Received: 23 October 2021 | Revised: 9 March 2022 | Accepted: 17 March 2022

DOI: 10.1111/ajag.13073

Australasian Journal on Ageing WILEY

BRIEF REPORT

Referral for publicly funded aged care services in Indigenous populations: An exploratory cohort study of ethnic variation in Aotearoa New Zealand

Joanna Hikaka[1,2] | **Zhenqiang Wu**[2] | **Katherine Bloomfield**[1,2] | **Martin J. Connolly**[1,2] | **Michal Boyd**[2] | **Dale Bramley**[1]

[1]Waitematā District Health Board, Auckland, New Zealand

[2]The University of Auckland, Auckland, New Zealand

Correspondence
Joanna Hikaka, Department of General Practice and Primary Health Care, The University of Auckland, Park Rd, Grafton, Auckland 1145, New Zealand.
Email: j.hikaka@auckland.ac.nz

Funding information
This research was supported by the Health Research Council of NZ (HRC: 20/1271).

Abstract

Objectives: As people age, they are more likely to require support to maintain activities of daily living. Referral for formal assessment of need (assessed using the 'international Resident Assessment Instrument' [interRAI]) is the first step to access publicly funded services in Aotearoa New Zealand (NZ). It is unclear whether ethnic access inequities present in other areas of the NZ health system occur in this referral process. This exploratory research aimed to explore ethnic variation in referrals for interRAI assessment, and associated factors.

Methods: A retrospective cohort study of all new referrals for aged care services for those 55-plus, received in 2018 by Waitematā District Health Board (WDHB), was conducted. The primary outcome was referral outcome (assessment and no assessment). Secondary outcomes included time from referral to assessment, reason for referral, mortality and, in the assessed cohort, assessment outcome.

Results: New referrals ($n = 3263$) were ethnically representative of the general older adult population in WDHB. Māori were younger and more likely to be referred for higher-level care needs than non-Māori, non-Pasifika (NMNP) ($p = 0.03$). There was no significant difference in referral outcome, time to assessment or mortality between ethnicities. NMNP were more likely to access lower-level care services than Māori or Pasifika older adults ($p = 0.002$).

Conclusions: Ethnicity was not associated with aged care service assessment access once people were referred for publicly funded services, nor was it associated with time to assessment or mortality in this exploratory study. Māori had higher care needs than NMNP at the time of referral.

KEYWORDS

access to health care, care services, geriatrics, health equity, long-term care

1 | INTRODUCTION

As people age, they are more likely to require support in their everyday lives to perform and maintain activities of daily living. This support may come from personal, social and family connections, and/or publicly funded services such as housework support, home care services and aged residential care for those requiring 24-h care or supervision (known internationally as long-term care homes). In Aotearoa New Zealand (NZ), to access publicly funded aged care services, an 'international Resident Assessment Instrument' (interRAI) assessment needs to be completed by a trained assessor.[1]

Inequities in access to NZ health services occur across the spectrum of clinical contexts with Māori (Indigenous people of NZ) being less likely to experience fair and equitable access to services than non-Māori.[2–4] Older Māori in need of daily care assistance are more than twice as likely not to be receiving formal care than their non-Māori counterparts (12% compared with 5%, respectively).[5] Waitematā District Health Board (WDHB) in Auckland is the largest of the 20 district health boards (DHBs) in NZ: DHBs are charged with commissioning and providing health and social services to their populations. The WDHB is largely urban, has the fourth highest median personal income and highest life expectancy of all DHBs,[6] and 5% of the population aged 65-plus are Māori. The WDHB-funded home care service cost (per head of population aged 65-plus) is similar for Māori and European, but for aged residential care, the cost is approximately 1.5 times higher for European than for Māori suggesting inequitable resource distribution.[7]

The first step to accessing an interRAI assessment, and therefore funded care services, is being referred for assessment. Any person involved in the care of an individual can make a referral, including self- and family members, with a requirement to specify referral reasons. Reasons can be broadly categorised as instrumental activities of daily living (IADLs), which allow people to live independently in the community (e.g. food shopping); and activities of daily living (ADLs), which are basic self-care tasks (e.g. feeding, bathing). The current exploratory research aimed to explore the ethnic variation between Māori, Pasifika and non-Māori, non-Pasifika (NMNP) in referrals for interRAI assessment in WDHB, and associated factors.

Policy Impact

Older Māori have higher care needs than older non-Māori when they are referred for publicly funded aged care. It is important that NZ health and social policies support the appropriate and equitable resourcing of informal carers in the community to support the achievement of Māori health equity.

Practice Impact

There is an opportunity for future research to focus on whether ethnic variation in care needs at the point of referral arises from unidentified unmet need, reduced requirements for external, publicly funded care due to Māori strengths and support mechanisms in the community, or both.

2 | METHODS

2.1 | Study design

An exploratory retrospective cohort study was conducted of referrals for needs assessment for people aged 55 years or older, received by WDHB from 01 January 2018 to 31 December 2018, excluding second (or subsequent) referrals in 2018 for each participant. This service evaluation was reviewed by the Health and Disability Ethics Committee, NZ (HDEC; Ref: 21/STH/51), who deemed it did not require HDEC review and referred it to the relevant DHB research office. The WDHB research office approval was obtained (Ref: RM14750). The study was reported in accordance with the STROBE statement.[8]

2.2 | Data collection

The National Health Index (NHI; unique identifier) was obtained for all new assessment referrals in the study period. All Māori and Pasifika participants were included in the analysis of referral data. A cohort of NMNP equal to the number of Māori participants was randomly selected, using random number generation, to ensure equal explanatory power between ethnicities.[9] The NHI-linked ethnicity data were obtained and analysed using prioritised ethnicity. If participants identify with more than one ethnicity, they were only included under one ethnicity in the analysis (the NZ national prioritisation standard prioritises Māori ethnicity first, Pasifika second and European last).[10] An electronic audit of WDHB data used NHIs of those referred to obtain available baseline demographics. Data relating to the referrer, reason for referral, referral outcome and assessment outcome were obtained by hand-searching the electronic secondary care records as electronic reporting methods are not currently available. Mortality data were sourced from secondary care records,

which are populated from the Ministry of Health national mortality data. WDHB 2018 census data[11] were used to obtain denominators for ethnic variation calculations.

2.3 | Outcomes

The primary outcome was a referral outcome (interRAI assessment or no assessment). Secondary outcomes were time from referral to assessment (<=7 or >7 days), reason for referral and mortality at 1 May 2021 (28–40 months from referral). For the cohort who received an assessment, assessment outcomes were also reported.

2.4 | Co-Variables

The following available baseline variables were collected: age, sex, ethnicity, smoking status, referrer (community/secondary care) and reasons for referral (ADL/IADL support).

2.5 | Sample size

This was an exploratory analysis of a retrospective cohort study; therefore, formal sample size calculations were not considered.

2.6 | Statistical analysis

Data were de-identified prior to analysis. The X^2 tests and one-way analysis of variance were used to detect the baseline characteristic difference by ethnicity. Unadjusted and adjusted logistic regression with odds ratios (ORs) and 95% confidence intervals (CIs) were used to explore the association between ethnicity and primary/secondary outcomes. The adjusted co-variables included age at referral, sex, smoking status, referrer, and reason for referral. All analyses were conducted using SAS statistical software version 9.4 (SAS Institute Inc., Cary, NC, USA). A 2-sided $p < 0.05$ was considered statistically significant.

3 | RESULTS

A total of 3263 people received new assessment referrals in WDHB in 2018. Referral numbers by ethnicity were similar to the ethnic profile of the age-matched population in WDHB, with 174 Māori (5.3% of all referrals compared with 5.0%), 130 Pasifika (4.0% vs 4.2%) and 2959 NMNP (90.7% vs 90.8%) referrals. The baseline demographics of 174 randomly selected NMNP were similar to the total NMNP referral population.

Compared to NMNP, Māori were significantly younger at referral (median age = 73.0 vs. 80.6; p-value <0.001), NMNP were less likely to have had a history of smoking (29.3% Māori never smoked vs 54.0% NMNP; p-value <0.001), and Māori were more likely to be referred for ADLs rather than IADLs in univariable analysis (84.5% vs. 73.6%, respectively; p-value = 0.03) and multivariable analysis (point estimate = 2.12 [1.18–3.83]) (Table 1). Differences in referrals from secondary care rather than community (primary care or self/family referral) did not reach significance (Māori 55.2% vs. NMNP 46.6%, $p = 0.2$).

There was no significant difference in referral outcome between Māori, Pasifika and NMNP in the univariable analysis (84.5%, 84.6% and 86.8% assessed, respectively, p-value = 0.8) or multivariable analysis (p-value = 0.5). Similarly, there was no significant difference between ethnicities and the odds of time to assessment >7 days or mortality (Table 2). Reasons for not being assessed included not qualifying for funded support, uncontactable, patient declined, change in care needs, and care was being provided by privately funded or informal carers. In those who were assessed, this resulted in publicly funded care in 79% ($n = 116$) of assessments for Māori, 78% ($n = 86$) for Pasifika and 84% ($n = 127$) for NMNP. Ethnicity was significantly associated with postassessment level of care ($p = 0.02$) with NMNP more likely to access lower-level care services (housework support) (28%; $n = 35$) than Māori (12%; $n = 14$) and Pasifika (13%; $n = 11$).

4 | DISCUSSION

This exploratory study did not find a significant ethnic variation in referral rates for publicly funded aged care support for older adults in WDHB, with referral numbers matching the ethnic structure of older adult population in the region. Given previous research has identified that older Māori have higher acute care needs and higher unmet needs than non-Māori,[12] we would expect higher rates of referral for Māori. The lack of ethnic variation in referral rates likely represents inequity in access to referrals for care support services, further supported by our finding that Māori were assessed as requiring higher levels of care than NMNP. Ethnicity was not associated with referral outcome, mortality or time to assessment >7 days.

The younger referral age for Māori is expected given lower life expectancy and earlier onset of chronic comorbidity, influenced by reduced access to the social determinants of health.[4,13] Māori were more likely than NMNP to be referred for, and assessed as requiring, higher-level

TABLE 1 Baseline characteristics by ethnicity

	Māori ($n = 174$)	Pasifika ($n = 130$)	NMNP ($n = 174$)
Age at referral	ANOVA test (p-value) <0.001[a]		
Mean (SD)	73.0 (8.9)	77.3 (8.5)	80.6 (8.7)
Median	72.8	78.1	82.0
Q1:Q3	66.7; 80.2	72.1; 83.5	75.2; 87.4
Min: Max	55.3; 92.6	56.3; 95.1	55.5; 96.7
Sex	X^2 test (p-value) 0.1		
Female	121 (69.5%)	80 (61.5%)	103 (59.2%)
Male	53 (30.5%)	50 (38.5%)	71 (40.8%)
Smoking Status	X^2 test (p-value) <0.001[a]		
Never smoked	51 (29.3%)	64 (49.2%)	94 (54.0%)
Ex-smoker	91 (52.3%)	47 (36.2%)	61 (35.1%)
Current smoker	20 (11.5%)	5 (3.8%)	9 (5.2%)
Not asked	12 (6.9%)	14 (10.8%)	10 (5.7%)
Referrer	X^2 test (p-value) 0.2		
Secondary care	96 (55.2%)	63 (48.5%)	81 (46.6%)
Community	78 (44.8%)	67 (51.5%)	93 (53.4%)
Reasons for referral	X^2 test (p-value) 0.03[a]		
ADL support	147 (84.5%)	99 (76.2%)	128 (73.6%)
IADL support	27 (15.5%)	31 (23.8%)	46 (26.4%)

Abbreviations: ADL, activity of daily living; ANOVA, analysis of variance; IADL, instrumental activity of daily living; NMNP, non-Māori, non-Pasifika; SD, standard deviation.

[a]Adjusted for age, sex, smoking status, referrer and reasons.

care needs (ADLs). The NMNP may be privileged by being offered a referral for IADL support to a greater extent than Māori. Alternatively, factors influencing this include that Māori may be more likely to live in multigenerational households, therefore being less likely to qualify for public care,[14] to have family support to perform ADLs and IADLs,[15,16] and to live in the community with higher levels of care needs.[12] Māori may therefore only be referred at a later stage of need. Alternatively, extra referral barriers could be in place for Māori, such as increased rurality or assumptions that may be made about Māori needs and preferences in relation to family support. Previous experiences in the health system may reduce Māori desire to engage,[17,18] although the finding that Māori were as likely as NMNP to receive an assessment once referred suggests that once a referral has been made, Māori engagement in the system is not an issue, nor are biases by assessors.

4.1 | Limitations

The exploratory nature of the research and small sample size reduced power to detect statistically significant outcome differences between ethnicity. A type 2 error, due to the small sample size, may have occurred with some outcomes, such as time to assessment and mortality, which suggest Māori may have reduced access and poorer outcomes (Table 2). Electronic systems enabling automated data collection would enable analysis of larger data sets and better support the right of Māori, as guaranteed in NZ's founding document, the Treaty of Waitangi, to be well informed in relation to equity of access and outcomes.[19] As date of death was not collected, survival analysis methods using the same time point for each person could not be used, which is a limitation, although the follow-up time for each ethnic group was not significantly different. Variables shown in other research to impact outcomes of interest, such as marital status, chronic co-morbidities, housing ownership, social networks and access to informal caregivers,[20] were not available and therefore not included in the analysis. Being referred for assessment itself is a potential barrier to accessing aged care services, and this study did not identify those who remain in the community with unidentified need, and unreferred for assessment. Given that systemic factors that cause inequities compound across the life course,[21] Māori have disproportionate access barriers to referral and therefore may be over-represented in those with undetected need living in the community. Future research could expand on current knowledge of need[14,16] to further

TABLE 2 Multivariable analysis for referral, mortality and time to assessment outcomes

Logistic regression			
		Odds ratio (95%CI), *p*	
Ethnicity	***N* (%)**	**Unadjusted**	**Adjusted**
interRAI assessment			
Māori	147 (84.5)	0.83 (0.46, 1.51), 0.54	0.64 (0.32, 1.30), 0.22
Pasifika	110 (84.6)	0.84 (0.44, 1.60), 0.59	0.84 (0.42, 1.70), 0.63
European/Other	151 (86.8)	1.00 (Ref)	1.00 (Ref)
Overall test (*p*-value)		0.8	0.5
Death at 2021			
Māori	85 (48.9)	1.49 (0.97, 2.28), 0.07	1.34 (0.83, 2.18), 0.23
Pasifika	54 (41.5)	1.11 (0.70, 1.76), 0.67	1.17 (0.71, 1.91), 0.54
European/other	68 (39.1)	1.00 (Ref)	1.00 (Ref)
Overall test (*p*-value)		0.2	0.5
Time to assessment >7 days			
Māori	91 (52.3)	0.83 (0.54, 1.27), 0.39	1.12 (0.66, 1.91), 0.67
Pasifika	71 (54.6)	0.91 (0.58, 1.44), 0.69	0.97 (0.56, 1.67), 0.92
European/Other	99 (56.9)	1.00 (Ref)	1.00 (Ref)
Overall test (*p*-value)		0.7	0.9

identify factors associated with unmet need. This study was limited to WDHB, a DHB with a largely urban Māori population with increased access to health services, where Māori have longer life expectancy, lower levels of deprivation and higher overall health outcomes than Māori in other DHBs.[6,22] Future research should be widened to include other regions, particularly those with higher levels of rurality and deprivation. This study was not aiming to look at other ethnic groups within the population, and this could be an area of other specific study.

5 | CONCLUSIONS

Ethnicity was not associated with likelihood of being assessed, mortality or time to assessment when older adults were referred for publicly funded aged care services in WDHB. Older Māori had higher care needs than NMNP when referred for assessment, and NMNP were more likely to have access to funded care to support lower-level care requirements than Māori and Pasifika older adults. This research may be used by providers to support critical review of their referral practices. To expand on this exploratory work and better understand appropriateness of ethnic variation in referral rates, future research should explore other factors potentially associated with care needs, including informal support networks and chronic co-morbidity. Referral for assessment is just one step in the pathway to funded aged care services, and this research group is currently exploring ethnic variation in the other stages of the aged care access pathway.

ACKNOWLEDGEMENTS

Thanks to Kate Sladden (Funding and Development Manager - Health of Older People) and Shayne Wijohn (Māori Health Gain Manager Planning, Funding and Outcomes) at Auckland and Waitematā DHBs, Esther Bushell (Needs Assessment Coordination Team) Waitematā DHB and their teams for supporting this work. Open access publishing facilitated by The University of Auckland, as part of the Wiley - The University of Auckland agreement via the Council of Australian University Librarians. [Correction added on 18 May, after first online publication: CAUL funding statement has been added.]

CONFLICTS OF INTEREST

No conflicts of interest declared.

DATA AVAILABILITY STATEMENT

Research data are not shared.

ORCID

Joanna Hikaka https://orcid.org/0000-0001-6792-6607
Katherine Bloomfield https://orcid.org/0000-0001-6679-1763
Martin J. Connolly https://orcid.org/0000-0002-1933-3345
Boyd Michal https://orcid.org/0000-0002-8895-1251

REFERENCES

1. Schluter PJ, Ahuriri-Driscoll A, Anderson TJ, et al. Comprehensive clinical assessment of home-based older persons within New Zealand: an epidemiological profile of a national cross-section. *Aust N Z J Public Health*. 2016;40(4):349-355.
2. Metcalfe S, Beyene K, Urlich J, et al. Te Wero tonu—the challenge continues: Māori access to medicines 2006/07–2012/13 update. *New Zealand Med J*. 2018;131(1485):27–47.
3. Hikaka J, Hughes C, Jones R, Connolly MJ, Martini N. A systematic review of pharmacist-led medicines review services in New Zealand – is there equity for Māori older adults? *Res Soc Admin Pharm*. 2019;15(12):1383-1394.
4. Robson B, Harris R, Eru Pōmare Maori Health Research Centre. *Hauora: Māori standards of health IV : a study of the years 2000-2005 [Internet]*. Te Rōpū Rangahau Hauora a Eru Pōmare; 2007. http://www.hauora.maori.nz. Accessed April 30, 2020
5. Kerse N, Lapsley H, Moyes S, Mules R. *Intervals of Care Need: Need for Care and Support in Advanced Age-LiLACS NZ*. University of Auckland; 2017:29.
6. Waitematā District Health Board. *Waitematā DHB Health Needs Assessment 2019 [Internet]*. Waitematā DHB; 2019. https://www.waitematadhb.govt.nz/assets/Documents/health-needs-assessments/Health-Needs-Assessment-Waitemata-DHB-2019.pdf. Accessed January 20, 2021
7. Waitematā DHB. *HCSS and ARC Comparison ADHB WDHB*. Waitematā DHB; 2019.
8. von Elm E, Altman DG, Egger M, et al. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *PLoS Med*. 2007;4(10):e296.
9. Robson B. *Mana Whakamarama-Equal Explanatory Power: Maori and non-Maori Sample Size in National Health Surveys*. Te Ropu Rangahau Hauora a Eru Pomare, Wellington School of Medicine and Health Sciences, University of Otago for Public Health Intelligence, Ministry of Health, New Zealand; 2002.
10. Ministry of Health NZ. *HISO 10001:2017 Ethnicity Data Protocols*. Ministry of Health; 2017:41.
11. Stats NZ. *Waitematā DHB 2018 Census data [Internet]*. Stats NZ; 2021. https://www.stats.govt.nz/tools/2018-census-place-summaries/
12. Holdaway M, Wiles J, Kerse N, et al. Predictive factors for entry to long-term residential care in octogenarian Māori and non-Māori in New Zealand, LiLACS NZ cohort. *BMC Public Health*. 2021;21(1):34.
13. Ministry of Health. *Tatau Kahakura: Māori Health Chart Book 2015*. 3rd ed. Ministry of Health; 2015.
14. Lapsley H, Kerse N, Moyes S, et al. Do household living arrangements explain gender and ethnicity differences in receipt of support services? Findings from LiLACS NZ Mori and non-Mori advanced age cohorts. *Ageing Soc*. 2018;19(40):1-17.
15. Edwards W. Taupaenui - Māori positive ageing [Doctoral Thesis]. [Palmerston North]: Massey University; 2010.
16. Lapsley H, Hayman KJ, Muru-Lanning ML, et al. Caregiving, ethnicity and gender in Maori and non-Maori new Zealanders of advanced age: findings from LiLACS NZ Kaiawhina (love and support) study. *Aust J Ageing*. 2020;39(1):e1-e8.
17. Jansen P. Non-financial barriers to primary health care services for Maori. *J Prim Health Care*. 2009;1(3):240.
18. Jansen P, Bacal K, Crengle S. *He Ritenga Whakaaro: Māori Experiences of Health Services*. Vol 200. Mauri Ora Associates; 2008.
19. Tribunal W. *Hauora -Report on Stage One of the Health Services and Outcomes Kaupapa Inquiry*. Wai 2575. Waitangi Tribunal; 2019.
20. Mah JC, Stevens SJ, Keefe JM, Rockwood K, Andrew MK. Social factors influencing utilization of home care in community-dwelling older adults: a scoping review. *BMC Geriatr*. 2021;21(1):1-21.
21. Marmot M, Friel S, Bell R, Houweling TA, Taylor S. Closing the gap in a generation: health equity through action on the social determinants of health. *The Lancet*. 2008;372(9650):1661-1669.
22. Stats NZ. *National and Subnational Period Life Tables: 2017–2019 [Internet]*. Stats NZ; 2021. https://www.stats.govt.nz/information-releases/national-and-subnational-period-life-tables-2017-2019. Accessed October 23, 2021

How to cite this article: Hikaka J, Wu Z, Bloomfield K, Connolly MJ, Boyd M, Bramley D. Referral for publicly funded aged care services in Indigenous populations: An exploratory cohort study of ethnic variation in Aotearoa New Zealand. *Australas J Ageing*. 2022;41:473-478. doi: 10.1111/ajag.13073