and Sex</b>                | 1.0 (0.7, 1.3)<br>0.8                               | 1.4 (0.8,2.5)<br>0.2   | 1.7 (0.8,3.2)<br>0.1  |
| <b>2 or more disorders<sup>†</sup></b>         |   |  |   |
| <b>Unadjusted</b>                              | 0.8 (0.6, 1.1)<br>0.2                               | 2.6 (1.5,4.6)<br>0.0007                                      | 3.0 (1.4,6.5)<br>0.004  |
| <b>Adjusted for Age and Sex</b>                | 0.7 (0.5, 0.9)<br>0.02                              | 3.0 (1.4,6.4)<br>0.004                                       | 3.1 (1.4,6.9)<br>0.007  |

<sup>†</sup>DSM-IV CIDI 3.0 disorders with hierarchy [32: section 13.4.1]; <sup>†</sup>Assessed in the subsample who did the long form interview [32: section 13.4.2]; <sup>††</sup> These results are taken from a logistic regression using both Pacific and other participants and also account for place of birth and age at migration; <sup>††</sup> These results are taken from a logistic regression for Pacific participants only.

ethnicity, place of birth and age at migration. The first column in Table 3 reports the odds ratios from logistic regressions on responses from both Pacific and Other participants. It compares the two ethnic groups (Other is the reference ethnic group), having taken into account age at migration of respondents. This was the model used to estimate the prevalence rates shown in table 2. Table 3 showed that Pacific participants reported an odds ratio that was 20% higher for any mental disorder (p=0.04) compared with that for Other participants. The odds ratio for

any substance disorder among Pacific participants was 40% higher than Other participants (p=0.04). In terms of severity, there were no ethnic differences. However, after adjustment for age at interview and sex, these ethnic differences were no longer statistically significant. Interestingly, the odds ratio reported by Pacific participants was 30% less than Other participants for multiple disorders (p=0.02).

Columns 2 and 3 in Table 3 report the odds ratios from the logistic regressions on the Pacific participants only. They show a comparison for Pacific participants between older migrants with 1) NZ born and 2) young migrants.

The odds ratio of NZ born Pacific participants having any mental disorder in the 12 months prior to the survey were 2.4 times that of older migrants (p<0.0001). Moreover, they had 2.7 times the odds ratio of being diagnosed with any mood disorder (p<0.0001), twice that of having any anxiety disorder (p=0.0006), and nearly three times that of having any substance disorder (p=0.001).

In terms of severity, the odds ratio for NZ born Pacific participants was 70% higher for any serious mental disorder (p=0.04), and 2.6 times higher for two or more disorders (p=0.0007).

Overall for Pacific participants, the differences between NZ born and older migrants were largely independent of age and sex as the odds ratios were reduced very little after adjustment and remained significant, except for substance use disorder and severity. For substance use disorder the odds ratio decreased from 2.9 to 1.7 and became non-significant (p=0.1). For severity, there was only a small decrease of 1.7 (p=0.04) down to 1.4 (p=0.2). The odds ratio of NZ born having 2 or more disorders was three times higher than their older migrants counterparts (p=0.004).

The third column of Table 3 is the comparison between young migrants and older migrants for Pacific participants only. Pacific people that were young migrants had odds ratios that were over twice that for older migrants for any mental disorder (p=0.001) and over three times for any mood disorder (p<0.0001). In terms of severity, the odds ratios of young migrants having any serious mental disorder was two times more than that of older migrants (p=0.04), and three times higher for two or more disorders (p=0.004).

Overall for Pacific participants, the differences between young and older migrants were also independent of age and sex as the odds ratios were reduced very little after adjustment and remained significant. After adjustment for age and sex the odds ratios for any mental disorder was 2.1 ( $p=0.005$ ) and 3.1 for any mood disorder ( $p<0.0001$ ). In terms of severity, only young migrants with two or more disorders remained independent of age and sex ( $OR=3.1$ ,  $p=0.007$ ) compared to older migrants.

(51.4%) were highest, followed by young migrants' (53.0%) and older migrants (34.3%). Only NZ born and older migrants were statistically significantly different and this remained significant after adjusted for age and sex.

Over all, the ethnic pattern of service utilisation is different from that for the prevalence of mental disorders. Other participants have lower prevalence of mental disorder than Pacific participants but were more likely to use any health service or specialist mental health services if they had a mental disorder.

**Table 4. Prevalence of health service use in the past 12 months among 'Pacific' and 'Other' participants, who had a 12 month mental disorder, by place of birth and age at migration.**

|   | Pacific              |                      |                      | Other                |                      |                      |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|   | NZ Born              | Young migrants       | Older migrants       | NZ Born              | Young migrants       | Older migrants       |
|   | %<br>(95%CI)         | %<br>(95%CI)         | %<br>(95%CI)         | %<br>(95%CI)         | %<br>(95%CI)         | %<br>(95%CI)         |
| <b>Visits to any health service for a mental health problem<sup>‡</sup></b> |                      |                      |                      |                      |                      |                      |
| <b>Unadjusted</b>   | 54.6<br>(45.4, 63.7) | 44.6<br>(31.5, 57.8) | 39.4<br>(30.2, 48.7) | 75.5<br>(72.6, 78.3) | 70.2<br>(59.4, 81.0) | 62.1<br>(54.6, 69.7) |
| <b>Adjusted for Age and Sex</b>   | 62.5<br>(54.2, 70.7) | 48.8<br>(35.2, 62.5) | 36.8<br>(27.9, 45.7) | 74.9<br>(71.9, 77.8) | 72.2<br>(61.9, 82.6) | 62.7<br>(55.1, 70.3) |
| <b>Mental health specialist service use<sup>‡</sup></b>                     |                      |                      |                      |                      |                      |                      |
| <b>Unadjusted</b>   | 38.7<br>(30.2, 47.1) | 32.1<br>(19.4, 44.9) | 12.9<br>(6.7, 19.2)  | 51.4<br>(48.3, 54.4) | 53.0<br>(41.4, 64.5) | 34.3<br>(27.2, 41.4) |
| <b>Adjusted for Age and Sex</b>   | 40.6<br>(31.9, 49.3) | 32.3<br>(19.5, 45.0) | 12.9<br>(6.6, 19.1)  | 51.1<br>(48.0, 54.2) | 53.8<br>(42.2, 65.4) | 34.8<br>(27.7, 42.0) |

<sup>‡</sup> Assessed for those who had a mental disorder

## Service use

Table 4 is the prevalence of health service use in the past 12-months among Pacific and Other participants who had a mental disorder by place of birth and age at migration.

The percentage of Pacific participants diagnosed with a mental disorder in 12 months that visited any health service for their mental health problem was 54.6% for NZ born, 44.6% for young migrants and 39.4% for older migrants. Mental health specialist service use by Pacific participants was 38.7% for NZ born, 32.1% for young migrants and 12.9% for older migrants. This difference remained even after adjustment for age and sex. Interestingly the difference in visits to any health service for a mental health problem became statistically significant after adjusted for age and sex among NZ born and older migrants Pacific participants.

Use of health services for mental health disorder was much higher for Other participants with disorder than for Pacific participants with disorder but showed a similar pattern. It was highest for NZ born (75.5%), followed by young migrants (70.2%) and older migrants (62.1%) when looking at any health service use. For mental health specialist service use NZ born

Table 5 shows the odds ratios for health service use in the past 12 months by ethnicity, place of birth and age at migration.

Column 1 in Table 5, shows that Pacific participants were 60% less likely to visit any health service for a mental health problem with odds ratio of 0.4, ( $p<0.0001$ ), compared with Other participants. The same pattern was

found for mental health specialist service use. Pacific participants were 50% less likely to visit a mental health specialist with odds ratio of 0.5 ( $p<0.0001$ ), compared with Other participants. These odds ratios remained statistically significant after adjustment for age and sex.

Columns 2 and 3 of Table 5 show the odds ratios for service use in the past 12 months for Pacific participants only who were diagnosed with any mental illness 12 months prior to participating in the survey. The odds ratio for NZ born participants diagnosed with a mental disorder in the past 12 months and visited any health service for a mental health problem was two and a half times more than that of their older migrants counterparts ( $p<0.0001$ ). The same pattern was found for mental health specialist service use. NZ born participants had odds ratio of visiting a mental health specialist that were nearly six times that of older migrants ( $p<0.0001$ ). These differences remained statistically significant and increased after adjustment for age and sex.

Finally, young migrants who were diagnosed with a mental disorder in the past 12 months prior to taking part in the survey, had odds ratio of 4.6 ( $p=0.0007$ ), nearly five times that of their older migrants counterparts, to visit a mental health specialist. A

similar pattern was found in terms of visits to any health service for a mental health problem where the odds ratio for young migrants was 1.9 (p=0.04), nearly double the odds ratio for their older migrants counterparts for visits to any health service for a mental health problem.

Overall Pacific participants were less likely to use any health services or see a mental health specialist for a mental disorder compared to Other participants. This finding remained after adjustment for age and sex. Pacific older migrants were less likely than their NZ born or young migrants counterparts to use any health provider or mental health specialist for a mental health disorder.

**Table 5. Odds ratios for health service use in the past 12 months by ethnicity, place of birth and age at migration**

|   | Pacific vs Other <sup>††</sup><br>(Reference Group) | Pacific only   |   |
|---|---|--|---|
|   |   | NZ Born vs Older migrants <sup>††</sup><br>(Reference Group) | Young migrants vs Older migrants <sup>††</sup><br>(Reference Group) |
|   | OR (95% CI)<br>p-value                              | OR (95% CI)<br>p-value                                       | OR (95% CI)<br>p-value  |
| <b>Visits to any health service for a mental health problem<sup>‡</sup></b> |   |  |   |
| <b>Unadjusted</b>   | 0.4 (0.3, 0.6)<br><0.0001                           | 2.5 (1.6,4)<br><0.0001                                       | 1.9 (1,3.6)<br>0.04   |
| <b>Adjusted for Age and Sex</b>   | 0.5 (0.3, 0.6)<br><0.0001                           | 3.1 (1.9,5.1)<br><0.0001                                     | 2.2 (1.1,4.2)<br>0.02   |
| <b>Mental health specialist service Use<sup>‡</sup></b>                     |   |  |   |
| <b>Unadjusted</b>   | 0.5 (0.4, 0.7)<br><0.0001                           | 5.7 (2.9,11.2)<br><0.0001                                    | 4.6 (1.9,11.2)<br>0.0007  |
| <b>Adjusted for Age and Sex</b>   | 0.5 (0.4, 0.7)<br><0.0001                           | 6.6 (3.1,13.8)<br><0.0001                                    | 4.7 (1.8,12.1)<br>0.001   |

<sup>‡</sup> Assessed for those who had a 12 month mental disorder; <sup>††</sup> These results are taken from a logistic regression using both Pacific and other participants and also account for place of birth and age at migration; <sup>†††</sup> These results are taken from a logistic regression for Pacific participants only.

**Discussion**

This paper confirmed previous results for Pacific and Other ethnic groups that showed Pacific people had a higher 12 month prevalence of any disorder and serious disorder compared with Others.<sup>35</sup> A similar pattern was shown in terms of severity of mental disorders. However these ethnic differences in prevalence were mostly explained by age and sex except for the prevalence of multiple disorders. The paper also showed that Pacific people also were less likely to utilise health services if they had a mental disorder. These ethnic differences remained after adjustment for both age and sex. This is the classic ‘Inverse Care Law’, where the “availability of good medical care tends to vary inversely with the need for it in the population served”.<sup>36</sup>

This paper also showed that the prevalence of mental disorders was higher among NZ born followed by young migrants than older migrants for both Pacific

and Other participants. This pattern was found for diagnosis of mental disorders as well as severity. For Pacific participants the difference between NZ born and older migrants changed little with adjustment for age and sex, except for substance disorder. This may suggest that early exposure to the New Zealand environment is strongly associated with high levels of mental disorder among Pacific people. In addition, among Pacific participants, NZ born were more likely to use any health care service compared to their older migrants counterparts.

These findings ask questions around pressures of adjustment and acculturation. These might include social, geographic, cultural, and economic pressures.

These are important factors that require further investigation in terms of their actual impact on mental health of Pacific people. Furthermore, are these symptoms of a health system failure or are there societal and wider cultural issues at play?

The authors acknowledge that while these results highlight some important issues about Pacific migrants and their descendants, as a cross-sectional study a direct link to migration as a cause of mental disorders among Pacific people cannot be ascertained. The issues around migration of Pacific people would need further study to be better understood.

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