Twelve-Month Prevalences Of Mental Disorders And Treatment Contact Among Cook Islanders Resident In New Zealand

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Abstract

Objective: *To show the 12 month prevalences of mental disorders, 12-month treatment contact and use of mental health services among Cook Islanders resident in New Zealand.*

Data: *A) The New Zealand Mental Health Survey (NZMHS) is a nationally representative face-to-face household survey, carried out in 2003-2004. It surveyed 12,992 New Zealand adults aged 16 or more including 2374 Pacific peoples (500 Cook Islands Maori) and 2457 New Zealand Maori. B) An extract from the Mental Health Information National Collection (MHINC). This is a national dataset that is reported to by mental health services around New Zealand.*

Methods: *Multiple logistic regression models are used to produce estimates from both sets of data. In the case of A) the NZMHS the results are weighted to account for different probabilities of selection and analysis takes account of the complex survey design.*

Results: *A previous paper[1] and this one confirm that Cook Islanders experience high prevalence of mental disorder. However, the difference is more attributable to their population age and gender structure or being New Zealand-born than from ethnicity. The prevalence was higher among New Zealand-born Cook Islanders than those born in the Cook Islands. Those born in the Islands with a disorder were less likely to have used a health service for their mental health compared with others and much less likely to have visited a specialist mental health service.*

From MHINC, twelve month data on use of mental health services shows: high use of acute inpatient and Forensic mental health services by Cook Island clients but similar levels of community mental health services. Cook Islands clients were more commonly diagnosed with bipolar, psychotic or schizophrenic disorders. They were also more likely to be diagnosed with a substance disorder.

Conclusion: *In spite of high levels of disorder Cook Islanders have low use of specialist mental health services. The exception to this is an over-representation in inpatient and forensic services. This experience of mental health services at the extreme end implies delayed or avoided treatment that has resulted in more serious levels of disorder among those Cook Islanders who are eventually seen by mental health services.*

Keywords: *cross-sectional studies, epidemiology, mental disorders, Pacific, Cook Islands.*

Introduction

The Cook Islands are a group of 15 islands in the South Pacific well known as a relaxed holiday destination with a colourful, appealing and varied culture. The peoples from these islands have a varied mix of cultural practices and languages. The past century has seen much interaction between the people of the Cook Islands and New Zealand since the Islands were annexed in 1900. People of the Cook Islands have both Cook Islands and New Zealand citizenship.

Increased demand for workers in New Zealand manufacturing and service industries during the 1950's and 60's led to greater numbers of people from the Cook Islands as well as from other non Cook Islands (NCI) Pacific nations emigrating to urban centres.[2,3] International migration has become a feature of Cook Islands society to the extent that it is estimated that 85% of Cook Islands descendants live outside of the Cook Islands themselves.[4] In 2006,

while 11,800 residents lived in the Cook Islands there were 52,600 Cook Islanders who lived in New Zealand at the same time.[5] As a result there are many vibrant Cook Islands communities throughout New Zealand. Although largely in Auckland, there are strongly identified Cook Islands communities around the rest of New Zealand. Wellington, Hamilton, Hastings, Tokoroa, Christchurch and even as far south as Dunedin and Invercargill each have small but distinct Cook Islands communities. People of the Cook Islands who have settled in New Zealand and their descendants have quietly become a part of that society. Cook Islanders can be found at all levels of New Zealand society.

An economic downturn began in the 1970's and characterised New Zealand's economy through the 1980's and early 90's that led to many Pacific peoples in the manufacturing industries to be laid off. This created adverse consequences in general living conditions for many Pacific migrants and their families. It has been speculated that resulting adverse socio-economic, living conditions, acculturation and adjustment pressures have had a negative impact on the mental health of all Pacific peoples living in New Zealand. Recent years have seen some improvement in the social and economic environment for Pacific communities as a whole.

Foliaki et al reported that Cook Islanders had a 12 month prevalence rate of mental disorder 50% higher than that of New Zealand as a whole.

Like those who descended from non Cook Islands (NCI) Pacific nations, issues exist for Cook Islanders born or raised in New Zealand from an early age that differ from Island born.[6] Issues of identity for young pacific peoples are significant, in a bicultural and multicultural environment. Transition from Island culture to an urban, largely papa'a dominated culture of New Zealand is difficult. Some evidence would point to a greater burden of this transition has been felt among the New Zealand born descendants of those who migrated rather than the migrants themselves.[7]

In the past there have been only a few publications about Cook Islands history, culture, health and traditional healing practices.[8-10] Even fewer documents have dealt with mental illness among Cook Islanders in New Zealand. An observation of traditional healing practices was that physical manifestations possibly attributed to mental illness would be interpreted and treated as "maki tupapaku" or spiritual illness. Waitemata District Health Board (DHB) produced a workbook for a workshop on Cook Islands cultural competency for mental health services in New Zealand.[11] In it the authors proposed a Cook Islands model for mental health care as well as an in depth glossary of Cook Islanders translations for many concepts related to mental illness.

Very little has been reported on the prevalence of mental disorder among Cook Islanders or even the use of mental health services by Cook Islanders in New Zealand. Foliaki et al[1] reported that Cook Islanders had a 12 month prevalence rate of mental disorder 50% higher than that of New Zealand as a whole. This paper seeks to expand on the analysis of Te Rau Hinengaro: the New Zealand Mental Health Survey (NZMHS)[1] and combine this with patterns of use of mental health services in New Zealand from the Mental Health Information National Collection (MHINC), New Zealand's national database of mental health services.

Method

New Zealand Mental Health Survey

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%. To enable analysis of Maori and Pacific peoples estimates with increased precision both groups were oversampled.[12]

Demography: Correlates included age at interview and sex, age at migration and place of birth.

Ethnicity: This was determined by self-identification, according to the ethnicity question in the 2001 Census of Population and Dwellings, which enables a breakdown to individual Island group for people of Pacific ethnicity. This paper uses an ethnicity breakdown of; 500 "Cook Islanders", 1874 people from other non Cook Islands Pacific ethnic groups ("NCI Pacific"), 2319 non Pacific New Zealand Maori ("NZ Maori"), and 7299 people from other, non Pacific-non Maori, ethnicities ("Others").

Diagnosis: Mental disorders have been identified using the Composite International Diagnostic Interview (CIDI) version 3.0. which covered anxiety disorders, mood, eating and substance disorders. There was a psychosis screener but this did not yield diagnoses for rare disorders like schizophrenia. People with a 12 month disorder were those who had previously met the criteria for that disorder and had displayed symptoms in the past 12 months.

'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 with

a Global Assessment of Functioning[15] score of 50 or less in conjunction with a mental disorder.[26]

Table footnotes refer to a "Long" and "Short" form version of the questionnaire. In order to reduce the overall length of interview only a selection of respondents were asked about less common disorders (Long version) while everyone was asked about common disorders (Short form).[12]

Analysis: Data was weighted to account for the clustered sample design, different probabilities of selection and differential non-response. 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). If the number in the denominator was 30 or less, confidence intervals were calculated according to a method by Korn and Graubard.[13,14]

The first "unadjusted" model regresses the logit of the (prevalence or service) variable of interest on ethnicity and migration (NZ born, not NZ born). 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.

New Zealand Mental Health Information National Collection

The Mental Health Information National Collection (MHINC) is "a national database of information collected by the Ministry of Health to support policy, monitoring and research".[15] In New Zealand there are 21 agencies, owned by District Health Boards (DHBs), that provide services to 99% of clients seen by mental health services reporting to the database. In practice not all non-government owned services (NGOs) report to the MHINC.[15] In most years the number of NGOs reporting to the MHINC was in excess of 30. This represented less than 10% of NGOs contracted to provide Mental Health services in New Zealand. The database used in this analysis contains data on individuals (clients) who had used a mental health service between July 2000 and June 2006.

Demography: A selection of demographic correlates include date of birth (age), gender, in addition to a geographic identifier. The latter enables a link to an indicator of local area deprivation (NZDEP2001).

Ethnicity: This is collected using the question in the 2001 census. Each client can report as many ethnic groups as they like but only three at most are recorded in the MHINC. The level of coding enables a breakdown to individual Island group for people of Pacific ethnicity. Ethnicity, in the MHINC is reported in two separate tables in MHINC and coding may change over time. "Pacific" and "Cook Island Maori" are counted if they identified themselves as such in any year or in either of the two places reported in the MHINC. This method of capturing ethnicity is similar to the method described in an analysis of breast cancer among Maori in 2005.[16]

Diagnosis: DSM IV and ICD10 diagnoses are both reported although to remain consistent with the NZMHS output only DSM IV diagnosis is reported. Rare conditions such as schizophrenia and other psychotic disorders are captured in the MHINC.

Services: A variety of attributes associated with mental health service care have been captured and are listed fully in the data dictionary.[15] This report focuses mainly on high level service use of community, inpatient or forensic services as a whole.

Analysis: This was carried out using logistic regressions in SAS version 9.2. In addition, missing data, mainly ethnicity and diagnosis, was addressed using multiple imputation.[17-19] This was done using the additional SAS Procedures; MI and MIANALYSE.

Results from NZMHS

Prevalence of disorder

The twelve month prevalence rates for mental disorder and treatment sought for a mental health problem in the past year have been estimated using the NZMHS. These extend analyses of the prevalence of disorder among New Zealand residents originally or descended from the Cook Islands (Cook Islanders). These were introduced in two earlier publications in published 2006.[20,1]

There is a typical pattern that emerges from looking at prevalence of mental disorder across the different ethnic groups: Cook Islanders are about the same as NZ Maori and higher than NCI (non Cook Islands) Pacific peoples who in turn are higher than the composite Other of non Maori and non Pacific ethnic groups. Many of these differences are reduced after adjusting the rates for population, age and sex.

As shown in Table 1, the 12 month prevalence of any mental disorder is 30.9% among Cook Islanders, 29.5% of NZ Maori, 24.2% of NCI Pacific and 10.3% of people of Others. All are significantly higher than Others. After adjustment for different age and sex structure of each population the 12 month prevalence of any mental disorder is 26.9% among Cook Islanders, 26.4% among NZ Maori, 21.6% among NCI Pacific peoples and 19.7% among people of Other ethnicities. Compared to Others, Cook Islanders still have higher prevalence after adjustment (p=.03) but the difference for NCI Pacific peoples are explained by age and sex (p=.3)

The 12 month prevalence of substance disorders in Cook Islands and NZ Maori is at least twice that for NCI Pacific peoples and over three times that of

Table 1 12 month prevalence of mental disorder† by ethnicity in NZMHS

Comparison	Adjusted	Cook Islands	NCI Pacific	NZ Maori++	Other
Any mental disorder#	unadjusted	30.9 (23.3, 38.5)	24.2 (20.3, 28.1)	29.5 (26.5, 32.4)	19.3 (18.0, 20.6)
	Adjusted for Age and Sex	26.9 (20.0, 33.7)	21.6 (18.0, 25.2)	26.4 (23.7, 29.0)	19.7 (18.4, 21.1)
Any mental disorder (excl substance) #	unadjusted	27.1 (19.9, 34.3)	22.1 (18.5, 25.7)	25.3 (22.8, 27.9)	17.9 (16.7, 19.1)
	Adjusted for Age and Sex	23.7 (17.2, 30.2)	20.0 (16.6, 23.4)	22.8 (20.4, 25.1)	18.3 (17.1, 19.5)
Any Substance disorder	unadjusted	9.5 (5.3, 13.7)	4.6 (3.2, 6.0)	9.0 (7.5, 10.5)	2.7 (2.3, 3.2)
	Adjusted for Age and Sex	7.0 (4.0, 10.1)	3.4 (2.4, 4.5)	7.2 (6.0, 8.4)	2.9 (2.4, 3.4)
Serious disorder#‡	unadjusted	7.7 (4.3, 11.1)	5.7 (4.2, 7.2)	8.9 (7.5, 10.2)	4.1 (3.6, 4.6)
	Adjusted for Age and Sex	6.5 (3.5, 9.4)	5.0 (3.6, 6.3)	7.8 (6.6, 9.0)	4.2 (3.7, 4.7)

†DSM-IV CIDI 3.0 disorders with hierarchy.[24: section 13.4.1] ++Excluding Maori who were also Pacific; #Assessed in the subsample who did the long form interview.[24: section 13.4.2] ‡For severity.[24: section 13.12.3, 25: section 2.3]

Table 2 Odds ratios of ethnicity and NZ born from logistic regression on 12 month prevalence of mental disorder† among Pacific in NZMHS.

Disorder	Model	Description	Cook Islands vs NCI Pacific (OR=1)	NZ Born vs not (OR=1)
Any Disorder#	i) Ethnicity alone	OR (95%CI)	1.41 (0.93,2.14)	
		p-value	0.1	
	ii) Adjusted NZ Born	OR (95%CI)	1.27 (0.84,1.92)	1.81 (1.28,2.56)
		p-value	0.3	0.0009
	iii) Adjusted as for ii) plus age and sex	OR (95%CI)	1.25 (0.82,1.9)	1.62 (1.1,2.39)
		p-value	0.3	0.01
Any Disorder excl substance#	i) Ethnicity alone	OR (95%CI)	1.32 (0.87,1.99)	
		p-value	0.2	
	ii) Adjusted NZ Born	OR (95%CI)	1.20 (0.80,1.80)	1.70 (1.20,2.42)
		p-value	0.4	0.003
	iii) Adjusted as for ii) plus age and sex	OR (95%CI)	1.15 (0.76,1.74)	1.57 (1.05,2.34)
		p-value	0.5	0.03
Substance	i) Ethnicity alone	OR (95%CI)	2.33 (1.27,4.27)	
		p-value	0.006	
	ii) Adjusted NZ Born	OR (95%CI)	1.95 (1.04,3.64)	2.35 (1.37,4.01)
		p-value	0.04	0.002
	iii) Adjusted as for ii) plus age and sex	OR (95%CI)	2.15 (1.15,4.01)	1.52 (0.84,2.73)
		p-value	0.02	0.2
Severe#‡	i) Ethnicity alone	OR (95%CI)	1.44 (0.81,2.56)	
		p-value	0.2	
	ii) Adjusted NZ Born	OR (95%CI)	1.36 (0.77,2.41)	1.37 (0.85,2.20)
		p-value	0.3	0.2
	iii) Adjusted as for ii) plus age and sex	OR (95%CI)	1.38 (0.76,2.51)	1.13 (0.67,1.88)
		p-value	0.3	0.6

†DSM-IV CIDI 3.0 disorders with hierarchy.[24: section 13.4.1] #Assessed in the subsample who did the long form interview.[24: section 13.4.2] ‡For severity.[24: section 13.12.3, 25: section 2.3]

Others. After adjustment for different age and sex structure of each population the pattern remains similar. However, prior to adjustment NCI Pacific were significantly higher than Others but the difference became no longer significant after adjusting for age and sex (p=.4).

Thus many of the differences between Pacific, particularly NCI Pacific, and Others for most disorders are explained by differences in age and sex.
Within Pacific, looking at Cook Islands and Non-Cook Islands ethnic groups, the first model includes only ethnicity (Cook Islands vs not) and then a second model adjusts for whether an individual is born in New Zealand (NZ born) or not and a further model also adjusts for age and sex. The results of the regressions are shown in Table 2.

In the case of diagnosed mental disorders, the odds ratio for ethnicity with no other factors is usually higher, indicating Cook Islanders are more likely to have a disorder than NCI Pacific peoples, but the odds ratios are not significant. However, with the introduction of place of birth, New Zealand born vs not born in New Zealand (NZborn), as a factor, the odds ratios for place of birth is significant. Although the difference is reduced, NZborn still are significantly more likely to have a disorder after adjusting for age and sex. The exception to this is for severe disorders where neither the odds ratios for ethnicity nor place of birth are significant.

In the case of substance disorder, not accounting for any the affects of other factors, Cook Islanders are more likely to have a disorder as NCI Pacific peoples. Even after adjusting for place of birth and age and sex, the odds ratios for both NZ born and ethnicity are still significantly greater than 1. This means that the differences between Cook Islanders and NCI Pacific ethnic groups, in substance disorder, are not fully explained by either place of birth or age and sex.

Age is a significant factor underpinning higher prevalence of substance disorder as well as serious disorder among Cook Islanders compared with NCI Pacific. People aged 16 to 24 years are most likely of all age groups to have substance disorder. They are also significantly more likely to have a severe disorder than older people.

Females have higher rates of mood disorders than males, and males have higher rates of substance disorders.

Service use

NCI Pacific peoples and Cook Islanders had the lowest proportions of people with a 12 month disorder to use any health service for their mental health problem compared to both NZ Maori and Others. Even after adjustment for different age and sex structure of each population NCI Pacific people remain significantly less likely to have seen anyone for their mental health problem. Cook Islanders are less, but not significantly, likely than Others to visit a service.

As shown in Table 3, the proportion who had used any mental health specialist service for their mental health problem is 26.4% among NZ Maori, 23.7% of Others, 17.2% of Cook Islanders, and 15.6% of NCI Pacific peoples. Pacific people, both Cook Islanders and NCI Pacific peoples, were significantly less likely to have seen anyone for their mental health problem, with or without adjustment for age and sex.

In summary Cook Islands people are more likely than NCI Pacific peoples to see someone for their mental health problem but both groups are less likely than Others and NZ Maori to visit mental health specialist services.

Table 3 12 month prevalence of service use by those with any disorder by ethnicity in NZMHS

Comparison	Adjusted	Cook Islands	NCI Pacific	NZ Maori†	Other
Mental Health Specialist Visit	unadjusted	17.2	15.6	26.4	23.7
		(12.7, 21.8)	(12.6, 18.6)	(24.2, 28.5)	(22.6, 24.8)
	Adjusted for Age and Sex	16.1	14.7	24.6	24.0
		(11.7, 20.5)	(11.8, 17.5)	(22.6, 26.7)	(22.8, 25.1)
Any Health Service	unadjusted	30.0	24.3	37.5	38.9
		(23.5, 36.5)	(20.9, 27.7)	(35.1, 39.8)	(37.6, 40.2)
	Adjusted for Age and Sex	30.1	24.4	36.9	39.0
		(23.4, 36.8)	(20.9, 27.9)	(34.6, 39.3)	(37.7, 40.3)

†NZ Maori excluding Maori who were also Pacific

Results from the MHINC

Mental health service use

The estimated prevalence of mental health service use (clients per year) is calculated from the MHINC for the years from 2001/02 to 2005/06. The MHINC enables a breakdown of ethnic group to individual Island ethnicity but unlike the NZMHS does not enable an analysis by place of birth or migration status.

Table 4 Average annual prevalence of mental health service use by ethnicity, per 10,000 people † (MHINC)

	Cook Islands	NCI Pacific	NZ Maori‡	Other
Unadjusted	162.2	150.7	336.4	215.6
	(148,177)	(137,164)	(327,346)	(213,218)
Adjusted† I) Age and gender	196.2	173.6	350.1	213.9
	(178,214)	(158,189)	(340,360)	(211,217)

†standardised to the New Zealand total 2006 population. ‡NZ Maori excluding Maori who were also Pacific

All services combined

Table 4 shows the average annual prevalence of mental health service use by ethnicity. NCI Pacific peoples and Cook Islanders had the lowest annual rates of people to use a mental health service compared to both NZ Maori and Others. Even after adjustment for different age and sex structure of each population the differences remain significant.

By service category

Table 5 shows that over 80% of Cook Islands mental health service clients were seen by community services, a similar proportion to the three other comparison ethnic groups. However, 30% of Cook Islands clients are seen by inpatient services compared with 9% of Others clients and 28% of Cook Islands clients are seen by Forensic services compared to 3% of Others.

NCI Pacific and Cook Islanders had lower use of community mental health service than NZ Maori and Other. After adjusting for age sex little difference remained between Cook Islanders, NCI Pacific and people of Other ethnicities. The rate for NZ Maori remained higher after adjusting for age and sex.

Table 5 Average annual mental health service use: service category by ethnicity† (MHINC)

	Cook Islands	NCI Pacific	NZ Maori‡	Other
Community				
Unadjusted	131.5	122.6	245.7	177.1
	(116,147)	(108,137)	(237,255)	(174,180)
Adjusted: Age and gender	162.0	143.3	255.6	176.3
	(143,181)	(128,159)	(246,265)	(173,180)
Inpatient				
Unadjusted	48.1	30.6	48.6	19.8
	(45,52)	(28,33)	(45,52)	(19,21)
Adjusted: Age and gender	39.0	25.0	44.7	19.1
	(35,43)	(23,27)	(43,47)	(18,20)
Forensic				
Unadjusted	45.5	26.4	39.7	7.4
	(40,51)	(24,28)	(37,42)	(7,8)
Adjusted: Age and gender	27.5	16.0	29.0	6.0
	(20,35)	(14,18)	(26,32)	(5,6)

†standardised to the New Zealand total 2006 population. ‡NZ Maori excluding Maori who were also Pacific

The unadjusted rate who had used an inpatient mental health service for Cook Islanders and NZ Maori (48.1 and 48.6 per 10,000) is twice that and NCI Pacific (30.6) 50% higher than the rate for Others (19.8). After adjusting for age sex the rate for Cook Islanders reduced to be similar that of NCI Pacific but remained 50% higher than that for Others.

A similar pattern was evident for those who used Forensic services except the rate for Cook Islanders was six times, for NZ Maori more than five times and NCI Pacific more than four times that of Others. Even after adjustment the differences were between three to 4.5 times that of Others.

Table 6 Average annual mental health service use: diagnosis by ethnicity † (MHINC)

	Cook Island	non CI Pacific	NZ Maori‡	Other
Anxiety				
Unadjusted	19.4	9.8	20.6	23.4
	(15,24)	(8,11)	(16,25)	(20,27)
Adjusted: Age and gender	25.9	12.2	21.0	23.2
	(17,35)	(10,14)	(17,25)	(20,27)
Bipolar				
Unadjusted	38.1	18.8	33.8	17.1
	(34,43)	(17,21)	(28,40)	(15,19)
Adjusted: Age and gender	39.5	18.4	33.7	16.1
	(36,43)	(16,21)	(28,40)	(14,18)
Depression				
Unadjusted	37.4	24.8	39.4	43.9
	(31,44)	(21,29)	(31,47)	(38,49)
Adjusted: Age and gender	39.0	22.6	39.9	42.8
	(31,47)	(20,26)	(33,47)	(37,48)
Schizophrenic disorders				
Unadjusted	94.9	65.5	91.5	24.1
	(81,109)	(56,75)	(77,106)	(21,27)
Adjusted: Age and gender	74.6	50.9	69.3	19.6
	(66,83)	(43,59)	(58,80)	(17,22)
Other Psychotic disorders				
Unadjusted	37.6	25.3	27.0	10.2
	(31,44)	(21,30)	(21,34)	(8,12)
Adjusted: Age and gender	35.5	20.5	20.2	8.6
	(28,43)	(17,24)	(15,26)	(7,11)
Alcohol				
Unadjusted	42.4	19.1	48.5	19.4
	(38,46)	(18,20)	(42,55)	(17,22)
Adjusted: Age and gender	26.8	10.8	34.4	15.7
	(18,35)	(9,12)	(28,41)	(13,18)

†standardised to the New Zealand total 2006 population. ‡NZ Maori excluding Maori who were also Pacific

By diagnosis

Among Cook Islanders the diagnoses of people who were seen by mental health services were from, most prevalent;

Order	Cook Islands	NCI Pacific	NZ Maori	Others
1	Schizophrenia	Schizophrenia	Schizophrenia	Depression
2	Alcohol related	Psychotic	Alcohol related	Schizophrenia
3	Bipolar	Depression	Depression	Anxiety
4	Psychotic	Alcohol related	Bipolar	Alcohol related
5	Depression	Bipolar	Psychotic	Bipolar
6	Anxiety	Anxiety	Anxiety	Psychotic

Individuals can receive more than one diagnosis so they can be counted in more than one diagnostic total. It should also be noted that around one third of people seen had a temporary diagnosis, where a specific diagnosis had not been determined.

For Cook Islanders, NCI Pacific and NZ Maori the most common diagnosis was schizophrenia followed by alcohol related disorder for Cook Islanders and NZ Maori or Psychotic disorders for NCI Pacific. Depression and anxiety, the two least likely diagnoses among Cook Islands clients are two of the three most common among Others.

There has long been a concern that Pacific peoples seem to be over represented in services that deal with extreme levels of mental health care

Table 6 shows that Cook Islanders (94.9 per 100,000) were nearly four times more likely to receive a diagnosis of Schizophrenia compared with Others (24.1). After adjusting for age and sex the rate among Cook Islanders was still 3.5 times that of Others. NZ Maori and NCI Pacific were also over three times the rate for Other ethnicities. A similar pattern was evident among those with psychotic disorders.
The rates of those who had an alcohol related disorder for Cook Islanders (42.4) was more than twice that for Others (19.4). After adjusting for age sex the difference between Cook Islanders, NCI Pacific and Others was no longer significant.

The rates of those who had a bipolar disorder for Cook Islanders (38.1) was also more than twice that for Others (17.1). After adjusting for age sex the difference between Cook Islanders was still more than twice the rate of Others.

Discussion

New Zealand Mental Health Survey

The NZMHS shows the prevalence of mental disorder among Cook Islands residents in New Zealand. This analysis of the NZMHS has extend that of Foliaki et al[1,20] which showed a high prevalence of mental disorder among Cook Islands peoples compared with NCI Pacific peoples or New Zealand as a whole.

Adjusting for age and sex enables us to see that many of the differences in prevalence of disorder are largely due to the age and gender structure of the Cook Islands population living in New Zealand. These results show the prevalence of disorder among "New Zealand-born" Cook Islands people is higher than those who migrated to New Zealand as is also shown in an analysis of ethnicity, migration and disorder.[8] The results suggest that early exposure to the New Zealand society may be associated with higher levels of mental disorder. The affect of place of birth on rates of disorder is greater than ethnicity. Thus, simply being a Cook Islander does not increase the likelihood of having a disorder. Nonetheless, even after adjustment for demographic factors, substance related disorder, predominantly alcohol, is still high.

National mental health service use (MHINC)

Te Rau Hinengaro[1,21] indicated that, in the previous 12 months, 3% of Pacific people had seen mental health specialist services for their mental health compared with 4.9% of the total population. The prevalence reported by MHINC is around half of that estimated by NZMHS. The reason for this lower prevalence is most likely because the NZMHS used a more inclusive definition of mental health specialist services than are able to be captured by the MHINC. It included private consultations with psychiatrists, psychologist, and counsellors and mental health helpline contacts, not just the psychiatric admissions and other services provided by mental health specialty services which are captured in MHINC.

It has been shown[1,20] that Pacific peoples with a serious mental disorder were half as likely to have seen any health service for their mental health problem and Pacific peoples with a 12 month disorder

were least likely to have seen health service for their mental health problem even after adjusting for socio-demographic factors.

The results in this paper also show that while both Cook Islanders and NCI Pacific groups have lower use of health services if they have a disorder Cook Islanders are slightly more likely to have seen someone for their mental health problem. The pattern is similar for use of a mental health specialist service.

There has long been a concern that Pacific peoples seem to be over represented in services that deal with extreme levels of mental health care.[22,23] Generally, there has been an impression that Pacific peoples use of mental health services, while generally lower than people from other ethnicities, generally required a level of treatment that was longer in duration and more costly. These results seem to confirm that pattern for Cook Islands clients.

There is a need for a better understanding of the underlying protective and risk factors for mental health and mental illness among all Pacific populations. While it is true that, age, gender and place of birth account for many of the differences between Cook Islanders and other ethnic groups there still remains a need for further investigation into other factors that contribute to better mental health of Cook Islanders in New Zealand. However, just because we understand a bit better the mechanisms that underpin higher levels of disorder in the Cook Islands population does not negate the fact that there is still a comparatively high burden of mental disorder in existence. It appears to be the price for making the adjustment to New Zealand that appears to be extracted more from the children and grandchildren of those who migrated to New Zealand.

Cook Islanders do have a high prevalence of mental disorder and particularly substance use yet relatively low levels of treatment sought for such problems. Another finding from an analysis of the impact of migration[8] seemed to point to particularly low use of health services by older migrants. This is also likely to be the case with Cook Islanders. So while treatment may be low among Cook Islanders generally the solution is not a one size fits all remedy.

Yet, it should be remembered that even with relatively high prevalence of mental disorder, 70% of Cook Islands people did not have a disorder when surveyed. Of those who have a disorder only a relatively small proportion would require treatment and under ordinary treatment conditions an even smaller number would be severely impaired for a great length of time.

However, there are some concerns raised by the results presented here about mental illness that should not be ignored by the Cook Islands population resident in New Zealand as well as those who plan for and work in services that treat people with problems related to mental disorder. These results point to:

- Relative high levels of need
- Particularly high rates of substance use, and
- Non-access to specialist mental health services for treatment by those who need it.

There are many reasons that lead to avoiding treatment; understanding of mental illness, cultural background, knowledge and availability of services or perceived cost, to name a few. The evidence suggests that for whatever reasons, Cook Islanders appear to only receive treatment when it is extremely severe or under compulsion.

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References

1. Foliaki SA, Kokaua J, Tukuitonga C, Schaaf D, for the New Zealand Mental Health Survey Research Team, Twelve-month and lifetime prevalence of mental disorders and treatment contact among Pacific people in Te Rau Hinengaro: the New Zealand Mental Heatlh Survey (NZMHS). Australian and New Zealand Journal of Psychiatry 2006; 40:924-934.
2. Spoonley P. Pacific Communities: Transforming the Politics of Place and Identity, In: Macpherson C, Spoonley P, and Anae M, eds. Tangata 0 Te Moana Nui: evolving identities of Pacific Peoples in Aotearoa New Zealand. Palmerston North, N.Z.: Dunmore Press 2001.
3. Krishnan V, Schoeffel P, Warren J. The Challenge of change: Pacific Island communities in New Zealand, 1986-1993. Wellington, NZ: NZ Institute for Social Research & Development, 1994.
4. Tongia M. Te Neke'anga i Porirua: Changing values in Aotearoa, In: Crocombe R and Crocombe MT, eds. Cook Islands Culture. Suva, Fiji and Rarotonga, Cook Islands: University of the South Pacific, 2003.
5. Office CIS. Population estimates & vital statistics, In: Islands SC, ed, 2008.
6. Tiatia J, Coggan C, Young Pacific suicide attempts: a review of emergency department medical records, Auckland, New Zealand. Pacific Health Dialog 2001; 8:124-128.
7. Flores G, Brotanek J, The healthy immigrant effect. Archive of Podiatry and Adolescent Medicine 2005; 159:295-297.
8. Kokaua J, Foliaki S, Schaaf D, Migration, ethnicity and twelve-month prevalence rates of mental disorders and treatment contact in Te Rau Hinengaro: The New Zealand Mental Health Survey. Pacific Health Dialogue to be published.
9. Hecht J. Physical and social boundaries in Pukapukan theories of disease, In: Parsons C, ed. Healing practices in the South. Hawaii: The Institute for Polynesian Studies, 1985.
10. Baddeley J. Traditional healing practices of Rarotonga, Cook Islands, In: Parsons C, ed. Healing practices in the South. Hawaii: The Institute for Polynesian Studies, 1985.
11. Worth M. Cook Islands Mental Health Cultural Competency Workshop. Auckland: Waitemata District Health Board, 2004.
12. Wells JE, Oakley Browne MA, Scott KM, McGee MA, Baxter J, Kokaua J, Te Rau Hinengaro: The New Zealand Mental Health Survey: overview of methods and findings. Australian & New Zealand Journal of Psychiatry 2006; 40:835-844.
13. Korn EL, Graubard BI, Confidence intervals for proportions with small expected number of positive counts estimated from survey data. Survey Methodology 1998; 24:193–201.
14. Korn EL, Graubard BI. Analysis of health surveys. New York: Wiley, 1999.
15. New Zealand Health Information Service. Mental Health Information National Collection: Data Dictionary, version 3.8. Wellington: New Zealand Health Information Service, 2006.
16. Curtis E, Wright C, Wall M, The epidemiology of breast cancer in Maori women in Aotearoa New Zealand: implications for ethnicity data analysis. New Zealand Medical Journal 2005; 119.
17. Schafer J, Multiple Imputation: a primer. Statistical Methods in Medical Research 1999; 8:3-15.
18. Harel O, Zhou XH, Multiple imputation: Review of theory, implementation and software. Statistics in Medicine 2007; 26:3057-3077.
19. Horton NJ, Lipsitz SR, Multiple imputation in practice: comparison of software packages for regression models with missing data. American Statistician 2001; 55:244-254.
20. Foliaki S, Kokaua J, Schaaf D, Tukuitonga C, for the New Zealand Mental Health Survey Research Team. Twelve-month and lifetime prevalences of mental disorders and treatment contact among Pacific people in Te Rau Hinengaro: the New Zealand Mental Health Epidemiology Survey (NZMHS), In: Oakley Browne MA, Wells JE, and Scott KM, eds. Te Rau Hinengaro: the New Zealand Mental Health Survey. Wellington: Ministry of Health, 2006.
21. Oakley Browne MA, Wells JE, Scott KM, for the New Zealand Mental Health Survey Research Team, Twelve month and lifetime health Service use in Te Rau Hinengaro: the New Zealand Mental Health Survey. Australian and New Zealand Journal of Psychiatry 2006; 40:855-864.
22. Ministry of Health. Te Orau Ora: Pacific Mental Health Profile. Wellington: Ministry of Health, 2005.
23. Gaines P, Bower A, Buckingham W, Eagar K, Burgess P, Green J, Mellsop G. New Zealand Mental Health Classification and Outcomes Study: Final report. Auckland: Health Research Council, 2003.
24. Wells JE, McGee MA, Oakley Browne MA. Methods, In: Oakley Browne MA, Wells JE, and Scott KM, eds. Te Rau Hinengaro: The New Zealand Mental Health and Wellbeing Survey. Wellington: Ministry of Health, forthcoming.
25. Wells JE. Prevalence and severity across aggregated disorders, In: Oakley Browne MA, Wells JE, and Scott KM, eds. Te Rau Hinengaro: The New Zealand Mental Health and Wellbeing Survey. Wellington: Ministry of Health, forthcoming.