



## Admissions to acute psychiatric inpatient services in Auckland, New Zealand: a demographic and diagnostic review

Amanda Wheeler, Elizabeth Robinson, Gail Robinson

### Abstract

**Aim** This paper describes demographic and diagnostic data for people admitted to three psychiatric units in Auckland, New Zealand over the year 2000.

**Methods** A retrospective file review of 932 people involving 1232 admission episodes was conducted in the acute adult inpatient psychiatric units of west, north, and south Auckland. Patient characteristics, diagnosis, and interventions were recorded.

**Results** Overall, 62% were involuntary admissions and the most common diagnosis was schizophrenia (38%). Based on the community population, Maori admissions were double the expected rate and Asian admissions were lower than expected. Compared to European admissions, Maori, Pacific, and Asian admissions were all more likely to have a diagnosis of a psychotic disorder. In addition, Maori were more likely to be admitted involuntarily than Europeans.

**Conclusions** Variations in psychiatric inpatient representation, diagnosis, and compulsory treatment were found across ethnic groups. The explanations for ethnic differences in mental health are likely to be many and multifactorial including socioeconomic status, pathways to access of care, levels of family understanding and acceptance, and community capacity to manage less disruptive presentations. The findings provide a benchmark for recently established ethnic specific Maori and Pacific community mental health services. A follow-up study is recommended to review utilisation of community services for patients following an admission.

Adult mental health services in New Zealand primarily consist of community-based teams with 24-hour crisis services and general hospital-based acute psychiatric units. A national mental health strategy was developed in 1994 that prioritised resources to target the care and treatment of those people with severe and ongoing mental disorders.<sup>1</sup> Whilst the reorganisation of psychiatric services over the last 25 years from hospital to community-based delivery has led to increased community accommodation and community staffing, the availability of acute hospital beds has declined with some areas reporting a critical bed shortage.<sup>2</sup>

Differences in psychiatric service utilisation and diagnosis have been reported among ethnic groups living in New Zealand. Admission rates to psychiatric units for Maori,<sup>3,6</sup> and Pacific,<sup>3,5</sup> have been found to be higher than that for European. The Te Puni Kokiri admissions review (1984–1993), and the 2002 New Zealand Mental Health Classification and Outcomes Study (NZ-CAOS) review of episodes of care (inpatient and community) in eight District Health Boards) both found rates of admission for psychotic disorders were higher for Maori and Pacific compared to European.<sup>3,5</sup>

Whilst under-utilisation of psychiatric services by Asian people is reported internationally, very little is known about service utilisation of Asian people living in New Zealand.<sup>7</sup>

There were three acute units providing psychiatric beds for adults aged 18–65 years living in the community catchment populations of north, west, and south Auckland in 2000 (total population 805,257 from the 2001 census data<sup>8,9</sup>). The ethnic groups making up the population were diverse; 60% European, 12.5% Maori, 12% Pacific, 10% Asian, and 6% other. Approximately 32% lived in the more deprived areas (NZDep2001 decile group 8–10<sup>10</sup>), predominantly in south Auckland. In 2000, these psychiatric units provided 102 acute adult beds or 12.6 per 100,000 total population (the national recommended figure was 12.8).

This study examined all consecutive admissions to these three adult psychiatric units for the year 2000. The focus of this paper is to report demographic and diagnostic data for this admission cohort.

## Methods

All consecutive admission episodes during the period 1 January 2000 to 31 December 2000 were identified by the electronic Patient Information Management System (PIMS). All repeat admissions were examined and any temporary discharges (patients readmitted within 5 days) were re-coded as one continuous inpatient admission. These were frequently because patients were absent without leave or transferred to a general medical ward during an admission and the PIMS recorded each period as a new admission.

A total of 1263 admission episodes were included in the review; 31 episodes were excluded, 29 because of missing clinical files, and 2 cases with an admission duration longer than 12 months due to non-clinical reasons. The data extracted from each clinical file included relevant demographic information (gender, age, and ethnicity) and clinical data (legal status, diagnosis at discharge, psychiatric admission history, length of stay, and treatment).

Information regarding ethnicity was collected as it was recorded in the patient's clinical file. The admission process defines this information as self-identification and not by any particular definition of ethnicity. Where the ethnicity was recorded as unknown or there was a discrepancy within the body of the notes, the researchers attempted to clarify the information via community files, keyworkers, or previous/subsequent admissions. In general, a single ethnic group was recorded in the admission document. Where more than one was identified, the researchers recorded only the first. This review was conducted as part of the services' quality assurance processes.

Data were entered into a Microsoft Access database in which the response options were coded. Chi-squared tests were used to investigate differences in ethnic proportions between inpatient groups and the catchment population. A generalised logits model was used to test for differences in diagnosis between ethnic groups. Age, ethnicity, gender, and comorbid substance use disorder were included in the model. Multiple logistic regression analyses—including age, ethnicity, gender, diagnosis, previous admission (for legal status only,) and inpatient unit—were used to investigate factors associated with comorbid substance use and legal status at admission. Statistical analyses were conducted using SAS (Version 9) software.

## Results

### Patient population

The cohort making up this review comprised 932 people. These people had a total of 1232 admission episodes over the 12-month review period; 212 people (23%) had more than one admission. The demographic data are reported for these 932 individuals and diagnosis and legal status data are reported with respect to each of the 1232 admission episodes.

## Demographics

The median age of the cohort was 34 years (range 16–68) and the overall proportion of males was 56% (n=521). The ethnicity of the cohort was diverse, with 60% identifying as European, 23.4% as Maori, 10.7% as Pacific, and 4.3% as Asian. The ‘other’ group totalling 12 people were African, Middle Eastern, and Central American and they are combined with the European group for analysis. There was a significant difference in the ethnic make-up of the cohort when compared to the corresponding 15–64 year community catchment population (p<0.001).<sup>8,9</sup> Percentage-wise, Maori were more than 100% over-represented whilst Asian patients were under-represented by about 60% (Table 1).

**Table 1. Ethnicity comparison for inpatient and community catchment populations**

Ethnicity	Inpatient cohort (16–68 years)		Catchment population (15–64 years)		Relative risk ratio
	n	%	n	%	
European	562	60.3	320,934	60.6	0.99
NZ Maori	218	23.4	60,117	11.4	2.06
Pacific Nations*	100	10.7	57,624	10.9	0.99
Asian	40	4.3	59,373	11.2	0.38
Other	12	1.3	31,038	5.9	0.22
<b>Total</b>	<b>932</b>		<b>529,086</b>		

\*Including Samoan, Cook Island Maori, Tongan, Niuean, Fijian, and Tokelauan people.

The proportion of ethnic groups differed in each of the three psychiatric units ( $\chi^2=102.3$ , df=6, p<0.001) reflecting the diversity within each local catchment population although, as in the overall cohort, Maori were higher and Asian patients lower than expected.

## Clinical variables

**Diagnosis**—The majority of the admission episodes received a principal diagnosis (DSM-IV) of either a psychotic or mood disorder (Table 2). The most common discharge diagnoses were schizophrenia (including schizoaffective disorder) and bipolar disorder (manic, depressive, mixed, and unspecified episodes).

**Table 2. Principal DSM-IV Axis I discharge diagnosis**

Diagnostic Group	Total	
	n	%
<b>Mood disorder</b>	<b>494</b>	<b>40</b>
Bipolar disorder	318	26
Depression	176	14
<b>Psychotic disorder</b>	<b>573</b>	<b>47</b>
Schizophrenia/schizoaffective	467	38
Other	106	9
<b>Other disorders</b>	<b>138</b>	<b>11</b>
<b>No/Unknown Axis 1</b>	<b>27</b>	<b>2</b>
<b>Total</b>	<b>1232</b>	<b>100</b>

**Table 3. Comorbid substance use**

Variable	Comorbid substance use		P value
	n	% of all admissions	
<b>Gender</b>			
Male	259	38	<0.0001
Female	75	14	
<b>Age group</b>			
30 and under	184	40	<0.001
over 30	150	20	
<b>Ethnicity</b>			
European	180	23	<0.001
NZ Maori	115	40	
Pacific Nations	30	25	
Asian	9	18	
<b>Total</b>	<b>334</b>	<b>27</b>	–

Just over a quarter (n=334; 27%) of the patients had an additional comorbid Axis I substance use disorder recorded (i.e. abuse or dependence). Table 3 shows that comorbid substance use was associated with younger age (less than 30 years old), male gender, and ethnicity (Maori were more likely to have a recorded comorbid substance use disorder).

The associations between demographic factors and the principal diagnoses of psychotic, mood, and ‘other’ disorders were investigated in a model including comorbid substance use disorder. There was a significant association between ethnicity and diagnosis. The proportion of patients with psychotic disorders was higher among Maori, Pacific, and Asian, while rates of mood and ‘other’ disorders were higher among European (Table 4). There were also differences in diagnoses by gender, with males being more likely to have psychotic disorders and younger patients were also more likely to have psychotic disorders. Comorbid substance use was not found to have an effect on diagnosis.

**Legal status at admission**—Overall, 62% (n=766) of admission episodes were recorded as involuntary or compulsory under the Mental Health (Compulsory Assessment and Treatment) Act 1992 (Table 5).<sup>10</sup> Compulsory status was found to be associated with male gender, a psychotic diagnosis and ethnicity (Maori more likely to have a compulsory admission when compared to European patients). Lower rates of compulsory treatment were seen for European when compared to all non-European admissions; however this does not reach the level of statistical significance for Pacific and Asian admissions because of the small cohort numbers.

**Table 4. Ethnicity, gender, age, and comorbid substance use by diagnosis**

Variable	Mood disorder		Psychotic disorder		Other disorders		P value
	n	%	n	%	n	%	
<b>Ethnicity</b>							
European	349	45	294	38	133	17	<0.001
NZ Maori	91	32	179	62	17	6	
Pacific Nations	36	31	70	59	12	10	
Asian	18	35	30	59	3	6	
<b>Gender</b>							
Male	213	31.5	396	58.5	68	10	<0.001
Female	281	51	177	32	97	17	
<b>Age group</b>							
30 and under	133	29	275	59	56	12	<0.001
over 30	361	47	298	39	109	14	
<b>CSUD</b>							
Yes	112	34	197	59	25	7	0.06
No	382	43	376	42	140	15	
<b>Total</b>	<b>494</b>	<b>40</b>	<b>573</b>	<b>47</b>	<b>165</b>	<b>13</b>	–

CSUD=Comorbid substance use disorder.

**Table 5. Admission legal status**

Variable	Involuntary admissions		P value
	n	% of all admissions	
<b>Gender</b>			
Male	454	67	0.04
Female	312	56	
<b>Age group</b>			
30 and under	308	66	0.8
over 30	458	60	
<b>Diagnosis</b>			
Mood	284	57	<0.001
Psychosis	421	73	
Other	61	37	
<b>Ethnicity</b>			
European	439	57	0.04
NZ Maori	207	72	
Pacific Nations	83	70	
Asian	37	73	
<b>Previous admission</b>			
Yes	523	63	0.6
No	243	60	
<b>Total</b>	<b>766</b>	<b>62</b>	–

## Discussion

This study describes the patients admitted to three urban psychiatric units. A significant finding was the different admission rates between ethnic groups compared to those expected from the catchment population; Maori admissions were higher and Asian lower than expected. Higher proportions of Maori admissions replicate other

findings however explanations for this are unclear.<sup>3-5</sup> In the New Zealand population overall,<sup>11</sup> the psychiatric population,<sup>5</sup> and the study catchment population,<sup>8,9</sup> Maori and Pacific are more likely to live in higher levels of socioeconomic deprivation than European.

A review of admissions in south Auckland between 1998–2000 found that areas of high deprivation were associated with increased psychiatric bed utilisation.<sup>12</sup> This is unlikely to be the only contributing factor to higher admission rates for Maori because Pacific are also over-represented in the more deprived deciles. This study did not find higher than expected rates of Pacific admissions, however NZ-CAOS found higher proportions of inpatient episodes for both Maori and Pacific compared to other ethnic groups.<sup>5</sup>

Low utilisation of inpatient services by Asian patients was found, consistent with overseas studies where under-utilisation and treatment delay among Asians to psychiatric care is reported.<sup>7</sup>

Diagnosis patterns differed among the ethnic groups; admission rates for Maori, Pacific and Asian were increased for psychotic disorders compared to European, which were higher for mood disorders. Both the Te Puni Kokiri and NZ-CAOS reports of psychiatric admissions found higher rates of psychotic disorders for Maori and Pacific inpatients.<sup>3,5</sup> Conversely, a review of admissions in Otago between 1990–1992 found higher rates of non-psychotic disorder in Maori first admissions.<sup>4</sup>

A comorbid substance use disorder was recorded for 27% of admissions. Although few studies examine the rates of co-existing psychiatric and substance use disorders in New Zealand, Peace and Mellisop found that 17% of psychiatric admissions had a current comorbid substance use disorder.<sup>13</sup> The rate found in this study may be artificially low because it relied on file documentation rather than a clinical interview, however it highlights that co-existing disorders are common in this inpatient population.

Comorbid substance use may lead to more disturbed behaviour, may complicate acute assessment and diagnosis, and may precipitate psychiatric disorders. In this study, comorbid substance use was not found to be a factor influencing the principal diagnosis, and the relationship between ethnicity and diagnosis existed even when controlling for substance use. However, comorbid substance use was found to be higher in Maori than non-Maori admissions, consistent with Ministry of Health reports that Maori overall have higher risks for hazardous drinking patterns, smoking, and cannabis use.<sup>14,15</sup> The higher rates of comorbid substance use for Maori may have contributed to higher acuity levels and disturbed behaviour.

Although psychotic disorders are present in all cultures, our finding of higher rates for Maori, Pacific, and Asian may reflect differences in prevalence rates, disparities in diagnosis, or different acuity levels and crisis within ethnic communities precipitating admission. For example, families may manage less disruptive mental disorders such as depression and anxiety within their communities, but serious psychotic illness requires them to seek professional intervention.

This study found that only 38% of admissions were informal or voluntary, thus suggesting that patients were disturbed or unwilling to accept treatment as well as the fact that their carers/families and community were no longer able to manage them.

The use of the Mental Health Act in this study was found to be associated with a psychotic diagnosis, male gender, and Maori ethnicity. High proportions of acutely disturbed male inpatients with psychotic disorder is in line with other Australasian studies,<sup>6,16</sup> and differences in voluntary status between ethnic groups supports other New Zealand research.<sup>3-5</sup> NZ-CAOS found differences in compulsory treatment between the three major ethnic groupings; European/other patients were more likely to be voluntary.<sup>5</sup> Both the Te Puni Kokiri and Otago studies found Maori patients were more likely to be admitted involuntarily.<sup>3,4</sup>

The information collected in this retrospective review is limited by the degree, extent, and accuracy of the original data source. The researchers relied on the expertise of the clinicians providing the information. Whilst every effort was made to ensure that the data was complete and accurate, this limitation must still be acknowledged.

Ethnicity data in this study was collected differently to the 2001 census which allowed a number of ethnic groups to be self-selected. Statistics New Zealand used a prioritisation algorithm to produce ethnic groups in ranked order. This difference means that conclusions drawn from comparisons between these two datasets should be interpreted with caution. The use of differentially collected ethnicity information to inform national health data sets has been identified as an ongoing problem for New Zealand.

Ajwani et al found that by including the census question on mortality data it was possible to improve ethnicity data quality. They recommended that health services should implement the standard 2001 census question in their data collection systems.<sup>17</sup> Misclassification of ethnicity may also have caused errors in the rates reported in this study but it is not possible to predict in which direction this may have confounded the findings.

The findings reflect the practice of three regional psychiatric units providing acute care for two of New Zealand's largest catchment populations. Twelve psychiatrists were responsible for admissions that occurred during the study. Clinical decisions such as Mental Health Act use and discharge diagnoses reflect the varied training and practice of a large number of clinicians. Whilst there are a number of findings in this study that highlight differences between ethnic groups, it was beyond the scope of the study to investigate disparity factors such as socioeconomic deprivation and pathways to access care. These factors may influence the findings rather than ethnic grouping per se. Although the study does not provide specific reasons for the differences, it highlights them and raises questions for further research.

In summary, this study reports the demographic, diagnostic, and legal status for an admission cohort to three psychiatric units in Auckland for the year 2000. The findings highlight the need for further research into explanations for ethnic differences in mental health—namely higher than expected proportions of Maori admissions and lower proportions of Asian compared with the catchment population; higher than expected rates of psychotic disorders for Maori, Pacific, and Asian; and higher rates of non-voluntary admission for Maori, Pacific, and Asian.

These findings have important implications for psychiatric service delivery in both the acute and community settings. To promote best outcomes, culturally relevant care is imperative—specifically, ensuring that patients and families can access treatment

when they need it, and ensuring that services are adequately resourced to deliver appropriate.

Whilst this study provides benchmarking information for several acute treatment indicators, further work is required to look at engagement in community follow-up after discharge, particularly for those patients with a first admission.

**Author information:** Amanda Wheeler, Co-Director, Clinical Research & Resource Centre, Mental Health Services and Community Alcohol and Drug Services, Waitemata District Health Board, Auckland; Elizabeth Robinson, Biostatistician, School of Population Health, University of Auckland, Auckland; Gail Robinson, Consultant Psychiatrist, Clinical Research and Resource Centre, Mental Health Services and Community Alcohol and Drug Services, Waitemata District Health Board, Auckland

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**Correspondence:** Amanda Wheeler, Co-Director, Clinical Research & Resource Centre, Mental Health Services and Community Alcohol and Drug Services, Waitemata District Health Board, 50 Carrington Road, Point Chevalier, Auckland. Fax: (09) 815 5896; email: [amanda.wheeler@waitematadhb.govt.nz](mailto:amanda.wheeler@waitematadhb.govt.nz)

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