

Mental health inequities for Māori youth: a population-level study of mental health service data

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ABSTRACT

AIM: To examine specialist mental health service, hospital discharge, and pharmaceutical dispensing data for emotional conditions (anxiety, depression), substance use, and self-harm for Māori compared to non-Māori/non-Pasifika (NMNP) youth.

METHODS: A novel population-level case identification method using New Zealand's Integrated Data Infrastructure for 232,845 Māori and 627,891 NMNP aged 10–24 years. Descriptive statistics on mental health conditions were generated and stratified by Māori/NMNP. Unadjusted and adjusted risk ratios (RRs) of mental health conditions were generated using generalised linear regression.

RESULTS: Māori were less likely to be identified for anxiety (ARR=0.88; 95% CI 0.85–0.90) or depression (ARR=0.92; 95% CI 0.90–0.95) than NMNP. They were more likely to be identified for substance problems (ARR)=2.66; 95% CI 2.60–2.71) and self-harm (ARR=1.56; 95% CI 1.50–1.63). Māori living in high deprivation areas were significantly more likely to be identified for substance problems, but less likely for emotional conditions, than Māori in least deprived areas.

CONCLUSION: Despite known high levels of mental health concerns for rangatahi Māori, administrative data suggests significant under-reporting, assessment, and treatment of emotional conditions relative to NMNP. These differences were exacerbated by deprivation. Māori were more likely to be referred to services for externalised symptoms of distress (substance use and self-harm).

Youth mental health distress, disorder and addictions are serious issues in Aotearoa New Zealand. Nearly a quarter (23%) of high school students report depressive symptoms, up from 13% in 2012.¹ Young adults aged 15–29 years have the highest rates of serious injuries from intentional self-harm (27.8 per 100,000 people).² Substance use is common, with 22% of high school students reporting binge drinking in the last four weeks, although these reported rates have been declining over the last 20 years.³ Longitudinal studies in Aotearoa show that by age 25 years, 12.5% have met the DSM-IV criteria for cannabis dependence, and 3.6% for other drug dependences.⁴ These patterns are broadly consistent with patterns in other developed countries.⁵

Rangatahi Māori—Māori youth—experience higher rates of mental health distress and addictions compared to young Pākehā—New Zealanders of European descent.⁶ There are growing numbers of rangatahi Māori who report depressive symptoms (28% in 2019 vs 14% in 2012).¹ Māori are more likely to be hospitalised for intentional self-harm⁷ and more likely to use substances than non-Māori.³

Despite higher reported rates of mental health distress, there are treatment inequities for Māori compared to Pākehā.^{8,9} Lee and colleagues found that Māori adults are more likely to report “psychological distress” and be at higher risk of developing anxiety and depression, but Pākehā are more likely to report a clinical diagnosis of depression or anxiety.⁹ Earlier research from Te Rau Hinengaro using diagnostic assessment of adults aged 16 years and over found that Māori had higher prevalence of anxiety, mood, major depressive, and substance use disorders compared to non-Māori/non-Pasifika (NMNP).¹⁰ However, except for substance use disorders, these differences did not remain significant after adjustment for confounders including education and household income. Māori compared to NMNP were; however, less likely to visit services for mental health reasons. Māori youth are less likely to receive medications (e.g., antidepressants) compared with non-Māori youth.¹¹ Māori are more likely, however, to be admitted to hospital, readmitted after discharge, secluded and treated under the compulsory assessment and treatment protocols and in forensic services.⁶ Overall, previous findings suggest that Māori are not able to access the

services that they need to be properly assessed and diagnosed. Multiple and complex determinants of mental health include poverty, discrimination and social isolation.¹² Inequities for Māori also result from the ongoing impacts of colonisation, racism, barriers to accessing services, and a lack of culturally appropriate services.¹²

Administrative data collections hold mental health information including specialist mental health and addiction services in inpatient and community settings, hospital discharge, and pharmaceutical data.¹³ These datasets cannot be used to estimate population prevalence rates of all mental health conditions because they do not capture young people who report mild-to-moderate mental distress and who may be managed in primary care. The datasets, however, do contain data on whether a person had contact with a specialist mental health service or were hospitalised and were coded as having a mental health condition, or prescribed pharmaceuticals.¹³ Moreover, the datasets contain whole-of-population data with large sample sizes to enable enough statistical power to undertake analyses focused on the Māori population.

The aim of the present study was to examine population-level administrative data on specialist mental health services, hospitalisations, and pharmaceutical dispensing for rangatahi Māori. We examined differences in specialist mental health service use, hospital discharges, and pharmaceutical dispensing for: anxiety, depression, emotional conditions and any emotional conditions (see descriptions in Methods section), substance use, and self-harm between rangatahi Māori and NMNP youth aged between 10–24 years of age. A companion paper by Ruhe et al. (in preparation) examines differences between Pasifika and NMNP youth.¹⁴

Methods

Study design

This was a national cross-sectional study using data sourced from the Integrated Data Infrastructure (IDI). The IDI is a large, population-level database containing administrative and survey data, probabilistically linked at the individual level by Statistics New Zealand (Stats NZ). Previously described in detail,¹⁵ the IDI contains data from over 60 different data sources including health, data on people and communities, and population (e.g., Census). Strict protocols and approval processes are in place to both

access IDI data and release results.

The University of Otago Human Research Ethics Committee reviewed and approved the present study as a “Minimal Risk Health Research – Audit and Audit related studies” proposal (Reference: HD17/004). Clearance for this study and access to data were also approved by Stats NZ.

Participants

The participants were a national cohort of young people (10–24 years), alive and living in Aotearoa, as of 30 June 2018. This cohort was established using an existing IDI-based method for determining the estimated resident population (ERP).¹⁶ Individuals were included in the ERP if they had used key services in Aotearoa (e.g., health) over the preceding two years.

Measures

Mental health

Mental health measures were generated using a novel IDI-based case identification method developed by Bowden et al.¹³ The method uses data from four Ministry of Health datasets:

- the programme for the integration of mental health data (PRIMHD)—specialist mental health service use data;
- the national minimum dataset (NMDS)—hospital discharge data (diagnosis on admission);
- the pharmaceutical collection (Pharms)—publicly subsidised medication dispensing data from community pharmacies;
- disability support services needs assessment data (Socrates).

The method was employed to identify anxiety, depression, emotional conditions (a composite group of indeterminant anxiety or depression based primarily on indications from pharmaceutical dispensing that either anxiety or depression can be identified but not one specifically), and any emotional conditions (combining the three aforementioned groups into one single indicator); substance (addiction and abuse) problems; and self-harm. A complete list of all the diagnosis and pharmaceutical dispensing codes used to indicate mental health conditions can be found in Bowden et al.¹³ For each mental health condition, an indication was made if a young person appeared in at least one dataset with a related diagnostic or dispensing code within a five-year period between 1 July 2013 until 30 June 2018. PRIMHD data are

only available up to 30 June 2018. We chose a five-year window vs a shorter period of time in order to obtain full coverage of all datasets used.

Ethnicity

Ethnicity information was drawn from the IDI personal details dataset using the total concept approach that permits individuals to identify with multiple ethnic groups. We classified the population as Māori and Pasifika utilising the New Zealand Standard Classification 2005 V2.0.0. All other participants were classified as NMNP. For the present study only data for Māori and NMNP were analysed.

Socio-demographics

We were restricted to using current statistical standards for sex, which are female/male. Changes to the statistical standard for sex and gender identity that address issues including limited inclusiveness of intersex and transgender populations are likely in the future based on national Stats NZ consultation undertaken in 2021. Age (in years) were grouped to align with mental health case identification method: 10–14, 15–19, and 20–24 years. Area-level deprivation (NZDep2018) and urban/rural profile of residence, defined by the Urban Rural Indicator 2018, were derived from address notification data and the meshblock where the individual resides.^{17,18} NZDep is a socio-economic measure of deprivation, defined at the meshblock level. NZDep scores were collapsed into quintiles, 1 representing the least deprived and 5, the most. Urban/rural profile of residence was collapsed into a 5-level categorical variable: major urban areas (populations of 100,000 or more); large urban areas (30,000–99,999); medium urban areas (10,000–29,999); small urban areas (1,000–9,999); and rural areas (<1,000). Time varying measures (age, NZDep2018, and urban/rural) were determined as of 30 June 2018.

Procedures and statistical analyses

Data were accessed from the June 2020 refresh of the IDI, extracted using SAS 7.1, and analysed using Stata MP version 15. All Stats NZ confidentiality requirements were adhered to including rounding to base three, and suppression of counts less than six. Reporting of studies conducted using Observational Routinely collected health Data (RECORD) guidelines were used to inform the reporting of analyses.¹⁹ The data analyses and reporting were conducted in line with the Ngā Tikanga Paihere framework for IDI use.²⁰ The

study was led by a Māori health researcher.

Descriptive statistics on the number of mental health conditions identified by data source and by sociodemographic subgroup were generated and stratified by Māori/NMNP. Unadjusted and adjusted risk ratios (RR) and associated 95% confidence intervals (CI) of mental health conditions were generated using generalised linear regression with a log link and binomial distribution. In adjusted models, sex, age, deprivation, and rurality were controlled for. Two-tailed tests ($\alpha=0.05$) defined significance. In addition, an adjusted regression included a rate ratio for an interaction between ethnicity and deprivation. That interaction is displayed in Figure 1.

Results

The ERP of 10–24-year-olds for the 2017/18 fiscal year included 232,845 Māori and 627,891 NMNP (see Table 1).

Table 2 shows the number of mental health conditions identified by data source for Māori and NMNP aged 10–24 years. Overall, Pharms was the main source of identifications for emotional conditions, PRIMHD for substance problems, and NMDS the only source for self-harm.

Table 3 shows the population-based rate of mental health conditions identified by service use and pharmaceutical dispensing between 1 July 2013 until 30 June 2018. Emotional conditions and substance problems were the most commonly identified for rangatahi Māori, each accounting for a five-year prevalence of more than 8% of the population, respectively. The identification of two or more conditions for Māori was 2.8% compared to 1.9% of NMNP young people (see Table 3), while identification of three conditions was 0.5% of Māori compared to 0.3% for their NMNP peers.

Table 4 shows unadjusted and adjusted ethnicity risk ratios. Rangatahi Māori compared to their NMNP peers were significantly less likely to be identified for any emotional conditions, anxiety, depression, or emotional conditions (indeterminant anxiety or depression) as documented in the IDI dataset. However, Māori were more likely than NMNP to be identified for substance problems, self-harm, two or more conditions, and three conditions as documented in the IDI dataset.

Figure 1 shows differing patterns of mental health conditions for Māori and for NMNP by level of deprivation.

Rangatahi Māori who lived in the most socio-

Table 1: Characteristics of the participants: Estimated Residential Population (ERP) 2017/18 for Māori and non-Māori/non-Pasifika (NMNP) aged 10–24 years.

		Māori		NMNP	
		N	%	N	%
ERP	Total	232,845	100.0	627,891	100.0
Sex	Female	113,802	48.9	303,027	48.3
	Male	119,046	51.1	324,861	51.7
Age	10–14 years	84,888	36.5	195,702	31.2
	15–19 years	76,584	32.9	201,051	32.0
	20–24 years	71,373	30.7	231,138	36.8
Area-level deprivation	1 (least deprived)	20,169	8.7	143,484	22.9
	2	26,298	11.3	136,479	21.7
	3	34,950	15.0	132,702	21.1
	4	52,236	22.4	125,727	20.0
	5 (most deprived)	98,220	42.2	85,215	13.6
Urban/rural	Major urban (<100,000)	94,782	40.7	353,574	56.3
	Large urban (30,000–99,999)	47,832	20.5	75,180	12.0
	Medium urban (10,000–29,999)	18,813	8.1	49,008	7.8
	Small urban (1,000–9,999)	32,535	14.0	48,102	7.7
	Rural (<1000)	37,941	16.3	97,863	15.6

Table 2: Mental health conditions by administrative data source (1 July 2013–30 June 2018) for Māori (n=232,845) and non-Māori/non-Pasifika (NMNP) (n=627,891) aged 10–24 years.

Condition	PRIMHD ^a	NMDS ^b	Pharms ^c	Socrates ^d	Overall
Māori					
Any emotional^e	5,334	2,487	17,340	90	19,788
Anxiety	2,829	1,560	3,765	81	6,906
Depression	2,967	1,419	3,081	18	6,111
Emotional conditions ^f	528	102	14,928	n/a	15,288
Substance problems	16,671	3,963	111	6	18,783
Self-harm	0	3,882	0	0	3,882
NMNP					
Any emotional	14,805	5,385	58,467	309	63,648
Anxiety	8,898	3,549	14,172	285	23,088
Depression	7,911	3,030	12,555	42	19,326
Emotional conditions	774	117	50,136	n/a	50,529
Substance problems	13,428	5,304	327	..S	17,121
Self-harm		6,465			6,462

^aProgramme for the integration of mental health data–specialist mental health service use data.

^bNational minimum dataset–hospital discharge data.

^cPharmaceutical collection–publicly subsidised medication dispensing.

^dDisability support services needs assessment data.

^eCombination of anxiety, depression, and emotional conditions^f (a composite group of indeterminant anxiety or depression based primarily on indications from pharmaceutical dispensing that either anxiety or depression can be identified but not one specifically).

Table 3: Five-year population prevalence (1 July 2013–30 June 2018) of mental health conditions identified by specialist mental health service, hospitalisation, and pharmaceutical dispensing administrative data for Māori and non-Māori/non-Pasifika (NMNP) aged 10–24 years.

Condition	Māori				NMNP			
	N (%)				N (%)			
	Total	10–14y	15–19y	20–24y	Total	10–14y	15–19y	20–24y
	232,845	84,888	76,584	71,373	627,891	195,702	201,051	231,138
Any emotional^a	19,788 (8.5)	1,227 (1.4)	6,048 (7.9)	12,516 (17.5)	63,651 (10.1)	4,197 (2.1)	18,306 (9.1)	41,145 (17.8)
Anxiety	6,906 (3.0)	777 (0.9)	2,283 (3.0)	3,849 (5.4)	23,091 (3.7)	2,808 (1.4)	7,134 (3.5)	13,146 (5.7)
Depression	6,111 (2.6)	147 (0.2)	1,797 (2.3)	4,167 (5.8)	19,329 (3.1)	333 (0.2)	4,821 (2.4)	14,175 (6.1)
Emotional conditions^b	15,288 (6.6)	600 (0.7)	4,635 (6.1)	10,050 (14.1)	50,532 (8.0)	2,070 (1.1)	14,814 (7.4)	33,648 (14.6)
Substance problems	18,780 (8.1)	930 (1.1)	7,935 (10.4)	9,915 (13.9)	17,124 (2.7)	465 (0.2)	5,772 (2.9)	10,884 (4.7)
Self-harm	3,882 (1.7)	162 (0.2)	1,815 (2.4)	1,902 (2.7)	6,462 (1.0)	174 (0.1)	2,751 (1.4)	3,537 (1.5)
Two or more conditions ^c	6,627 (2.8)	117 (0.1)	2,352 (3.1)	4,158 (5.8)	11,619 (1.9)	159 (0.1)	4,005 (2.0)	7,455 (3.2)
All three conditions ^c	1,083 (0.5)	9 (0.0)	435 (0.6)	636 (0.9)	1,737 (0.3)	12 (0.0)	555 (0.3)	1,170 (0.5)

^aCombination of anxiety, depression, and emotional conditions^b (a composite group of indeterminant anxiety or depression based primarily on indications from pharmaceutical dispensing that either anxiety or depression can be identified but not one specifically).

^cAny emotional conditions, substance problems, self-harm.

Table 4: Risk ratios for Māori compared to non-Māori/non-Pasifika (NMNP) aged 10–24 years by mental health condition.

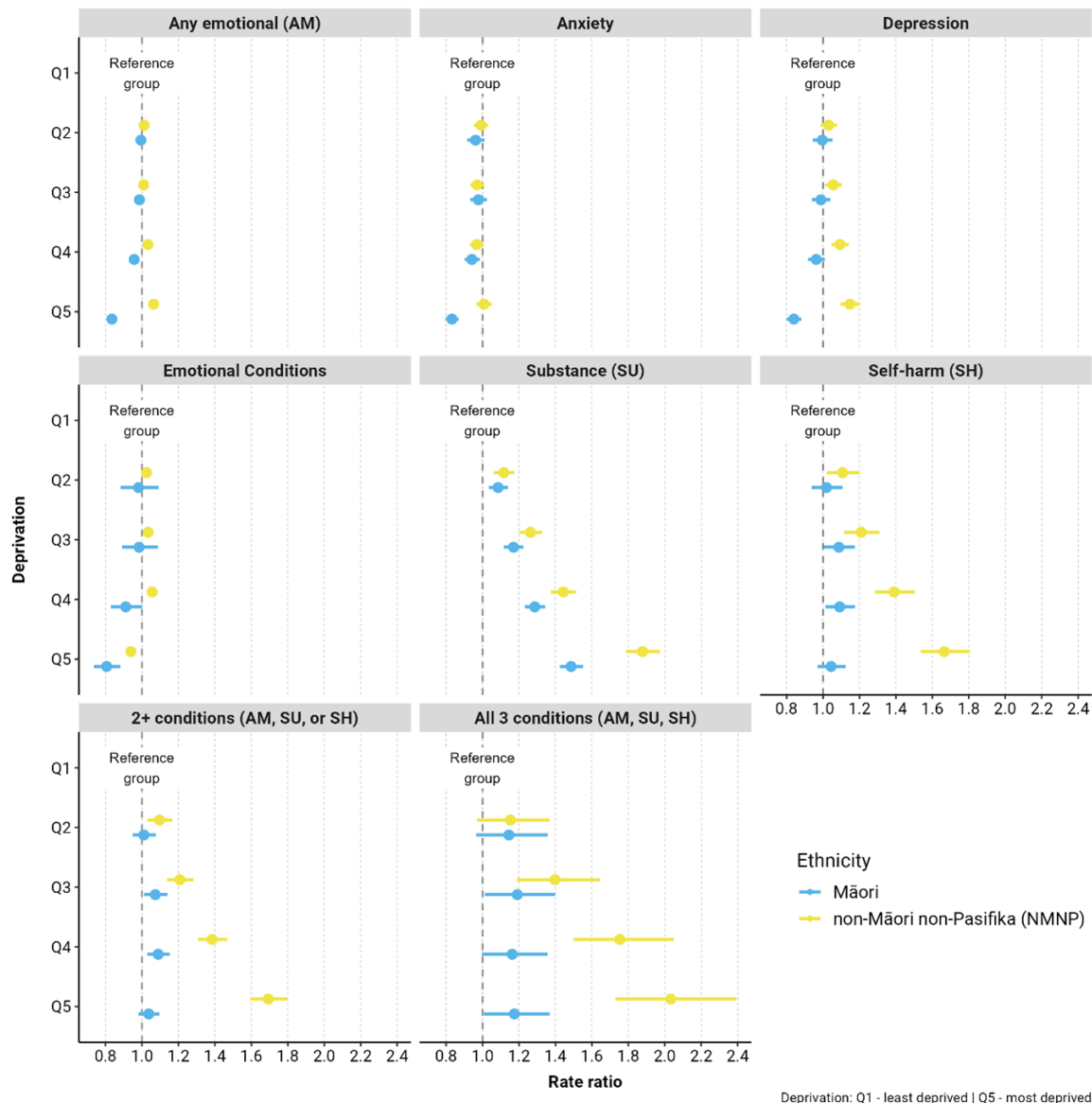
	Unadjusted RR (95% CI)	Adjusted^a RR (95% CI)
Any emotional^b	0.838 (0.826, 0.851)	0.909 (0.895, 0.924)
Anxiety	0.807 (0.786, 0.828)	0.875 (0.850, 0.899)
Depression	0.852 (0.829, 0.877)	0.924 (0.897, 0.952)
Emotional conditions ^c	0.816 (0.802, 0.830)	0.887 (0.871, 0.903)
Substance	2.958 (2.899, 3.018)	2.656 (2.600, 2.714)
Self-harm	1.619 (1.557, 1.685)	1.562 (1.497, 1.630)
Two or more conditions ^d	1.539 (1.493, 1.585)	1.519 (1.471, 1.568)
All three conditions ^d	1.683 (1.560, 1.816)	1.629 (1.501, 1.767)

^aAnalyses controlled for sex, age, area-level deprivation, and rurality.

^bCombination of anxiety, depression, and emotional conditions^c (a composite group of indeterminant anxiety or depression based primarily on indications from pharmaceutical dispensing that either anxiety or depression can be identified but not one specifically).

^dAny emotional conditions, substance problems, self-harm.

Figure 1: Rate ratios of mental health conditions for Māori and non-Māori/non-Pasifika (NMNP) aged 10–24 years by NZ Deprivation Index (NZDep2018).



AM=Combination of anxiety, depression, and emotional conditions (a composite group of indeterminate anxiety or depression based primarily on indications from pharmaceutical dispensing that either anxiety or depression can be identified but not one specifically).

economically deprived areas were significantly less likely to be identified as having any emotional conditions (ARR=0.84; 95% CI 0.81–0.86), anxiety (ARR=0.83; 95% CI 0.80, 0.87), depression (ARR=0.84; 95% CI 0.80, 0.88), or emotional conditions (indeterminant anxiety or depression) (ARR=0.81; 95% CI 0.74, 0.88) as documented in the IDI, than Māori living in the least deprived areas (Figure 1). Māori in the most deprived areas were more likely to be identified with substance problems (ARR=1.49; 95% CI 1.42–1.55) and all three conditions (ARR=1.18; 95% CI 1.01–1.12) than Māori living in the least deprived areas. In contrast, NMNP living in the most deprived areas were significantly more likely to be identified as having any emotional conditions (ARR=1.07; 95% CI 1.04–1.09), depression (ARR=1.15; 95% CI 1.10–1.20), self-harm (ARR=1.67; 95% CI 1.54–1.81), two or more conditions (ARR=1.70; 95% CI 1.59–1.80), and all three conditions (ARR=2.03; CI 1.73–2.39).

Discussion

Despite known high levels of mental health concerns for rangatahi Maori, administrative data suggests significant under-reporting, assessment, and treatment of emotional conditions relative to NMNP. However, Māori were more likely to be referred to services for externalised symptoms of distress like substance use and self-harm. We found that rangatahi Māori were 63% more likely than their NMNP peers to be receiving treatment for all three conditions—any emotional conditions, substance problems, and self-harm. These findings suggest that rangatahi Māori as compared to NMNP youth are less likely to be identified at earlier stages of distress until distress symptoms become more severe with explicit markers (e.g., self-harm injuries).

Rangatahi Māori were 12% and 8% less likely than NMNP youth to be identified through specialist mental health service use, hospitalisation, and pharmaceutical dispensing data for anxiety and depression, respectively. Our results align with findings showing unmet need for Māori.^{9,21} Emotional conditions (anxiety, depression, and a composite group of indeterminant anxiety or depression) in this study were primarily identified through pharmaceutical dispensing data suggesting lower rates of anti-depressant/anti-anxiety dispensing for rangatahi Māori compared to their peers, as shown in previous studies.¹¹

Rangatahi Māori were 56% more likely to be being admitted to hospital for self-harm than their NMNP peers. Rangatahi Māori were also sig-

nificantly more likely than NMNP youth to have contact with a specialist mental health service or be admitted to hospital for substance problems. Moreover, there was a 49% higher likelihood of substance problems for rangatahi Māori living in the most deprived areas compared to Māori living in the least deprived. Alcohol misuse is associated with a range of conditions including depressive symptoms and self-harm.²² A recent paper found that one quarter of all suicides between 2007–2020 involved acute alcohol use, with higher proportions at younger ages (28.7% for 15–24 year olds) and for Māori aged 15 years and older (32.3%).²³

The determinants of mental health are multiple and complex. Social determinants include poverty, unemployment, unstable housing, and loss of community and communal spaces.¹² Underlying social determinant pathways are issues like exclusion through discrimination (e.g., racism, sexism, homophobia, transphobia, ableism), social isolation, trauma, adverse childhood experiences, and the stigma of having mental health issues.¹² We found that rangatahi Māori living in high deprivation areas vs those living in low deprivation areas were less likely to be identified as having any emotional condition or depression. Conversely, NMNP youth living in higher vs low deprivation areas were more likely to be identified as having any emotional condition or depression. Our analyses took into account differences in age, gender, rurality, and the population size in each deprivation quintile. We can only speculate as to other factors outside of the scope of this present study that may be affecting these comparative differences. Factors that may include differential barriers for rangatahi Māori to accessing services for emotional conditions or barriers within services including not receiving a diagnosis or treatment. Previous reports have noted that for Māori, colonisation, racism, “Western” models of health, barriers to accessing primary care, and a lack of culturally appropriate services perpetuate inequities.¹² These interrelated social and economic factors will have direct and indirect impacts on mental health for rangatahi Māori with cumulative effects over their lifetimes. Further research is needed to understand the intersectionality between deprivation and ethnicity in relation to mental health inequities.

A lifecourse prevention and early intervention approach, addressing the structural determinants of health, with Māori-led services and models, are key solutions.

Māori are a young population, compared to non-Māori, with more than half aged 25 years or younger. Focusing on prevention and early intervention can reduce mental health distress before issues develop into diagnosable mental health conditions, thereby reducing the future burden of disease and related issues (e.g., poorer academic achievement, unemployment).¹² Whole-school approaches and universal skills-based programmes, starting in early childhood, can promote wellbeing, reduce stigma, and promote help-seeking.²⁴ There is growing evidence of the effectiveness of digital health interventions,^{25,26} and youth focussed and friendly, low or no-cost, community-based integrated healthcare environments.²⁷

Alcohol and drugs are serious public health concerns affecting communities, particularly higher deprivation areas. Broader environmental and community level interventions aimed at reducing alcohol availability include alcohol pricing, advertising bans, limiting alcohol outlet density, and higher minimum legal drinking age.²⁸ Addressing the structural determinants of the marginalised position of Māori in Aotearoa, and using a Te Tiriti o Waitangi framework with a commitment to equity by partnership with Māori to support effective policy, regulation, and service delivery of programmes appropriate for rangatahi Māori, are fundamental. More broadly, Aotearoa lacks a coordinated, integrated approach to social services to tackle the social and economic determinants of mental health.¹² The central Government is responsible for coordinating policy, practice, and investment to address social wellbeing at the environmental level including providing support for parents and whānau and increasing access to recreational areas and safer neighbourhoods.⁶

The strengths and limitations of the present study should be considered. Using IDI data enabled us to examine mental health conditions

at a population level. There are few datasets that have the statistical power to produce robust findings for Māori. We were able to identify clinically relevant cases of mental health conditions and examine inequities by ethnicity and level of deprivation. We were unable to examine service use in primary care, and therefore our results do not reflect overall youth mental health need. The absence of primary care data in existing administrative datasets means limited data on treatment without medication (e.g., public or privately funded psychological therapy).¹³ PRIMHD was only available up to 2018 and future research is needed to examine the long-term impacts of COVID-19 on the mental health of young people in Aotearoa.

Overall, we found inequities in the identification of rangatahi Māori with mental health conditions, particularly those living in high deprivation areas. Our findings suggest that rangatahi Māori are not able to access the services that they need to be properly assessed, diagnosed and/or prescribed anti-depressant/anti-anxiety medications, for emotional conditions (anxiety, depression). Conversely, they are more likely to be identified through contact with specialist mental health services and hospital admissions for substance problems and self-harm. These issues contribute to long-standing mental health inequities for rangatahi Māori.

Stats NZ disclaimer

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit:

<https://www.stats.govt.nz/integrated-data/>.

COMPETING INTERESTS

Nil

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