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Cultural and social factors and quality of life of Māori in advanced age. Te puawaitanga o ngā tapuwae kia ora tonu – Life and living in advanced age: a cohort study in New Zealand (LiLACS NZ)

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Abstract

Aim To establish 1) the socioeconomic and cultural profile and 2) correlates of quality of life (QOL) of Māori in advanced age

Method A cross sectional survey of a population based cohort of Māori aged 80–90 years, participants in LiLACS NZ, in the Rotorua and Bay of Plenty region of New Zealand. Socioeconomic and cultural engagement characteristics were established by personal interview and QOL was assessed by the SF-12.

Results In total 421 (56%) participated and 267 (63%) completed the comprehensive interview. Māori lived with high deprivation areas and had received a poor education in the public system. Home ownership was high (81%), 64% had more than 3 children still living and social support was present for practical tasks and emotional support in 82%. A need for more practical help was reported by 21%. Fifty-two percent of the participants used te reo Māori me ngā tikanga (Māori language and culture) daily. One in five had experienced discrimination and one in five reported colonisation affecting their life today.

Greater frequency of visits to mārae/sacred gathering places was associated with higher physical health-related QOL. Unmet need for practical help was associated with lower physical health-related QOL. Lower mental health-related QOL was associated with having experienced discrimination.

Conclusion Greater language and cultural engagement is associated with higher QOL for older Māori and unmet social needs and discrimination are associated with lower QOL.

Glossary

- **Māori** (normal, usual, natural, common)
- **Whānau** (an extended family)
- **Hapū** (groups of extended families or sub-tribe)
- **Iwi** (tribe)
- **Te Ao Māori** (Māori society)
- **Pou** (the post supporting the ridge pole in the back wall of a Meeting House, expert, teacher, dependable people, reliable people)
- **Te reo Māori me ngā tikinga** (Māori language and culture are inseparable entities, te reo Māori is used to translate the English word, ‘culture in this article’)

- **Tāngata whenua** (earliest or indigenous peoples of Aotearoa New Zealand)
- **Mauri** (life principle, special nature, a material symbol of a life principle, source of emotions)
- **Whakawhānaungatanga** (recitation of genealogies or stories about the world, ways by which people come into relationship with the world, with people, and with life)
- **Marae** (sacred gathering place of kin relations)
- **Te Rōpū Kaitiaki o Ngā Tikanga Māori** (the protectors of principles of conduct in Māori research)
- **Kaupapa Māori** (Māori ideology - a philosophical doctrine, incorporating the knowledge, skills, attitudes and values of Māori society, lived experience, a Māori approach to research)
- **Te Puawaitanga o Ngā Tapuwae Kia Ora Tonu** (flourishing life and living)
- **Whakapapa** (to recite in proper order e.g. genealogies, legends, months)
- **Tikanga** (correct procedures, customs, habits, lores, methods, manners, rules, ways, codes, meanings, plans, practices, conventions)
- **Mātauranga Māori** (Māori education, knowledge, wisdom, understanding, skill, knowledge)
- **Tūrangawaewae** (domicile, land, place where people belong through kinship and whakapapa)
- **Tihei (wā) mauriora! tihei mauriora** (the sneeze of life and, the call to claim the right to speak)

In theory, Antonio Gramsci makes a distinction between civil and political society. In any civil society,[1] certain cultural forms predominate over others, just as certain ideas are more influential than others in the form of cultural leadership which Gramsci has identified as hegemony.[1]

For Māori, tāngata whenua (indigenous peoples of Aotearoa New Zealand), te reo Māori me ngā tikanga (Māori language and culture, hereafter referred to as te reo Māori), Māori ways of knowing, wisdom, and traditions which form our culture have been transferred across generations and, through the process of cultural leadership or hegemony some have changed. Nevertheless, the indigenous people hold on to the values that Māori people are intimately connected and are part of mauri (living force) that exists within the physical, social, and spiritual worlds in which Māori people live and are a part.[2]

How the quality of mauri is lived by Māori from the context of health interviews is an important aspect of this paper to establish 1) the socioeconomic and cultural profile and 2) correlates of quality of life (QOL) of Māori of advanced age.

An increasing number of Māori people are living longer. Statistics New Zealand reported that in 2012 approximately 5,000 Māori were aged 80 years and over, considered advanced age, a 50% increase in number from 2002.[3] There are few Māori in statutory surveys and even fewer older Māori, justifying a study specifically about this age group.

Since Māori people's first contact with non-Māori, the continuing process of colonisation and government policies have adversely influenced Māori people's health, socioeconomic and cultural profile, and wellbeing.

Health and socioeconomic inequalities throughout the life span are structural and are perpetuated across generations.[4,5] Yet, there is evidence that whānau (extended family), hapū (extended families), iwi (tribe) thrive in Te Ao Māori (Māori society)[6] With some Māori ageing successfully, then, questions arise around health, socioeconomic and cultural profile; how quality of life will be experienced, and how

Māori society will respond within prevailing English-speaking, New Zealand Pākehā (European) society.

Māori in advanced age have an important role in Māori whānau, hapū, and iwi and, the wider community. Often with age, their roles and responsibilities increase. In consequence of their whakapapa, role, responsibilities, and knowledge of te reo Māori some Māori in advanced age are the pou, that is the main support of their whānau and hapū.

Māori in advanced age are experienced, knowledgeable, and wise; they are influenced by the history, the diverse conditions in which they were raised, tribal aspirations, and enlistment in World War 2 to prove that Māori are citizens of New Zealand at a time of policies that marginalised and discriminated against the indigenous population.

Māori aged 80 years and over have lived their lives under policies which have discriminated against them, for example, being punished for speaking te reo Māori in school, and forced to assimilate to the ways of living of the dominant New Zealand Pākehā (European) society.[7,8]

Te reo Māori-determined factors, though, are important to health,[9] and socioeconomic and cultural profile, but exactly how and to what extent is not known. What is known, however, is that there are an increasing number of Māori people living longer.

Te puawaitanga o ngā tapuwae kia ora tonu – Life and living in advanced age: a cohort study in New Zealand (LiLACS NZ) has engaged Māori and non-Māori in a longitudinal study.[10,11]

This paper focusses on the socioeconomic and cultural profile of Māori participants aged 80 to 90 years in 2010 (baseline), and how these characteristics are related to quality of life (QOL).

Methods

LiLACS NZ recruited over 421 Māori (45% of total LiLACS NZ sample) in advanced age (aged 80–90 years in 2010).[12,13] and 516 non-Māori participants (data reported elsewhere). Enrolment of the participants used both the New Zealand Māori and General electoral rolls, local health services data bases, whakawhānaungatanga (kin relations) and active promotion of the study in all areas of the community, including marae (sacred gathering place of kin relations), and residential care facilities.

Ethical approval for this study was given by the Northern X Regional Ethics Committee NXT09/09/88. A Kaupapa Māori research methodology has been developed for the study with the creation of Te Rōpū Kaitiaki o Ngā Tikanga Māori (the protectors of principles of conduct in Māori research), the group of elders who help to guide the study, recruit Māori organisations and participants, assist in translation of the LiLACS NZ documents from English language to te reo Māori, conduct ceremonial ritual, and oversee the ongoing processes. The methodology for the study was rehearsed in a feasibility study. [12, 13]

Detailed recruitment and assessment information appears elsewhere[10,11] and is briefly summarised here. The Bay of Plenty and Rotorua regions were chosen after careful consideration of availability of older Māori, the need for a balance of rural and urban settings and the presence of strength in te reo Māori. Eligible participants were born between 1 January 1920 and 31 December 1930 and resident in the Bay of Plenty and Lakes District Health Board areas, excluding the Taupo region.

Participants were invited by a person or organisation known to them, and informed consent was obtained for each component of the study: interview, physical assessment, blood sample and access to the medical record. A family member or caregiver was invited to be present and act as a proxy if the participant was unable to answer themselves.

A comprehensive quantitative questionnaire covered health, social, cultural, environmental and economic status. The interview schedule was translated from English language to te reo Māori by a

New Zealand-registered translator and revised by Te Rōpū Kaitiaki to better suit the language and lived experience of the age group.

In this paper sociodemographic information, family contact and support, language and cultural practices are reported along with the main outcomes of functional status and QOL. Demographic information: age, gender, marital status, housing, living arrangement, main family occupation, size of family, number of children, was recorded using standardised questions.

The deprivation index (NZDep)[14] was derived from the address given at the time of the interview. Income was assessed by self-reported receipt of the NZ Superannuation (pension) and any other income. Religious affiliation was assessed by self-report and the importance of faith to wellbeing was asked with a 5 level Likert response. Social support utilised the approach from the MacArthur studies [15] (Appendix 1 – questionnaire items: social):

Questions about cultural practices were generated from discussion groups with older Māori [13] and asked about importance of hapu, iwi and tikanga to wellbeing and the effect of colonisation (Appendix cultural questions).

Further questions about cultural identity were drawn from the Te Hoa Nuku Roa scale about contact with marae, fluency and use of te reo Māori (Appendix 1).[16]

The experience of discrimination was asked using the New Zealand Health Survey[17] questions about discrimination: whether they had been a victim of physical or verbal abuse because of ethnicity less than 12 months ago, greater than 12 months ago: whether they had been treated unfairly by a health professional on the basis of ethnicity within the last 12 months and greater than 12 months ago and whether they had been treated unfairly by a services agency for renting or buying housing.

A composite code for 'ever' been discriminated against was constructed if any of these were 'yes'. Also asked was, *Have you ever been spoken down to as a Māori?*

Occupation was by self-report of the main lifetime occupation of the participant and their spouse and coded using the "New Zealand Standard Classification of Occupations 1999" from Statistics New Zealand. The highest occupational category of the participant or their spouse was used in analyses.

The Nottingham Extended Activities of Daily Living (NEADL) functional assessment tool[18] established the functional status of participants and the SF-12 quality of life (QOL).[19] The best instrument to assess quality of life for indigenous people is not known as most measures have been developed from a western dominant cultural perspective.

The SF-36[20] and the SF-12[19] are commonly used as health-related QOL measures in many cultures and in New Zealand. However the exact utility of these measures for Māori is not known, despite translation of the SF-12 to te reo Māori. The scale presents two summary scores; mental health-related QOL and physical health-related QOL. The maximum score from this instrument is 100 and any score lower that is below 40 indicates poor health and above 60 reasonable and better health.[21]

Descriptive statistics were used to show the characteristics of men and women. Chi-squared test (χ^2) was used to compare men and women.

The association between socioeconomic and cultural factors and QOL was assessed by univariate analyses (not shown) using analysis of variance, t-tests and nonparametric statistics depending on the distribution of the data. Factors significant at the 0.2 level (in the univariate models) were entered into a multiple regression model and examined to assess independence and strength of association. The model was adjusted for: gender, age, functional status and meshblock decile using the New Zealand Deprivation index (NZ Dep) related to participant address.[14] Models were adjusted for best fit. Final models are presented for outcomes of physical and mental health related to QOL. All analyses were carried out using SAS v9.2 software.[22]

Results

A total of 421 of 766 Māori eligible for recruitment agreed to be enrolled, 56% recruitment rate. All participants answered a core group of questions (shaded in the tables) and 267 (63%) completed the comprehensive interview.

Those who opted for the short interview (150, 36%) were more likely to be in residential care and/or to be incapable of answering the interview questions for

themselves (p <0.0001 for both). Four participants did not complete the study on enrolment and so 417 are included in the analysis. 91 (14%) completed the interview in te reo Māori and English and 568 (86%) in English alone. The average number of interviews to complete the comprehensive study was 1.2 (between 1 and 4, SD 0.5) and the median total interview time was 2.5 hours (IQR 2-3hours).

The average age of participants was 82.7 years and 42% were men. Table 1 provides an overview of the characteristics of the Māori cohort. More women were widowed than men (42% of men, 74% of women, χ^2=41.5 df=2 p<0.001). Just over 40% of the participants were living alone, 27% of men and 51% of women, (χ^2=17.6, df=2, p<<0.001), 70 (26%) lived with a spouse and 87 (33%) lived with others. Sixteen (6%) had no children living at the time of the survey, 82 (32%) had 1-3 living children and 160 (62%) had 4–6 surviving children, with on average 16 (SD 23) mokopuna (grandchildren). The majority 212 (81%) reported owning their home outright, 2% had a mortgage and 17% (58) lived in rented accommodation. Almost all 240 (94%) reported the NZ superannuation was their main source of income and for almost half (47%) it was their only source of income.

Table 1. Sociodemographic characteristics of Māori participants in LiLACS NZ

	Men, n (%)	Women, n (%)	Total
Total number recruited	176 (42%)	241 (58%)	417 (100%)
Completed the full questionnaire	102	155	255
Completed the partial questionnaire	75	89	164
Age, mean (SD)	82.5 (2.8)	82.8 (2.7)	82.7 (2.8)
Country of birth			
Born in New Zealand	173 (99)	239 (99)	412 (99)
Born overseas	2 (1)	2 (1)	4 (1)
Childhood family size, mean (SD) total family size	7.5 (3.9)	7.6 (4.3)	7.5 (4.1)
Sisters	3 (2.0)	3.2 (2.4)	3.1 (2.3)
Brothers	3.5 (2.7)	3.4 (2.4)	3.4 (2.5)
Sisters still living	1.3 (1.4)	1.4 (1.5)	1.3 (1.5)
Brothers still living	0.9 (1.1)	1.1 (1.4)	1 (1.3)
Marital status			
Widowed	72 (42)	176 (74)	257 (50)
Married/ partnered	80 (47)	50 (21)**	120 (32)
Never married/separated/divorced	10 (11)	13 (5)	49 (9.6)
Number of living children			
None	8 (8)	8 (5%)	16 (6)
1–3	31 (30)	51 (33%)	82 (32)
4–6	65 (63)	95 (62%)	160 (62)
Grandchildren, mean (SD)	16 (21.8)	16 (23.5)	16 (22.8)
Living arrangement			
Alone	29 (27)	81 (51)**	110 (41)
With spouse	40 (37)	30 (19)	70 (26)
With other	38 (36)	49 (31)	87 (33)
If with other person, average number in house	3.7 (2.0)	3 (1.4)	3.3 (1.7)
Type of house			
Private house	87 (84)	125 (80)	212 (81)
Unit/apartment	8 (8)	15 (10)	23 (9)
Other	8 (8)	16 (10)	24 (9)
Residential care	1 (1)	1 (1)	2 (1)
Home ownership			
Owns own home outright	118 (80)	157 (82)	275 (81)
Owns own home mortgage	3 (2)	3 (2)	6 (2)
Rent	27 (18)	31 (16)	58 (17)
Deprivation, NZDep score			

	Men, n (%)	Women, n (%)	Total
Total number recruited	176 (42%)	241 (58%)	417 (100%)
1–3 Low	5 (3)	18 (8)	23 (6)
4–7 Medium	71 (40)	79 (33)	150 (36)
8–10 High	100 (57)	144 (60)	244 (59)
Income			
Pension only	49 (48)	71 (46)	120 (47)
Other income as well as pension	53 (52)	82 (54)	135 (53)
Main occupation*			
Professionals	48 (27)	63 (26)	111 (27)
Technical	15 (9)	30 (12)	45 (11)
Non-technical, non-professional	113 (64)	148 (61)	261 (63)
Education			
Tertiary	10 (6)	27 (11)	37 (9)
Trade	5 (3)	12 (5)	17 (4)
Any secondary	99 (59)	138 (59)	237 (59)
Primary only or none	56 (33)	59 (25)	115 (28)
Religion			
Anglican	52 (53)	67 (44)	119 (47)
Catholic	18 (18)	36 (24)	54 (22)
Presbyterian	6 (6)	11 (7)	17 (7)
Methodist	2 (2)	3 (2)	5 (2)
Rātana/Paimārie	7 (7)	10 (7)	17 (7)
Ringatū	8 (8)	5 (3)	13 (5)
Destiny/ Church of the Latter Day Saints of Jesus Christ (Mormon)	2 (2)	3 (2)	5 (2)
Other	4 (4)	17 (11)	21 (8)
How important is faith to your wellbeing?			
Not at all	7 (7)	5 (3)	12 (5)
A little	10 (10)	8 (5)	18 (7)
Moderately	18 (17)	17 (11)	35 (13)
Very	44 (42)	71 (45)	115 (44)
Extremely	26 (25)	57 (36)	83 (32)
Do you have anyone to help with daily tasks?			
Yes	78 (77)	131 (85)	209 (82)
No	7 (7)	10 (6)	17 (7)
I don't need help	16 (16)	14 (9)	30 (12)
Unmet need for practical help			
Yes	24 (24)	29 (19)	53 (21)
Anyone to provide emotional support?			
Yes	82 (81)	126 (82)	208 (82)
No	5 (5)	9 (6)	14 (5)
I don't need emotional support	14 (14)	19 (12)	33 (13)
Unmet need for emotional support	17 (17)	23 (15)	40 (16)

Shading shows core questions answered by all participants (full and partial). Other questions answered by those that completed full questionnaire only. There were no gender differences in responses unless stated. ** p <0.001; *The highest of spouse and participant, Professional = Legislators, Administrators, Professionals, Agricultural and Fishery Workers (requiring tertiary qualification); technical: Technicians, Associate Professionals and Trades Workers (technical training); Clerks, Service Workers, Sales Workers, Plant/Machine Operators, Assemblers, Elementary Workers (on the job training). NEADL Nottingham Extended Activity of Daily Living Scale, higher score indicates better function.

The majority of the sample lived in areas in the highest deprivation tertiles, and half received income in addition to the pension (135 or 53%). Non-technical occupations were the most common and n=54 (13%) had qualifications beyond secondary school. Almost all reported a religion and the importance of faith to wellbeing was reported to be very/extremely important by n=145 (76%).

The majority of participants reported someone being available for practical and emotional support however up to 20% could have used more practical or emotional

help (Table 1). Those who lived alone were no more or less likely to have practical or emotional support or to report unmet need in these areas than those who lived with spouse or others.

Table 2 shows there was a similar level of fluency in te reo Māori among both Māori men and women. The majority of the participants had a moderate to in-depth understanding of te reo Māori.

Table 2. Cultural practices of Māori in advanced age (LiLACS NZ)

	Men, n (%)	Women, n (%)	Total
Total number recruited	176 (42)	241 (58)	417
Completed the full questionnaire	102	155	257
Completed the partial questionnaire	75	89	164
Do you live in the same area as your hapū?			
No	82 (47)	131 (55)	213 (51)
Yes	91 (52)	108 (45)	199 (48)
Have you ever been to a marae?			
No	3 (3)	3 (2)	6 (2)
Yes	104 (97)	157 (98)	261 (98)
Over the last 12 months, how often?			
<Yearly	17 (16)	38 (24)	55 (21)
Once	17 (16)	18 (11)	35 (13)
A few times	15 (14)	23 (14)	38 (14)
Several times, more than monthly	58 (54)	81 (51)	139 (52)
Who are your contacts?			
Mainly Māori	51 (48)	74 (47)	125 (47)
Some Māori	37 (35)	46 (29)	83 (31)
Few/no Māori	19 (18)	38 (24)	57 (22)
Can you have an everyday conversation in Māori?			
Yes	58 (54)	80 (50)	138 (52)
No	49 (46)	80 (50)	129 (48)
Where do you speak Māori?			
Don't speak it	3 (5)	3 (3)	6 (4)
On the marae	48 (84)	69 (80)	117 (82)
In my community	45 (79)	66 (76)	111 (77)
At home	42 (74)	61 (71)	103 (72)
In meetings or at work	33 (63)	37 (47)	70 (54)
Other	5 (12)	10 (15)	15 (14)
How well are you able to understand your tikanga?			
Not at all	21 (12)	22 (10)	43 (11)
A little	24 (14)	36 (16)	60 (15)
Moderately	39 (23)	53 (24)	92 (23)
Completely	87 (51)	114 (51)	201 (51)
How much has colonisation affected the way you live your life today?			
Not at all	64 (67)	93 (65)	157 (66)
A little	11 (11)	13 (9)	24 (10)
Moderately	9 (9)	22 (15)	31 (13)
Very	7 (7)	12 (8)	19 (8)
Extremely	5 (5)	3 (2)	8 (3)
Importance of hapū to your wellbeing			
Not at all	20 (12)	35 (15)	55 (14)
A little	23 (14)	26 (12)	49 (12)
Moderately	30 (18)	38 (17)	68 (17)
Very	68 (40)	84 (37)	152 (38)
Extremely	29 (17)	43 (19)	72 (18)
Importance of language and culture to wellbeing			
Not at all/ moderately	32 (30)	40 (25)	72 (27)
Very	50 (47)	78 (49)	128 (48)
Extremely	24 (23)	41 (26)	65 (25)

	Men, n (%)	Women, n (%)	Total
Total number recruited	176 (42)	241 (58)	417
Importance of family /whānau to wellbeing			
Not at all/moderately	9 (9)	4 (3)	13 (5)
Very	62 (60)	85 (55)	147 (57)
Extremely	33 (32)	66 (43)**	99 (38)
Victim of ethnic abuse verbal more than 12 months ago? Yes	8 (8)	13 (8)	21 (8)
Victim of ethnic abuse physical more than 12months ago? Yes	6 (6)	4 (3)	10 (4)
Treated unfairly by health professional more than 12 months ago? Yes	6 (6)	4 (3)	10 (4)
Discriminated against ever? – combined	23 (23)	34 (22)	57 (22)
Spoken down to as a Māori ever?	8 (8)	21 (14)	29 (12)
Do you have a specific role in your family/whānau/hapū? Yes	77 (78)	125 (81)	202 (80)
How satisfied are you with your role(s) in your family/whānau/hapū?			
Not at all/ moderately	14 (18)	13 (10)	27 (13)
Very	51 (65)	77 (61)	128 (63)
Extremely	13 (17)	36 (29)	49 (24)
Specific role in local community? Yes	39 (39)	53 (34)	92 (36)
How satisfied are you with your role(s) in your community?			
Not at all/ moderately	9 (22)	9 (16)	18 (18)
Very	29 (71)	36 (63)	65 (66)
Extremely	3 (7)	12 (21)	15 (15)
Specific role in your tribal/marae group?			
Yes	35 (38)	47 (32)	82 (34)
How satisfied are you with the role(s) in your tribal/marae activities?			
Not at all/ moderately	10 (28)	13 (24)	23 (26)
Very	19 (53)	29 (54)	48 (53)
Extremely	7 (19)	12 (22)	19 (21)
Specific role in wider Māori organisation? Yes	20 (22)	42 (28)	62 (26)
How satisfied are you with the role(s) in other Māori organisations in wider society?			
Not at all/ moderately	11 (42)	16 (35)	27 (38)
Very	12 (46)	21 (46)	33 (46)
Extremely	3 (12)	9 (20)	12 (17)
Functional status, m (SD), NEADL score	17.0 (4.3)	17.4 (4.8)	17.2 (4.6)
Physical health-related quality of life, m (SD), SF-12 score	44.9 (10.8)	42.4 (11.5)	43.4 (11.3)
Mental health-related quality of life, m (SD), SF-12 score	53 (8.8)	53.6 (8.7)	53.4 (8.7)

Shading shows partial questionnaire questions answered by all participants. Other questions answered by those that completed full questionnaire only.

m = mean, SD = standard deviation. All factors tested for gender effect and ns unless specified.

** Significance >0.001.

Te reo Māori me ngā tikanga and contact with whānau, hapū, and activities on marae—Almost all, 98% of Māori participants reported that they had been to the marae in the past 12 months and over half had been several times or more than monthly. Over half of social contacts were predominately with Māori and Māori language and culture was mostly rated as very or extremely important to wellbeing.

Women were more likely to rate whanāu as extremely important to their wellbeing (44%) compared to the men (32%, χ=10.1, df=1, p<0.001). There were no other gender differences in the cultural questions.

Those who lived in the area of their hapū were more likely to have contacts *mainly* with Māori (68%) compared with those that didn't (33% contact *mainly* with Māori, χ^2=53, df=3, p<0.001) and to be fluent in te reo Māori; (65% fluent who lived in area of hapū vs 35% fluent not living in area of hapū, χ^2=44.96 df=1, p<0.001).

A low number of participants reported discrimination; 4 and 3 participants reported being the victim of ethnic abuse verbally or physically respectively and 5 reported being treated unfairly by a health professional in the last 12 months. Reports of longer term abuse are shown in Table 2.

To see whether one form of discrimination was associated with other forms of discrimination all discrimination items were examined in a correlation matrix. Verbal attack occurring more than 12 months ago and physical attack occurring more than 12 months ago were significantly correlated (Spearman's correlation $r=0.41$, $p<0.001$) as were physical and verbal attack less than 12 m ago ($r=0.23$, $p<0.001$). A verbal attack in the last 12 months also correlated with being treated unfairly by a services agency more than 12 months ago ($r=0.41$, $p<0.001$).

Overall 57 (14%) reported ever experiencing discrimination. Comparing this group with those reporting never having experienced discrimination showed that there were no differences between the 'contacts with Māori', 'fluency of Te Reo Māori' or 'understanding of tikanga' or whether they 'lived in their Hapū area'.

Tribal diversity—Because of the diversity of Māori realities,[23] this research recognises the participants as upholding specific identities within a broader cultural setting of being Māori. Tribal affiliation was reported by the participants and there is diversity among the cohort.

The major tribes identified reflected the area of study: Ngāi Te Rangi (Tauranga), Ngāti Awa (Whakatāne), Ngāi Tuhoe (Waimana), Whakatōhea (Opotiki), Ngāti Tai (Tōrere), and Te Arawa (Rotorua). These were the main tribal affiliations but there were kin relations to other tribes across the country due to whakapapa (shared ancestry). Other tribal affiliations are shown in Appendix 2. Overall 52% were fluent in te reo Māori and 28% lived in a rural area.

Quality of life—Overall mental health-related QOL was moderately high with mean scores above 50 (Table 2). Physical health-related QOL was moderately low with a mean score of 43.3 (SD 11.3) and physical and mental health-related QOL scores did not differ significantly. Functional status was high with an average mean score of 17.2 (SD 4.6) of a possible top score of 22.

Table 3 shows the Multiple regression model examining all variables in Tables 1 and 2 and retaining those that were significant ($p<0.2$) in the univariate analyses. 'Ever' experiencing discrimination was independently associated with lower mental health-related quality of life for Māori in advanced age. Several other factors contributed to the model but were not strongly nor independently associated. Family size, frequency of visits to marae, age, gender, and education and functional status (NEADL score) were included in the model of best fit.

Better physical health-related quality of life was strongly and independently associated with both a measure of cultural practices; higher frequency of marae attendance, and a social support factor; unmet need for practical help. A report of colonisation affecting a participant's life at all showed a trend towards being associated with lower QOL. Higher functional status scores were strongly associated with higher physical health related QOL ($p<0.001$)

Table 3. Regression models identifying significant independent associations with mental and physical health-related quality of life (QOL)

Mental health-related QOL, n=241	Mean*	Adjusted**	F	P
Spent time on or visited marae				
<Yearly	55.2	52.2 (1.8)	2.47	0.09
Once	50.0	49.0 (2.0)		
A few times to >monthly	53.5	52.6 (1.5)		
Number of children				
None	53.9	50.8 (2.5)	1.54	0.22
1–3	55.4	52.5 (1.6)		
4–6	52.3	50.4 (1.4)		
Any discrimination[#]				
Yes	50.9	49.6 (1.8)	5.86	0.02
No	54.1	52.8 (1.4)		
Physical health-related QOL n=222				
Spent time on or visited marae				
<Yearly	39.8	37.6 (1.8)	3.94	0.02
Once	42.1	42.3 (1.9)		
A few times to >monthly	44.8	42.6 (1.0)		
How much has colonisation affected the way you live your life today?				
Not at all	44.5	42.2 (1.3)	3.59	0.06
A little to extremely	41.2	39.4 (1.4)		
Any discrimination				
Yes	45.4	42.1 (1.6)	2.61	0.11
No	42.9	39.5 (1.1)		
Unmet need: practical help				
Yes	38.0	38.2 (1.6)	8.91	0.003
No	44.8	43.4 (1.3)		
Unmet need: emotional support				
Yes	38.7	39.6 (1.8)	1.61	0.21
No	44.3	42.0 (1.2)		
Functional status (NEADL)			46.25	<0.0001

QOL = quality of life. Analysis was generalised linear regression model with all variables in the Table entered and controlling for NZDep, age, gender, education level and NEADL Nottingham Extended Activities of Daily Living. Only those with near statistically or highly statistically significant associations are shown in the table,

*Observed mean score, ** mean score adjusted for all other variables (standard deviation)

[#] Discrimination small number of respondents.

Discussion

LiLACS NZ is a population-based cohort study and is reported in this paper from a predominantly Māori world view. The descriptive data is valuable as little was known about the population group.

Generally older Māori health data has been presented as just one group, those aged 65 years or more.[24] The main sociocultural correlates of QOL of Māori aged 80-90 years in the Bay of Plenty and Rotorua region include: frequency of marae visits; experience of discrimination; a measure of unmet need; and functional ability. This is quantitative evidence of the importance of te reo Māori me nga tikanga to QOL and mirrors qualitative studies reporting the sustaining nature of cultural activities for Māori wellbeing.[6]

The LiLACS NZ findings support Waldon's work[9] where he found a significant association between cultural activities and wellbeing in Iwi from the Taranaki and Whanganui regions.

Mental health-related QOL is high and overall level of function and independence is good. Physical health related QOL is lower than the average population but is good when considering the age of the participants and similar to other studies of very old people.[25] Studies of indigenous people are rare and there are none to compare with this study.

The majority of the Māori participants are engaged with other Māori, have high levels of knowledge of te reo Māori and visit marae several times a year. These older Māori live in areas of high deprivation, similar to Māori of all ages.[26] The regression shows that it is the te reo Māori me nga tikanga that is significantly associated with physical health related QOL, rather than socioeconomic deprivation (NZDep not significant).

Frequency of visits to the tribal marae can be considered as proxy for engagement in the cultural activities through the marae. The marae is a sacred place of meeting where many different tribal and whānau functions are undertaken, but most importantly the marae is a place of belonging and connection through shared ancestry and tribal relationships.

Frequent participation on their marae supports the participants' upbringing, their knowledge of tikanga Māori and ability to speak te reo Māori on a daily basis. The Māori participants, however, were not isolated from non-Māori and they had contact with them as well in their community.

The perceived impact of colonisation also contributes to the physical health related QOL meaning this is a relevant concept for Māori in advanced age. Functional status is independently related to QOL as in other groups of older people,[27] emphasising the contribution of physical function to wellbeing.

The Māori participants in this study are a significant repository of te reo Māori and mātauranga Māori (Māori knowledge) as found by Murchie amongst older Māori women in a survey conducted in the 1980s.[28] The level of te reo Māori fluency among the LiLACS NZ participants was high with 52% using te reo Māori for everyday conversation, compared with on average 27% of Māori adults in New Zealand speaking the language at least fairly well.[29]

Discrimination—There were a small number of Māori participants that reported discrimination directly related to their ethnicity. This discrimination was harmful in that it was independently related to lower mental health-related QOL. This was the only strong association with mental health-related QOL, and no other economic or social variables were independently related to mental wellbeing. It is very likely this age group experienced significant discrimination during the 20th and 21st century when discriminatory policies were and are in place.[8]

Institutionalised racism is acknowledged and exists within our health and disability system[30–32] and is a factor that contributes to health inequalities and poorer health outcomes.[5,31] This matter needs to be addressed by those in senior decision-making positions and the education and ongoing training and development of all health and related occupations revisited.[33]

Ethnic density is hypothesised to protect against discrimination and promote health.[34] The current study did not find an association between contacts with Māori, living in

the area of their hapū and reports of discrimination suggesting that in this sample ethnic density did not protect them from the adverse effects of discrimination.

The New Zealand General Health Survey suggests 1 in 10 New Zealanders felt discrimination in the past 12 months and 3% of those over 65 years reported discrimination.[35] It is possible that there may be other ways to word questions to access information about the impact of discrimination that may be more meaningful for older Māori.[36]

Social support and unmet need—In this study, many more Māori women lived alone compared with men, who are much more likely to be married. Marriage and kinship provides protection from mortality,[37, 38] thus Māori women may be at risk.

Living arrangement was not independently related to QOL supporting research suggesting that close social ties and collective support may be potentially available within groups of indigenous peoples' whether cohabiting or not.[39,40] It is possible, therefore, that living alone is not as arduous for Māori as it is for other groups,[38] and LiLACS NZ follow up will examine this. In the regression family size trended towards being important to mental wellbeing, however the relationship was non-linear with modest numbers of surviving children being associated with higher mental wellbeing.

Social support is confirmed as being key to wellbeing[41] by our finding that the reporting of unmet need in practical support and to some degree in emotional support is related to lower health-related QOL. Unmet need is reasonably easy to ask about and has been identified and examined previously for Māori.[42]

Identifying this unmet need could enable whānau, support persons, health professionals and regional health bodies to potentially benefit QOL. QOL maintenance and on-going development of old and new social contacts are part of the matrix of maintaining wellness and quality of life.[43]

Strengths and limitations—This study provides the first detailed knowledge of how cultural social, economic and health determinants interact within a large number of Māori in advanced age drawn from the population base. The support of Te Rōpu Kaitiaki in engagement, translation, and interpretation of the study reinforces its validity.

The number of iwi participating in this project was large with at least a few people from all over the North, South and Chatham Islands. A limitation is the participation of 56% of those eligible and, of them, 60% who completed the full interview. This is to be expected in conducting research with people in advanced age,[44] and is similar success to other international studies.[25] It is also likely that mistrust of research,[45] researchers, and the university, affected participation rate. The study results also will be specific to the region from which the participants were drawn.

Analyses reported here are cross sectional and as such no causality can be implied. Unmeasured confounding factors (e.g. health status) may also be important as the mix of factors associated with QOL is large. Ongoing research will continue to examine these complex relationships over time.

The use of the SF-12 can also be questioned for Māori as health has a broader perspective for Māori.[46] Thus the associations identified here are related to the

western concept of health and it is possible that different cultural and social factors would be related to mātauranga Māori. The standard questionnaires were not back translated from te reo Māori to English but our local interviewers are fluent and able to converse in te reo with our participants. Indigenous specific measures need to be developed by indigenous peoples.

Summary—LILACS NZ confirms the independent significance of te reo Māori me ngā tikanga to wellbeing and quality of life for Māori in their eighties. Social support, particularly the identification of the need for more available help is also important to quality of life and experience of discrimination is associated with lower mental wellbeing.

Competing interests: Nil.

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Appendix 1. Interview questions used in the LiLACS NZ interviews

Social questions:

- When you need extra help, can you count on anyone to help with daily tasks like grocery shopping, cooking, house cleaning, telephoning, giving you a ride?
- In the last year who has been the most helpful with these daily tasks?
- Could you have used more help with daily tasks than you received? (unmet need)
- Can you count on anyone to provide you with emotional support?
- In the last year who has been most helpful in providing you with emotional support?
- Could you have used more emotional support than you received? (unmet need)

Cultural questions generated by focus groups with older Māori[13] (see article's ref. list)

- Do you live in the same area as your hapū /extended family / where you come from?
- How important is your hapū to your wellbeing?
- How important is your iwi to your wellbeing?
- How well do you understand your tikanga?
- How much has colonisation affected the way you live your life today?
- Do you have a specific role in a) your family/whānau/hapū, b) your local community/neighbourhood, c) your tribal/marae activities and d) other Māori organisations in wider society?
- How satisfied are you with the role(s)?

The importance of: hapū and iwi; te reo Māori; whānau and family to participant's wellbeing was asked with 5-level Likert responses

The concept of tikanga was not defined but assumed understood by participants as knowledge, values, beliefs and protocols in being Māori which may be used on a daily basis or when required.

Cultural questions drawn from the te hoa nuku roa scale[16]

- How often over the last 12 months have you been to a Marae?
- In general, would you say that your contacts are with: mainly Māori, some Māori few Māori, no Māori?
- Could you have a conversation about a lot of everyday things in Māori?
- Where do you speak Māori/other language? – response menus including; On the marae, in my community, at home, in meetings or at work, other.

Appendix 2. Tribal affiliations

Other tribal affiliations listed by participants included:

Ngāpuhi (13), Ngāti Whakaue (Te Arawa) (29), Ngāti Pikiao (Te Arawa) (15), Ngāti Rangiwewehi (Te Arawa) (6), Ngāti Kahungunu (13), Ngāti Pūkenga (5), Ngāiterangi (21), Ngāi Tai (10), Ngāti Pōrou (20), Ngāti Tūwharetoa or Ngāti Ranginui or Ngāti Manawa (19), Ngāti Awa (25), Te Tai Tokerau Region (22), Waikato Tainui (34), Taranaki Region (12), Tauranga Moana/Mātaatua Region (117),Te Arawa including: Ngāti Rangiteaorere (1), Ngāti Rangitihi (3), Tarāwhai(1), Tapuika (5), Uenuku-Kōpako (1), Waitaha (4), Ngāti Tahu (1), Te Arawa/Taupō Region (70), Te Tai Rāwhiti Region (25), Te Waipounamu/Wharekauri Region (11), Tūhoe (21), Tūhourangi (Te Arawa) (10), Whakatōhea (12), Te Whānau-ā-Apanui (22), Whanganui/Rangitīkei Region or Manawatū/Horowhenua/Te Whanganui-ā-Tara Region or Ngāi Tahu/Kāi Tahu (19).

(The numbers do not add to the overall total as many nominated more than one iwi)