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RESEARCH ARTICLE

Changes in indicators of well-being on moving from home to long-term care for Māori in Aotearoa New Zealand: A retrospective cohort study

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Abstract

Objective: To investigate changes in well-being measures for older Māori after moving from community to long-term care (LTC).

Methods: We undertook a retrospective cohort study of older Māori in New Zealand (NZ) who had received assessments for their health needs whilst living at home (interRAI-HC assessment) as well as a subsequent assessment after moving into a care facility (interRAI-LTCF). All interRAI-HC assessments from 01 July 2013 to 21 December 2018 were identified and matched to LTCF assessments that were undertaken at least 6 months later. Odds ratios (OR) and 95% confidence interval (CI) were calculated to determine the difference in proportion of variables of interest (indicative of movement, socialising, sleep and nutrition, alongside general physical and mental health status) between participants' HC and subsequent LTCF assessments.

Results: Changes in well-being measures were investigated among 1531 Māori (mean age 76.2 years, 61% female). Odds of having a fall (OR: 0.40 [95% CI 0.34, 0.48]), being lonely (OR: 0.13 [95% CI 0.09, 0.18]), sleeping difficulty (OR: 0.74 [95% CI 0.60, 0.91]) and fatigue (OR: 0.18 [95% CI 0.14, 0.23]) reduced on moving to LTC. However, the presence of depression (OR 3.96 [95% CI 2.58, 6.09]) and dependence with locomotion (OR 1.56 [95% CI 1.23, 1.97]) significantly increased when moving from home to LTC.

Conclusion: Despite some indicators of functional and health-related decline, significant improvements are also apparent across multiple domains of well-being. Further investigation of resident and family perceptions of well-being in association with a move to LTC is warranted.

KEYWORDS

home care services, health services, indigenous, long-term care

1 | INTRODUCTION

Māori, the Indigenous people of Aotearoa New Zealand (NZ), are currently under-represented in NZ older persons' long-term care (LTC) facilities (aged residential care, dementia care, rest homes and nursing homes). Although Māori comprise 8% of the population aged 65 years or older,[1] data suggest <3% of the population living in LTC are Māori.[2] However, it is projected that the number of Māori moving into LTC will increase fourfold in the next 20 years.[3] Therefore, it is important that Māori are able to access information to make decisions about their living and care arrangements, and that information is available to better support LTC facilities to provide high-quality care for Māori.

The reasons for the current lower proportions of Māori utilising LTC are likely multifactorial, with structural and service-level design influencing individual and family decisions. Currently, LTC facilities often do not reflect Māori ways of living and cultural values, and there are low proportions of Māori in the workforce, including at clinical and organisational governance levels, which can impact Māori choice to access LTC.[3] Inequities exist in access to the LTC entry pathway,[4] and there is variation in the factors associated with entering LTC between Māori and non-Māori.[5] For Māori, living alone and older age have been identified as predictors for entry, while dependence in activities of daily living (ADL) and lower self-rated health predict entry for non-Māori.[5] It is often the preference of older Māori for care to be provided in the home, often by whānau (family).[3] Barriers to LTC experienced by Māori are similar to other Indigenous populations and include a lack of cultural congruence and cultural safety in the workforce, an absence of policies that support Indigenous rights and cultures and marginalisation of Indigenous people within LTC settings.[6]

Decision-making around formal care requirements is complex and challenging for care recipients, their informal carers and family.[7] To make informed decisions about care arrangements, information regarding the potential positive and negative impacts of LTC living for individuals, families and communities is required. This includes understanding the impact that moving from the community to a LTC has on well-being. Indicators of 'ageing well' and optimising function have increasingly been recognised as multidimensional, including diseases of physical and mental health as well as key aspects of nutrition, sleep, social connection and physical activity.[8]

In NZ, those seeking publicly funded home care services (such as support with household duties, activities of daily living or caregiver support) must undergo an interRAI assessment, which encompasses multidimensional well-being measures. The interRAI assessments contain a comprehensive range of items including those concerning the care recipient's individual and social position and context, as well as their health and functioning.[9] Six-monthly LTC assessments are mandated for all people in a LTC facility in NZ. Those with complex needs are assessed for need in the community using the interRAI-Home Care Assessment (interRAI-HC). Once living in LTC, the equivalent LTC facilities assessment (interRAI-LTCF) is used to assess needs and support care-planning and needs to be completed on admission and every 6 months after this.[10] Most aspects and measures are identical across the two tools. Therefore, these data provide a unique mechanism to explore changes in indicators of well-being between the contexts of living in the community and LTC for Māori.[9] It could be anticipated that indicators of well-being may change when people progress to a stage where living in LTC is needed to adequately support them.[11] However, these changes have not been studied for Māori. There is the potential that understanding such changes could both inform decision-making about moving to LTC as well as help identify aspects to target for increased support and service development for Māori living in LTC.

Therefore, the aim of this study was to investigate changes in well-being measures for older Māori after moving from community to LTC living.

Policy Impact

Older Māori are currently under-represented in New Zealand's long-term care (LTC) facilities, but numbers are expected to rise. This study provides information regarding the potential positive and negative impacts of moving into LTC living to support informed decision-making around aged care services as well as practice and policy planning.

2 | METHODS

2.1 | Study design and participants

We undertook a retrospective cohort study of older Māori in NZ who had received assessments for their needs whilst living at home and after moving into LTC. All interRAI-HC assessments from 01 July 2013 to 21 December 2018 were identified and matched to those who had at least two interRAI-LTCF assessments completed. For these people, the most recent HC assessment and the second LTCF, completed at least 6 months after the HC assessment, were retained (LTCF assessments ranged from 4 January 2014 to 30 June 2019). Only those who consented for their

data to be used for planning and research purposes were included. Non-Māori and those aged less than 55 years were excluded to obtain the final cohort for analysis. This was to facilitate a sample of 'older' adults requiring care, acknowledging the complex health needs of the ageing population requiring home care and the lower life expectancies among Māori compared to non-Māori.[12]

2.2 | Ethics

This research involved human participants through the analysis of extant assessment data. During the interRAI assessments, informed consent was obtained from the care recipient (or person entitled to consent on their behalf) to have their anonymised assessment information used for research purposes. This research was approved by the Technical Advisory Service who are responsible for the interRAI assessment data. Independent ethics approval was obtained from the Central Health and Disability Ethics Committee (19/NTA/152).

2.3 | Data collection and variables of interest

All interRAI assessments are undertaken by people who have completed a 3-day training program and are subject to ongoing training. In the community, the assessor undertakes the assessment together with the older person, potentially alongside family members, and may be relatively unknown to the older person. In the LTCF, the assessor is a staff member and often someone who the older person interacts with on a daily basis.[13]

Variables of interest were informed by an aligned research National Science Challenge research program. The Ageing Well through Eating, Sleeping, Socialising and Mobility (AWESSoM) program involves integrated studies across different ethnicities and contexts with the overarching aim of optimising well-being and reversing the trajectory of age-related functional decline.[8] In line with this program, interRAI assessment well-being measures were reviewed and collated to represent the themes of 'ageing well', that is, several items each pertaining to movement, socialising, sleep and nutrition, alongside general physical and mental health status (Table 1).

2.4 | Data analyses

Odds ratios (ORs) and their 95% confidence intervals (CIs) from conditional logistic regression models matching resident's HC and LTCF assessments were calculated to determine the difference in proportion of variables of interest between participants' HC and subsequent LTCF assessments. The ORs were displayed in a forest plot for comparative purposes. Across all the variables of interest, the missing data proportions ranged between 0% and 3%. Single imputation methods (modes for categorical variables) were used to handle the missing values before analysis. All statistical analyses were conducted using IBM SPSS Statistics version 28. The reporting of the results for this study followed RECORD reporting guidelines.

3 | RESULTS

A total of 209,957 HC assessments were completed between 01 July 2013 and 21 December 2018. After matching the HC and LTCF assessments and taking the most recent HC and the LTCF assessment taken at least 6 months later, 39,674 people remained. Non-Māori participants were excluded, leaving the final cohort of 1535 people. Mean (SD) age at time of HC assessment was 76.2 (8.6) years. At time of LTCF assessment, it was 78.0 (8.5) years. Over half (61%, $n = 941$) of the population was female.

Table 2 displays the characteristics of the participants with the frequencies concerning all problem health and functioning for the HC assessments and the LTCF assessments. Table S1 provides the matched frequency changes in physical and mental health outcomes. Odds ratios comparing the LTCF assessment to the HC assessment are reported. This shows that measures relating to falls and balance; sleep difficulty and fatigue; nutrition; and social interactions significantly improved according to the LTCF assessments of older Māori compared to their prior HC assessments. For example, they were less likely to have fallen (OR: 0.40 [95% CI 0.34, 0.48]), to report feeling lonely (OR: 0.13 [95% CI 0.09, 0.18]), to exhibit moderate–severe fatigue (OR: 0.18 [95% CI 0.14, 0.23]) and to have nutritional issues (OR: 0.30 [95% CI 0.24, 0.37]) in LTC compared to at home. However, the presence of depression and dependence with locomotion all significantly increased when moving from home to LTC. Stroke was more likely and congestive heart failure less likely for those in LTC compared to at home (Figure 1).

4 | DISCUSSION

This study investigated changes in well-being indicators among 1531 older Māori after moving from home into LTC. Key findings were that, despite some indicators of functional and health related decline (i.e., increased dependency with locomotion and raised cases of depression and CHF), significant improvements were noted in key

TABLE 1 Variables of interest arranged by theme with categorical definitions based on interRAI assessment measures.

Category	Variables	
Movement	**Balance problems**	
	Yes	*No*
	[a]Any of: 'difficult or unable to move self to standing position unassisted', 'difficult or unable to turn self around and face the opposite direction when standing', 'dizziness', or 'unsteady gait'	No problems at all
	Falls status last 90 days	
	Falls	*No falls*
	Any of: 'fell 31–90 days ago', 'one fall in last 30 days', or 'two or more falls in last 30 days'	"No fall in last 90 days"
	Primary mode of locomotion	
	Dependant	*Independent*
	Require use of wheelchair or scooter	Walk with or without the use of assistive devices
	Activities of Daily Living (ADLs)	
	Higher dependence[b]	*Lower dependence*[b]
	ADL status score 3–6	ADL status score 0–2
Socialising	**Anxiety**	
	Yes	*No*
	Formal diagnosis	No formal diagnosis
	Reduced social interaction	
	Yes	*No*
	[a]Observed reduction in social interactions	No observed reduction in social interactions
	Loneliness	
	Yes	*No*
	Answers yes to 'says or indicates that he/she feels lonely'	Answers no to "says or indicates that he/she feels lonely"
Sleep	**Excessive sleep**	
	Difficulty present	*None*
	[a]"Too much sleep – excessive amount of sleep that interferes with person's normal functioning'	No problems at all
	Fatigue	
	Moderate to severe	*None to minimal*
	Any of: 'moderate', 'severe', or 'unable to commence any day-to-day activities due to diminished energy'	"None" or "diminished energy but completes normal day-to-day activities"
	Sleep difficulty	
	Difficulty present	*None*
	[a]Any of: 'difficulty falling asleep or staying asleep', 'waking up too early', restlessness or 'non-restful sleep'	No problems at all
Eating and nutrition	**Nutritional issues**	
	Yes	*No*
	Any of: 'weight loss of 5% or more in last 30 days, or 10% or more in last 180 days', 'Dehydrated, or BUN/Creatinine ratio >25 1', 'fluid intake less than 1000 cc per day (less than four 8 oz cups/day)', 'Fluid output exceeds input', 'decrease in amount of food or fluid usually consumed', and/or 'ate one or fewer meals on at least 2 of last 3 days'	No problems at all
	Dry mouth	
	Yes	*No*
	"Report dry mouth"	No problems at all
	Difficulty chewing	
	Yes	*No*
	"Report difficulty chewing"	No problems at all

TABLE 1 (Continued)

Category	Variables	
Medical status	**Cognitive impairment**	
	Present	*Not present*
	Formal diagnosis of Alzheimer's disease or dementia present or a Cognitive Performance Scale score of 2 or more	No formal diagnosis and a Cognitive Performance Scale score of 0–1
	Depression	
	Present	*Not present*
	Formal diagnosis present (receiving active treatment or being monitored without active treatment)	No formal diagnosis
	Congestive heart failure	
	Present	*Not present*
	Formal diagnosis present (receiving active treatment or being monitored without active treatment)	No formal diagnosis
	Stroke	
	Present	*Not present*
	Formal diagnosis present (receiving active treatment or being monitored without active treatment)	No formal diagnosis

[a]Included those having an issue on at least one of the last 3 days as well as those who were considered to have an issue but who had not exhibited the issue in the last 3 days.

[b]Lower ADL scores indicate that an individual is more able to independently undertake activities of daily living than someone with a higher ADL score.[14]

areas indicative of 'ageing well' across domains of movement, socialising, sleep status and nutritional and oral health.

Given our study examined changes in well-being measures on moving from home to LTC as well as changes over time (due to use of matched assessments), it is perhaps not surprising that risk of locomotion dependency increased for those in LTC. Locomotion dependency would make living alone difficult, so this elaborates on previous research indicating that living alone predicts entry to LTC for older Māori.[5] Our finding of increased rates of depression on moving to LTC is important. Depressive symptoms have been noted to be associated with admission to LTC in NZ[5] and rates of depression in LTC are twice that of community-dwelling older people internationally.[15] Higher rates of depression in LTC in our study could have been an artefact of increased likelihood to identify and diagnose depression in LTC. Underdiagnosis of depression for Māori in primary care, which is known to occur in the general Māori population,[16] as is proportionally lower prescription for antidepressants in older Māori comparted to older non-Māori.[17]

Our finding could also indicate that LTC living increases the rates of depression for Māori meaning that depression should be actively monitored for on admission to LTC and mechanisms put in place to prevent depression. There is the potential that this is influenced by LTC living going 'against cultural norms'.[3] At the resident level, a holistic approach to depression prevention is needed.[18] Prevention activities could include maintaining social connection,[19] and activities that are meaningful and uphold the revered cultural status of older Māori are likely to support this.[20–22] LTC living may also be protective as it is known that feeling burdensome to others reduces quality of life for older Māori.[23] The fact that higher rates of depression existed in the context of lower rates of loneliness is also important and suggests that intervention needs to extend beyond social connectivity. At a facility level, availability of culturally appropriate activities and opportunities for connection to community could also be important,[21] which require a change in organisational culture to ensure sustainability,[18] and are likely to differ regionally in response to local care customs and practices.[3]

Older Māori showed significant improvement across a range of well-being measures on moving from community to LTC including an improvement in movement and reduction in fatigue. Most LTC residents experience at least some movement limitations with the potential to significantly impact on quality of life and are often a target for intervention in the LTC setting.[20] Importantly, while indicators of independent movement declined, care recipients' physical balance and odds of having a fall improved on moving into LTC. Falls are a common issue with advancing age and cause significant morbidity and mortality, including among older community-dwelling Māori.[24] Interventions to reduce fall rates in LTC have largely been ineffective[25,26] although a recent study involving a complex, all-of-facility intervention seems promising.[27] Our findings suggest a move to LTC may be fall-protective, perhaps suggesting that the complex and intersecting nature of LTC interventions aimed at fall reduction are difficult

TABLE 2 Odds ratio of change in physical and mental health outcomes from conditional logistic regression models.

	HC	LTCF	Odds ratio (95% CI)[a]
	N (%)	*N* (%)	Conditional regression
Movement			
ADL hierarchy			
0–2	1100 (72)	1076 (70)	
3–6	435 (28)	459 (30)	1.17 (0.93, 1.46)
Dependent locomotion			
Independent	1212 (79)	1148 (75)	
Dependent	323 (21)	387 (25)	1.56 (1.23, 1.97)
Falls			
No	869 (57)	1128 (74)	
Yes	666 (43)	407 (27)	0.40 (0.34, 0.48)
Balance problems			
No	465 (30)	607 (40)	
Yes	1070 (70)	928 (61)	0.40 (0.32, 0.51)
Socialising			
Lonely			
No	1166 (76)	1435 (94)	
Yes	369 (24)	100 (7)	0.13 (0.09, 0.18)
Reduced social interaction			
No	1228 (80)	1298 (85)	
Yes	307 (20)	237 (15)	0.62 (0.49, 0.78)
Sleep			
Sleep difficulty			
None	1041 (68)	1094 (71)	
Difficulty present	494 (32)	441 (29)	0.74 (0.60, 0.91)
Fatigue			
None to minimal	916 (60)	1226 (80)	
Moderate to severe	619 (40)	309 (20)	0.18 (0.14, 0.23)
Too much sleep			
None	1378 (90)	1413 (92)	
Too much sleep present	157 (10)	122 (8)	0.60 (0.42, 0.84)
Eating and nutrition			
Nutritional issues			
No	1087 (71)	1323 (86)	
Yes	448 (29)	212 (14)	0.30 (0.24, 0.37)
Dry mouth			
No	1429 (93)	1484 (97)	
Yes	106 (7)	51 (3)	0.26 (0.16, 0.43)
Difficulty chewing			
No	1354 (88)	1455 (95)	
Yes	181 (12)	80 (5)	0.13 (0.08, 0.22)
Medical status			
Cognitive impairment			
Not present	255 (17)	289 (19)	

TABLE 2 (Continued)

	HC	LTCF	Odds ratio (95% CI)[a]
	N (%)	*N* (%)	Conditional regression
Present	1280 (83)	1246 (81)	0.68 (0.50, 0.92)
Depression			
Not present	1373 (89)	1296 (84)	
Present	162 (11)	239 (16)	3.96 (2.58, 6.09)
Anxiety			
Not present	1396 (91)	1386 (90)	
Present	139 (9)	149 (10)	1.26 (0.83, 1.91)
Congestive heart failure			
Not present	1021 (67)	1067 (70)	
Present	514 (34)	468 (31)	0.60 (0.44, 0.81)
Stroke			
Not present	1165 (76)	1142 (74)	
Present	370 (24)	393 (26)	1.72 (1.11, 2.66)

[a]Conditional logistic regression models matching residents' HC and LTCF assessments.

to study in pragmatic trials. This finding also identifies the need for fall prevention activities to support older community-dwelling Māori, and the potential for culturally informed and tailored interventions are currently being explored.[28]

The reduction in sleep difficulty, excessive sleep and fatigue on move to LTC in this study was somewhat unexpected. Prior research indicates unique sleep-related issues in the context of LTCs including adverse influence other residents, atypical sleep environments and schedules and changes in the timing of cues necessary for sustained regulation of sleep and wake cycles.[29] Previous qualitative research has indicated that, with ageing, the thresholds for what constitutes a 'sleep problem' may change and differ cross culturally[30] and, therefore, sleep may not have been appropriately assessed using the present internationally developed assessment. Further investigation using more comprehensive surveys and objective sleep monitoring is warranted.

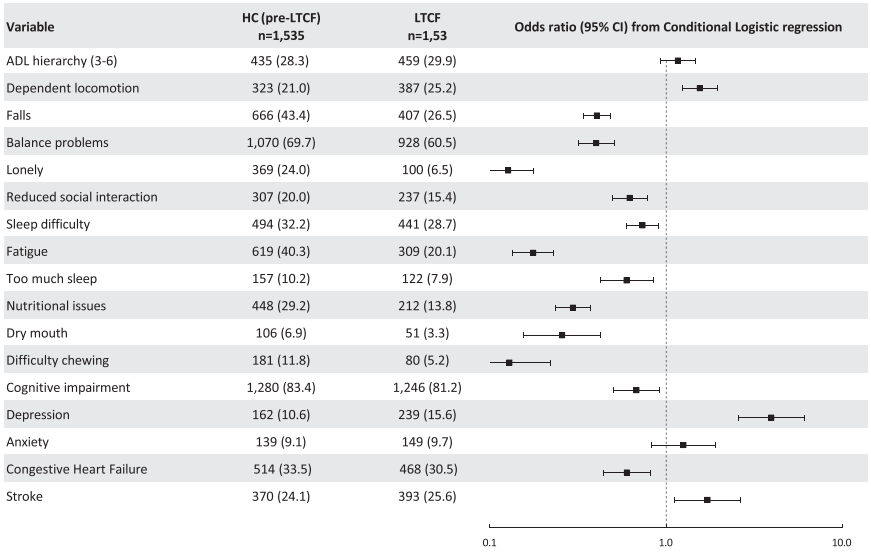
The impact that moving to LTC has on social connectedness has previously been identified as a concern for Māori and a potential reason that alternative care arrangements are made.[3] Our finding that socialisation improved on entry to LTC may be of comfort to those making care decisions, which include the potential move to LTC. However, this finding does need to be interpreted with caution. Variables included in this measure were diagnosis of anxiety, reduction in social interactions and self-identified loneliness. Māori have previously been shown to have higher self-rated health despite objectively poorer quality of health compared to non-Māori,[5] indicating that this measure may not appropriately reflect social connectedness. These measures may speak to the quantity of social engagements rather than the quality and take a biomedical approach to health without encompassing other factors associated with health and well-being such as connection to whānau (family), culture and place. Similar to the other dimensions of well-being, it is important that follow-up research examines whether the findings in this quantitative study are supported by the perceptions of older Māori and their families in relation to quality of life and well-being.

Positive changes to indicators of nutritional and oral health are promising. Such issues are considered major with regard to older persons' health and challenging to manage in LTC.[31] Improvements in these areas may be indicative of the routines of the LTC environment, including reminders to take fluids and meals, as well as support with oral health behaviours. Māori models of health, well-being and social practice apply to oral care as well as the preparation, consumption and sharing of food.[32]

4.1 | Strengths and Limitations

A strength of this paper is the use of routinely collected national data using standardised validated tools. Another strength is the investigation of issues specifically relevant to older Māori, a group underrepresented in ARC, and exploring change within the population cohort rather than exploring differences between different ethnic groups. This increases relevance to Māori communities and supports informed discussions and decision-making.

Results need to be interpreted with caution as the assessment process differs between the community and LTC



ID	OR	LCI	UCI	ler	uer	ref	OR (95% CI)
17	1.17	0.93	1.46	0.24	0.29	1.00	1.17 0.93. 1.46)
16	1.56	1.23	1.97	0.33	0.41	1.00	1.56 (1.23, 1.97)
15	0.41	0.34	0.48	0.07	0.08	1.00	0.40 (0.34, 0.48)
14	0.40	0.32	0.51	0.09	0.11	1.00	0.40 (0.32, 0.51)
13	0.13	0.09	0.18	0.04	0.05	1.00	0.13 (0.09, 0.18)
12	0.62	0.49	0.79	0.13	0.16	1.00	0.62 (0.49, 0.78)
11	0.74	0.60	0.91	0.14	0.17	1.00	0.74 (0.60, 0.91)
10	0.18	0.14	0.23	0.04	0.05	1.00	0.18 (0.14, 0.23)
9	0.60	0.42	0.84	0.17	0.25	1.00	0.60 (0.42, 0.84)
8	0.30	0.24	0.37	0.06	0.07	1.00	0.30 (0.24, 0.37)
7	0.26	0.16	0.43	0.10	0.17	1.00	0.26 (0.16, 0.43)
6	0.13	0.08	0.22	0.05	0.09	1.00	0.13 (0.08, 0.22)
5	0.68	0.50	0.92	0.18	0.24	1.00	0.68 (0.50, 0.92)
4	3.96	2.58	6.09	1.39	2.13	1.00	3.96 (2.58, 6.09)
3	1.26	0.83	1.91	0.43	0.66	1.00	1.26 (0.83, 1.91)
2	0.60	0.44	0.81	0.16	0.21	1.00	0.60 (0.44, 0.81)
1	1.72	1.11	2.66	0.61	0.94	1.00	1.72 (1.11, 2.66)

FIGURE 1 Forest plot of odds ratios comparing the odds of having problem health and functioning indicated within the LTCF assessment compared to the former HC assessment.

settings. Some questions in the interRAI assessment are subjective and responses to questions could also be influenced by situational expectations. For example, for fatigue, people are asked whether they experience fatigue while undertaking ADLs. The type and extent of ADLs are likely to differ between the home and LTC environments, with potentially increased levels of energy required in the community. Those in the community who have not had prior access to an interRAI assessment and experience unmet needs will not be captured in this study. It is also important to note that potential time-dependant variables, such as number of co-morbidities, were not adjusted for in this study using matched assessments, and that many of the included variables decline with age which could confound findings. It is likely that different levels of care, geographical locations, organisational culture and care settings will influence well-being outcomes for groups and individuals, and this was not investigated in this study. The interRAI was originally developed in the United States and, although undergoing extensive Māori contextualisation when first introduced, likely does not include all relevant well-being measures for Māori.

Previous research in those assessed as having daily assistance needs found that Māori were more likely than non-Māori to receive neither LTC or home support (12% vs. 5%, respectively).[33] Inequities in access to LTC or equivalent supports in the community represent inequities in the distribution of public resources. Better understanding of changes in well-being, drivers for decisions to access LTC, and Māori expectations of LTC care will facilitate the development of services better suited to Māori aspirations and expectations.

4.2 | Future investigation

Our study investigated objective well-being measures to report changes between community and LTC living. It did not investigate older persons' perceptions of change

on moving to LTC, or those of family and carers, which would provide a more complete understanding of the benefits and downsides of moving to LTC. Our study does highlight some key areas for future investigation with older Māori relating to transitions of residence, with particular need to investigate culturally appropriate interventions and activities to prevent depression and maintain social connections.

5 | CONCLUSION

Our nationwide study suggests that a move from community home care support to LTC is associated with improvement in fall risk, balance, levels of fatigue, sleep and socialisation but an increase in depression. Further investigation of resident and family perceptions of well-being in association with a move to LTC is warranted.

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CONFLICT OF INTEREST STATEMENT

No conflicts of interest declared.

DATA AVAILABILITY STATEMENT

Research data are not shared as data sharing has not received ethics approval.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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