Socioeconomic correlates of quality of life for non-Māori in advanced age: Te Puāwaitanga o Nga 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 socioeconomic and cultural profiles and correlates of quality of life (QoL) in non-Māori of advanced age.

Method: A cross sectional analysis of the baseline data of a cohort study of 516 non-Māori aged 85 years living in the Bay of Plenty and Rotorua areas of New Zealand. Socioeconomic and cultural characteristics were established by face-to-face interviews in 2010. Health-related QoL (HRQoL) was assessed with the SF-12.

Results: Of the 516 non-Māori participants enrolled in the study, 89% identified as New Zealand European, 10% other European, 1% were of Pacific, Asian or Middle Eastern ethnicity; 20% were born overseas and half of these identified as 'New Zealand European.' More men were married (59%) and more women lived alone (63%). While 89% owned their own home, 30% received only the New Zealand Superannuation as income and 22% reported that they had 'just enough to get along on'. More than 85% reported that they had sufficient practical and emotional support; 11% and 6% reported unmet need for practical and emotional support respectively. Multivariate analyses showed that those with unmet needs for practical and emotional support had lower mental HR QoL ($p<0.005$). Reporting that family were important to wellbeing was associated with higher mental HR QoL ($p=0.038$). Those that did not need practical help ($p=0.047$) and those that reported feeling comfortable with their money situation (0.0191) had higher physical HRQoL. High functional status was strongly associated with both high mental and high physical HR QoL ($p<0.001$).

Conclusion: Among our sample of non-Māori people of advanced age, those with unmet support needs reported low HRQoL. Functional status was most strongly associated with mental and physical HRQoL.

The demographic ageing of the New Zealand population is most marked for those in advanced age (85 years and over) as this population group will increase six-fold by 2050.[1] Older people contribute to society in many ways and valued contributions continue into advanced age.[2–7] Those in advanced age also utilise the highest per capita public expenditure mostly on health and disability support.[8] Knowing more about the health, cultural profile and social status of those in advanced age will help health planners, society, families and older people prepare for the projected increase in those of advanced age.

The life in years (quality of life), rather than years of life (quantity of life), may be particularly relevant for older people, thus quality of life (QoL) is the topic of this paper. Those in advanced age may have higher life satisfaction than the younger old[9] and certain factors including social support are more important to QoL for the very old than for younger age groups.[10] Economic resources,[11] cannot be ignored and there is a complex interaction between economic hardships and social supports.[12]

In New Zealand the material wellbeing of older people has been examined[13] and qualitative research has outlined contributions to QoL.[14,15] Stephens et al described associations between more and stronger age-related social networks and higher wellbeing[16] in those aged 55–70 than was found for younger cohorts. Other research explores the social context of ageing in New Zealand,[17,18] but there is a lack of specific information about the octogenarian population. Culture, beliefs and religion also influence successful ageing.[19] It is known that social relationships sustain wellbeing, prevent depression,[20] aid longevity,[21] and interconnect with economic wellbeing in complex ways. A better understanding of the current amount and type of social support for those in advanced age is needed.

Te Puāwaitanga o Nga Tapuwae Kia ora Tonu, Life and Living in Advanced Age: a Cohort Study in New Zealand, (LiLACS NZ) was funded to describe the health, social and cultural status and to identify predictors of successful advanced ageing of Māori and non-Māori. In acknowledgement of the disparity in longevity for Māori[22] and the need for equal explanatory power to establish predictors, two inception cohorts were recruited in 2010; Māori aged 80–90 years (a birth decade) and non-Māori aged 85 years (a single year birth cohort).

This paper presents the demographic, social and cultural characteristics and aims to identify correlates of health-related QOL (HRQoL) for the non-Māori cohort. A companion paper reports the Māori data.[23]

Methods

The detail of LiLACS NZ recruitment and assessment schedule has been described elsewhere.[24,25] Eligibility included living in the geographic boundaries of the Bay of Plenty District Health Board and Lakes District Health Board (excluding Taupo region) of the North Island of New Zealand, and being born in the calendar year of 1925. A comprehensive list of all persons in the age group was compiled from the New Zealand General Electoral Roll, primary health care databases, residential care lists and word of mouth. Participants were recruited by personal invitation from their general practitioner, a person known to them or by a letter from The University of Auckland. Those interested were visited or telephoned by a researcher and they or a family member gave written informed consent. Ethical approval for this study was given by the Northern X Regional Ethics Committee NXT09/09/88.

A comprehensive baseline assessment was undertaken to assess the health, social, economic, cultural and physical status of participants[25] and is briefly summarised here. In this paper socio-demographic information, family contact and support, and cultural practices are reported along with the main outcome of HRQoL.

Demographic information: age, gender, marital status, type of house, home ownership, education, living arrangement, main lifetime occupation of participant and partner, religion and income data were gathered using standardised questions. Self-perceived economic wellbeing was assessed with the question:

- Thinking of your money situation right now, would you say: I can't make ends meet, I have just enough to get along on, or I am comfortable?

Socioeconomic deprivation related to their residential address at the time of interview was achieved by the geocoded New Zealand Deprivation Index (NZDep).[26]

Ethnicity was self-identified using the 2001 NZ census question[27] and where several ethnicities were identified New Zealand European was prioritised over 'other European'. Where very small numbers were reported they were grouped for analysis.

Size of family, number of living children and number of grandchildren was recorded.

Social support was assessed using the approach from the MacArthur studies[28] with these questions with a yes or no response:

- When you need extra help, can you count on anyone to help with daily tasks like grocery shopping, cooking, house cleaning, telephoning, give 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?
- 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?

Questions about culture asked of all participants were based on a measure developed in New Zealand[29] and by Te RōpūKaitiaki o ngā tikanga Māori (Protectors of principles of conduct in Māori research in LiLACS NZ), a cultural guidance and governance group gathered together for LiLACS NZ:

- Do you live in the same area as your Hapū (Māori term for extended family)/extended family/where you come from?
- Have you ever been to a marae (sacred Māori meeting place) at all?
- How often in the last year 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 or another language?
- How important is your language and culture to your wellbeing?

Questions about life roles and the importance of aspects of life to wellbeing were asked:

- Roles within the whānau and family (Yes, No)
- Role within the community and neighbourhood (Yes, No)
- Satisfaction with those roles (extremely to not at all)
- The importance of family to well-being (extremely to not at all)
- Importance of faith to wellbeing (extremely to not at all)

All participants were asked about discrimination using standard questions from the 2006/2007 New Zealand Health Survey[30]

- Have you ever been the victim of an ethnically motivated attack in New Zealand? (verbal or physical; further ago or within 12 months)
- Have you ever been treated unfairly by a service agency (eg WINZ) because of your ethnicity in New Zealand?
- Have you ever been treated unfairly when renting or buying housing because of your ethnicity in New Zealand?
- Have you ever been treated unfairly by a health professional because of your ethnicity in New Zealand?

Discrimination questions were collapsed into 'ever' vs 'never experienced' discrimination.

HRQoL was assessed with the SF-12 Version 2® including the summary scores for physical and mental HRQoL.[31] Scores vary between 0 (worst health/QoL) and 100 (best health/QoL) with a mean score of 50. The Nottingham Extended Activities of Daily Living (NEADL) was used to assess functional status.[32] Scores range from 0 to 22 with higher being better.

The questionnaire was undertaken with the participant by trained lay and nurse interviewers using standardised techniques and took a minimum of two hours. For some participants two or more visits were required for full completion. Each completed questionnaire was quality checked by two different coordinators, and any queries referred back to the interviewer for rectification and contact with the participant if required.

Analyses. Descriptive statistics showed status of participants on demographic, social, economic and cultural variables. Generalised linear models or the Cochran-Mantel-Haenszel test were used to compare status by gender as appropriate.

Functional status was *a priori* selected as being known to be highly correlated with HRQoL, and HRQoL differed between genders. Gender and functional status (NEADL score) were considered confounding variables. Each variable in Tables 1, 2 and 3 was tested against mental HRQoL and physical HRQoL adjusting for gender and functional status in a 'brief model'. For those variables showing a significance of $p<0.1$ models were further adjusted for the early life socioeconomic status (SES) marker of highest education level, midlife marker of main family occupation ascertained by the higher occupational status of participant or lifetime partner, and current SES marker reflected by perceived economic wellbeing in a 'full model'. Adjusted means are presented for the models. Interactions between gender and marital status and gender and living arrangement were explored.

Results

Of all eligible non-Māori available in the study area, 59% (516 participants) agreed to participate. All completed a core set of questions (shown in Tables 1 & 2 with shading) and 404 completed the full questionnaire with additional questions expanding on the core set, one participant did not complete the questionnaire because of change of mind. Those completing the full questionnaire differed from those completing only the core. Firstly core questionnaire participants were more likely to be living in residential care 24/111 (22%) of core respondents were in residential care and 23/404 (3%) of those completing the full questionnaire were in residential care) ($p<0.001$). Secondly core questionnaire respondents were more likely to have the questionnaire completed by a proxy 17/111 (15%) of those completing the core questions were represented by a proxy and 16/404 (4%) of those completing the full questionnaire were represented by a proxy) ($p<0.0001$). Thirdly, core respondents were more likely to be dependent in personal care, toileting, getting in and out of bed, making a hot drink, doing shopping and using the phone ($p<0.001$ on each).

Socio-demographic and economic characteristics

Table 1 provides an overview of the socio-demographic and economic characteristics of the sample. About 80% were born in New Zealand and half of those born overseas identified as New Zealand European. Other countries of birth included: Australia (4), England (including northern Ireland, 58), Scotland (12), Ireland or Wales (3), Netherlands (7), Other Central or Western European countries (6), Indonesia (3), Sri Lanka, Japan, Fiji, Canada or Brazil (6). Self-identified ethnicity for non-Māori consists of those who identified as New Zealand European (89%), other European (10%), and 'other' being Pacific (3), Asian, Middle Eastern or South African (4).

More men were married (59% cf 24% of women, $p<0.001$) and more women were living alone (63% cf 32% of men, $p<0.001$) with 32 (15%) women living with others and 12 (6%) women living in residential aged care. Overall, 4% had never married and 5% had no children.

Most (89%) owned their own home and income from non-New Zealand Superannuation (NZS) sources included other superannuation (eg workplace schemes) 11%, other pensions 12%, investments 50%, with less than 5% receiving income from salary and wages, tribal land trusts or inheritance.

Table 2 shows social support, importance of faith, QoL and functional status. Religious affiliation was recorded with 68 (17%) reporting no religion (not in Table) and 13% reporting that faith was not at all important to their wellbeing. No non-Māori participated in Māori faith. 'Other' religions included Baptist (11), Christian (8), open Brethren (3), Salvation army (4), Seventh Day Adventist, Jehovah's Witness, Protestant and Pentecostal (2 each). Four did not answer the question about religion and one each reported religion as: all encompassing, belief in the creator, interdenominational, Liberal Christian, non-conformist, non-denominational, Spiritual Church, and Theosophical Society.

Social support was reported as present by most with 20% of men reporting that they

Table 1: Socio-demographic, economic and family makeup characteristics of non-Māori aged 85 years in LiLACS NZ.

		Men	Women	Total
All participants—core interview		237 (46%)	278 (54%)	515
Full interview completed		190 (47%)	214 (53%)	404
Age, mean (sd)		84.6 (0.5)	84.6 (0.5)	84.6 (0.5)
Country of birth, n (%)	Born in NZ	185 (78)	229 (82)	414 (80)
	Born Overseas	52 (22)	49 (18)	101 (20)
Ethnicity, n (%)	NZ European	213 (89)	251 (90)	462 (89)
	Other European	23 (10)	22 (8)	45 (10)
	Other (Pacific, Asian, Middle Eastern)	2 (1)	5 (2)	7 (1)
Childhood family size, mean (sd)	Total family size	4.6 (2.8)	4.3 (2.6)	4.4 (2.7)
	Sisters	1.7 (1.6)	1.6 (1.7)	1.7 (1.7)
	Brothers	1.8 (1.8)	1.7 (1.6)	1.8 (1.7)
	Sisters still living	0.8 (1.0)	0.6 (0.8)	0.7 (0.9)
	Brothers still living	0.6 (0.9)	0.5 (0.9)	0.6 (0.9)
Marital status, n (%)	Never married	10 (4)	8 (3)	18 (4)
	Widowed	73 (31)	184 (67)	257 (50)
	Divorced	14 (6)	17 (6)	31 (6)
	Married/ partnered	137 (59)	67 (24)	204 (40)*
Number living children, n (%)	None	11 (6)	9 (4)	20 (5)
	1–3	115 (61)	135 (63)	250 (62)
	4–6	62 (33)	69 (32)	131 (33)
Number grandchildren, mean (sd)		7 (6.3)	7.2 (5.3)	7.1 (5.8)
Living arrangement, n (%)	Alone	61 (32)	134 (63)	195 (48)*
	With spouse	106 (56)	48 (22)	154 (38)
	With other	23 (12)	32 (15)	55 (14)
	If with other average number in house, mean (sd)	2.4 (1.0)	2.9 (1.2)	2.7 (1.2)
Type of house, n (%)	Stand alone house	115 (61)	121 (57)	236 (59)
	Unit/apt	26 (14)	33 (15)	60 (15)
	Retirement village	35 (19)	39 (18)	74 (18)
	Residential care	9 (4)	15 (6)	23 (5)
	Other	5 (3)	6 (4)	11 (4)
Home ownership, n (%)	Owns own home outright	155 (89)	170 (90)	325 (89)
	Rental	20 (11)	20 (11)	40 (11)
Deprivation, NZDep area score, n (%)	1–4 Low	34 (14)	41 (15)	75 (15)
	5–7 Med	123 (52)	146 (53)	269 (52)
	8–10 High	80 (34)	91 (33)	171 (33)
Income, n (%)	NZ Superannuation (NZS) only	49 (26)	69 (32)	118 (30)
	Other income as well as NZS	137 (74)	144 (68)	281 (70)
Main family occupation§, n (%)	Professionals	93 (39)	107 (38)	200 (39)
	Technicians	38 (16)	49 (18)	87 (17)
	Clerks	106 (45)	122 (44)	228 (44)
Thinking for your money situation right now—(%)	Can't make ends meet	2 (1)	0	2 (.5)
	Just enough	38 (20)	49 (23)	87 (22)
	I am comfortable	149 (79)	163 (77)	312 (78)
Education, n (%)	Tertiary	38 (16)	30 (11)	68 (13)
	Trade	26 (11)	34 (13)	60 (12)
	Any secondary	125 (54)	170 (62)	295 (58)
	Primary only or none	44 (19)	39 (14)	83 (16)

Shaded items show core questions included in the core interview answered by all and unshaded are questions in the full interview. Childhood family size is siblings only, not including parents.
§Professional: -Legislators, Administrators, Professionals, Agricultural and Fishery Workers
Technicians:- technicians, Associate Professionals and Trades Workers
Non-technical :- Clerks, Service Workers, Sales Workers, Plant/Machine Operators, Assemblers, Elementary Workers. * significant difference between men and women p<0.05

Table 2: Social support, importance of faith, QoL and functional status of LiLACS NZ non-Māori participants.

		Men	Women	Total
Full interview completed		190 (47%)	214 (53%)	404
Religion, n (%)	Anglican	59 (41)	78 (42)	137 (41)
	Catholic	14 (10)	19 (10)	33 (10)
	Presbyterian	43 (30)	53 (28)	96 (29)
	Methodist	6 (4)	12 (6)	18 (5)
	Other	22 (15)	26 (14)	48 (15)
Importance of faith to your wellbeing, n (%)	Not at all	33 (18)	19 (9)	52 (13)
	A little	13 (7)	16 (8)	29 (7)
	Moderately	39 (21)	40 (19)	79 (20)
	Very	67 (36)	86 (41)	153 (39)
	Extremely	32 (17)	51 (24)	83 (21)
Anyone to help with daily tasks? n (%)	Yes	145 (77)	175 (83)	320 (80)
	No	6 (3)	11 (5)	17 (4)
	I don't need help	37 (20)	25 (12)	62 (16)
Who has been the most helpful? n (%)	Spouse	65 (43)	34 (19)	99 (30)
	Daughter	23 (15)	61 (35)	84 (26)
	Son	10 (7)	22 (13)	32 (10)
	Other relative	7 (5)	7 (4)	14 (4)
	Other	48 (31)	51 (29)	99 (30)
Could have used more practical help? n (%)	Yes	14 (8)	28 (14)	42 (11)
Count on anyone to provide emotional support? n (%)	No	7 (4)	14 (7)	21 (5)
	Yes	142 (76)	177 (85)	319 (81)
	I don't need emotional support	37 (20)	17 (8)	54 (14)
Who most helpful? n (%)	Spouse	78 (55)	30 (18)	108 (35)
	Daughter	22 (16)	68 (40)	90 (29)
	Son	15 (11)	24 (14)	39 (13)
	Other relative	5 (4)	10 (6)	15 (5)
	Other	21 (15)	39 (23)	60 (19)
Could have used more emotional support? n (%)	Yes	7 (4)	15 (7)	22 (6)

*** difference between men and women p<0.001
NEADL Nottingham Extended Activity of Daily Living scale.
QoL = quality of life.—a higher score means better QoL, range 0–100.

did not need help. A daughter was the main support for women and the spouse for men for both practical and emotional support. Thirty and 19% of non-Māori received practical and emotional support, respectively, from 'others' which included formal paid support workers, 14% of women and 8% of men (p=0.051) reported an unmet need for practical help.

Function and QoL

Table 2 shows a mean score of 41 for physical HRQoL which indicates that HRQoL is below the mean for a standard older population[33] and was higher (better) in men (p=0.005). Mental HRQoL was slightly higher than physical HRQoL, and was similar in men and women.

Functional status was similar between men and women and varied according to living arrangement. Those living with others, including those in residential care, had the lowest NEADL scores with a mean of 13.1 (sd 7.0) compared with means of 17.9 (sd 3.0) for those living with their spouse and 18.7 (sd 2.6) for those living alone (p<0.001). Neither physical HRQoL nor mental HRQoL varied by living arrangement when adjusted for SES and functional status.

Table 3: Socio-cultural characteristics of LiLACS NZ non-Māori participants.

		Men	Women	Total
All participants—core interview, n (%) Full interview completed, n (%)		237 (46%) 190 (47%)	278 (54%) 214 (53%)	515 404
Do you live in the same area as your hāpu/ extended family/ where you come from?	No Yes	219 (93) 16 (7)	247 (89) 29 (11)	466 (91) 45 (9)
Have you ever been to a marae at all?	No Yes	51 (27) 139 (73)	74 (35) 138 (65)	125 (31) 277 (69)
How often in the last 12 months have you been to a marae?	Less than yearly* Once A few times Several times, more than monthly	156 (82) 26 (14) 5 (3) 3 (2)	193 (91) 15 (7) 3 (1) 1 (0)	349 (87) 41 (10) 8 (2) 4 (1)
Are your contacts with	Mainly Māori Some Māori Few/no Māori	1 (1) 51 (27) 137 (72)	2 (1) 71 (33) 140 (66)	3 (1) 122 (30) 277 (69)
Importance of language and culture to wellbeing	Not at all/moderately Very Extremely	64 (35) 103 (56) 17 (9)	70 (33) 120 (56) 23 (11)	134 (34) 223 (56) 40 (10)
Importance of family to wellbeing	Not at all/moderately Very Extremely	27 (15) 105 (56) 54 (29)	13 (6) 105 (49) 95 (45)	40 (10) 210 (53) 149 (37)
Specific role in local community/ neighbourhood	No Yes	160 (85) 29 (15)	177 (83) 35 (17)	337 (84) 64 (16)
How satisfied with role in local community/neighbourhood?	Not at all/moderately Very Extremely	9 (29) 18 (58) 4 (13)	7 (20) 25 (71) 3 (9)	16 (24) 43 (65) 7 (11)
Do you have a specific role in your family?	No Yes	75 (40) 113 (60)	69 (33) 141 (67)	144 (36) 254 (64)
Satisfaction with role in your family?	Not at all/moderately Very Extremely	11 (10) 88 (77) 15 (13)	14 (10) 100 (70) 29 (20)	25 (10) 188 (73) 44 (17)
Discriminated against ever, combined[1]	No Yes	176 (93) 13 (7)	190 (90) 22 (10)	366 (91) 35 (9)
Physical health-related QoL (SF-12®), mean (sd) Mental helath-related QoL (SF-12®), mean (sd) Functional status (NEADL, higher is better), mean (sd) The 15 question Geriatric Depression Scale, (GDS-15, higher is worse), mean (sd)		43.0 (11.9) 55.2 (7.9) 17.7 (3.7) 2.26 (2.1)	39.7 (12.0) 54.9 (8.7) 17.6 (4.3) 2.13 (1.8)	41.3 (12.0)*** 55.1 (8.3) 17.6 (4.0) 2.19 (2.0)

[1] Any positive response to any of the discrimination questions. QoL—Quality of Life
* includes never been to a marae
*** significant difference between men and women, p<0.001

Just under a third of non-Māori in advanced age had mainly or some Māori contacts (Table 3). While the majority (69%) had been to a marae, few (14%) had been once or more in the last year.

Only 9% lived in the area of their extended family where they had grown up.

More women reported that family were extremely important to their wellbeing (45%) than men (29%, p=0.001) and two thirds of the cohort reported that language and culture were very or extremely important to their wellbeing.

Table 4: Characteristics of socioeconomic status associated with physical HRQoL.

Full interview completed n=404 Independent variable of interest		Adj mean Physical HRQoL (CI)	Brief model* F-test (p)	Adj mean Physical HRQoL (CI)	Full model** F-test (p)
1. Living arrangement	Alone With spouse With other	40.1 (38.5–41.7) 42.1 (40.4–43.9) 44.5 (41.2–47.8)	3.08 **(0.047)**	37.1 (30–44.2) 38.6 (31.2–45.9) 41.2 (33.2–49.1)	2.39 (0.093)
2. Residence Type	House Unit/ Apartment Retirement Village Residential care Other	41.7 (40.4–43.1) 41.1 (38.4–43.9) 40.1 (37.7–42.5) 50 (43.2–56.9) 34.5 (28.9–40)	3.52 **(0.008)**	35.3 (27.9–42.8) 35 (27.2–42.7) 33.5 (25.9–41.1) 44.6 (36–53.2) 28.9 (19.9–37.9)	3.56 **(0.007)**
3. NZ deprivation index	Low 1–4 Mod 5–7 Hi 8–10	42.7 (40.6–44.9) 41.9 (40.2–43.5) 39.8 (37.9–41.6)	2.36 (0.096)	38.4 (31–45.8) 38 (30.8–45.2) 35.9 (28.8–43.1)	1.82 (0.163)
4. Main family occupation	Professionals Technicians Clerks	42.8 (41.3–44.3) 39.8 (37.5–42.1) 40.1 (38.2–42.1)	3.41 **(0.034)**	38.9 (31.8–46) 36.7 (29.2–44.1) 36.8 (29.4–44.1)	1.88 (0.155)
5. Thinking of your money situation, would you say?	Can't make ends meet Just enough Comfortable	30.2 (9.3–51.1) 38.5 (36.3–40.8) 42.2 (41–43.4)	4.60 **(0.011)**	31.3 (10.4–52.2) 38.7 (36.3–41.2) 42.3 (40.8–43.8)	4.00 **(0.019)**
6. Anyone to help with daily tasks?	No Yes I don't need help	38.8 (33.7–43.9) 41 (39.8–42.2) 44.2 (41.5–47)	2.83 (0.060)	35.1 (26.5–43.7) 37.3 (30.2–44.4) 40.7 (33.1–48.3)	3.08 **(0.047)**
7. Importance of family to wellbeing	Not at all/moderately Very Extremely	45 (41.6–48.5) 40.6 (39.1–42) 41.8 (40–43.5)	2.82 (0.062)	41.7 (33.8–49.5) 37.1 (30–44.2) 37.9 (30.6–45.2)	2.95 (0.054)
8. Satisfaction with role in community	Not at all/moderately Very/extremely	37.2 (31.6–42.7) 43.6 (40.5–46.7)	4.09 **(0.048)**	35.2 (29.2–41.3) 43.3 (38.6–48.1)	5.65 **(0.021)**
9. Satisfaction with role in family	Not at all/moderately Very Extremely	38.7 (34.3–43.1) 40.3 (38.7–41.9) 44 (40.7–47.3)	2.52 (0.083)	35.5 (26.8–44.2) 37 (29.6–44.5) 40.5 (32.4–48.6)	2.13 (0.122)

HRQoL- SF-12® physical health summary score, CI 95%-confidence interval
Each numbered section is a separate analysis.
* Brief model adjusted for functional status (NEADL) and gender
**Full models adjusted for gender, functional status, education (early life) main family occupation (midlife), NZdep and perceived economic wellbeing (current state), (except for models 2 and 3 where the covariate became the variable of interest)
Interactions between: gender and marital status; and gender and living arrangement were not significant and were dropped.

A minority (16%) reported a *specific* role in their local community; those who had a role were highly satisfied with it. Sixty-four percent reported a role in their family and satisfaction was high with this role.

Reports of discrimination were rare. No one reported being treated unfairly by a health professional in the last 12 months and 1% more than 12 months ago. When aggregated, 9% reported being discriminated against ever. Those born overseas were no more or less likely to have experienced discrimination, however those identifying as New Zealand European were less likely to have experienced discrimination (25/465, 5%) compared with those not identifying as New Zealand European (10/51, 19%; p=0.001). The reported discrimination was experienced by 'other Europeans', not by those of Pacific, Asian, Middle Eastern, or African ethnicity.

Table 5: Characteristics of socioeconomic status associated with mental HRQoL.

Full interview completed n=404 Independent variable of interest		Adj mean Mental HRQoL (CI)	Brief model* F-test (p)	Adj mean Mental HRQoL (CI)	Full model** F-test (p)
1.Living arrangement	Alone With spouse With other	54.2 (53–55.4) 56.3 (55–57.7) 54.3 (51.7–56.8)	2.79 (0.063)	52.6 (47.2–58.1) 54.6 (48.9–60.3) 52.6 (46.4–58.7)	2.37 (0.095)
2.Could have used more practical support than received	Yes Not at all	51.8 (49.3–54.3) 55.4 (54.5–56.2)	6.75 **(0.010)**	50.9 (45.2–56.6) 54.6 (49–60.3)	7.00 **(0.009)**
3. Anyone to provide emotional support?	No Yes I don't need help	49.6 (46.1–53.2) 55.3 (54.4–56.2) 55.7 (53.5–57.9)	4.84 **(0.008)**	47.4 (41–53.9) 53.4 (47.9–58.9) 53.7 (48–59.3)	5.14 (0.006)
4.Could have used more emotional support than received	Yes Not at all	45 (41.8–48.3) 55.7 (54.9–56.5)	38.53 **(<.0001)**	42.5 (36.3–48.7) 53.6 (48.3–58.8)	41.33 **(<.0001)**
5.Importance of language and culture to wellbeing	Not at all/moderately Very Extremely	53.8 (52.4–55.3) 55.8 (54.8–56.9) 55.3 (52.7–57.8)	2.4 (0.092)	51.5 (45.9–57.1) 53.5 (48.1–59) 52.7 (46.7–58.8)	2.42 (0.091)
6.Importance of family to wellbeing	not at all/moderately Very Extremely	52.1 (49.5–54.7) 55.3 (54.2–56.4) 55.5 (54.2–56.9)	2.74 (0.066)	49.9 (43.8–55.9) 53.3 (47.8–58.8) 53.7 (48.1–59.3)	3.29 **(0.038)**
7.Do you have a specific role in your family	No Yes	54.1 (52.7–55.5) 55.6 (54.6–56.6)	3.08 (0.080)	51.8 (46.1–57.4) 53.4 (47.9–58.9)	3.47 (0.064)
8.Experienced any discrimination	No Yes	54.8 (54–55.7) 57.5 (54.8–60.2)	3.43 (0.065)	52.9 (47.5–58.4) 55.9 (49.7–62)	3.98 **(0.047)**

HRQoL-SF-12® mental health summary score, CI 95%-confidence interval
Unmet need for emotional support = Could have used more emotional support than received
Unmet need for practical support = Could have used more practical support than received
Each numbered section is a separate analysis.
*Brief model adjusted for functional status (NEADL score) and gender.
**Full models adjusted for gender, functional status, education (early life) main family occupation (midlife), NZdep and perceived economic wellbeing (current state).
Interactions between: gender and marital status; and gender and living arrangement were not significant and were dropped.

Correlates of HRQoL

Regression models were used to examine the association between QoL and the socioeconomic and cultural factors in Tables 1, 2 and 3, controlling for functional status and gender, completing analyses for both physical HRQoL and mental HRQoL.

Physical HRQoL

The brief models in Table 4 show the variables that were associated with physical HRQoL to the level of significance of $p<0.1$ with those reaching $p<0.05$ bolded adjusting for age and functional status; functional status was strongly associated with physical HRQoL. After adjusting for gender and functional status in the brief models, living arrangement, type of residence, family occupation, and satisfaction with role in community were significantly associated with physical HRQOL. Those living with others had higher physical HRQOL.

Full models added lifetime SES markers to each of these seven regression models. 'Type of residence' was independently associated with Physical HRQoL with those living in other situations having the lowest HRQoL. 'Economic wellbeing' and 'satisfaction with role in community' were also independently associated with physical HRQoL. 'Not needing help with practical tasks' was independently associated with higher physical HRQoL.

Mental HRQoL

Mental HRQoL was examined in a similar way with the brief models controlled for gender and functional status. The brief model in Table 5 shows variables that were associated with mental HRQoL to the level

of significance of p<0.1 with those reaching p<0.05 bolded. The table shows that unmet need for practical and emotional support and having no one to provide emotional support were associated with lower mental HRQoL. Those who reported that family were very or extremely important to well-being had higher mental HRQoL when fully adjusted for SES. The perceptions of unmet need for practical and/or emotional support were independently associated with lower mental HRQoL. Those who had experienced discrimination reported higher mental HRQoL when fully adjusted for SES. Interactions between: gender and marital status; and gender and living arrangement were not significant.

Discussion

This study describes the socioeconomic and cultural status and social support factors associated with HRQoL of non-Māori aged 85 years in one region of New Zealand in 2010. Participants mainly lived in moderately deprived areas and HRQoL for mental health was good. HRQoL for physical health was modest.

Women may be less well off financially and are more likely to live alone. Despite these challenges, a higher proportion of women reported they can count on someone to help with daily task (83% vs 77% in men) but they also have higher unmet needs for practical support (14% vs 8% in men). Women and men traditionally have different roles in household tasks, and as more men than women lived with a spouse, their participation in the practical tasks probably differed, thus partially explaining their different perceived unmet need for practical support. Women are more likely to outlive men and thus will need more support for the tasks done by their husbands. The unmet need for practical support may also be related to house maintenance which might not be fulfilled by the daughter (the main support for women).

NZS, the universal retirement pension, is the main source of income for the majority of non-Māori in this study, in accordance with nationally reported economic data.[34] Home ownership of 89% is higher than the average New Zealand home ownership rate of 66.9%35 (although the denominators may have differed) despite a national decline in mortgage-free home ownership rates in older age groups New Zealand since 2001.[36,37] Home ownership is also notably higher than that reported in other longitudinal studies; in 1988, 68% of the 80+ group of the Dubbo longitudinal study in Australia owned their own home.[38]

Individual socioeconomic status in the UK predicts health outcomes such as frailty.[39] Here we demonstrate that main family occupation during the working life and perceived economic wellbeing were associated with physical HRQoL. This association was attenuated when other lifetime SES factors were adjusted for, unlike self-perceived economic wellbeing which was independently associated with HRQoL after all adjustment. Education and deprivation status, in our analysis, were not strongly associated with HRQoL. Jatrana and Blakely found that while disparities in mortality related to ethnicity persist into old age, the impact of socioeconomic gradients on mortality appear to be less in the 85+ age group compared with the 65+ age group.[40,41] Our analyses examined HRQoL, not mortality, and this may in part be why there is not apparently such a strong association between education and deprivation and HRQoL. Rather, self-perceived economic wellbeing was important. Potentially self-perceived economic well-being may represent the adequacy of money for day-to day living while education and deprivation does not tell us adequacy of resource availability.

For women, a daughter was seen as the most common provider of support concurring with English research where it was not so much the size of the family but the presence of a daughter that was associated with higher social contact and better outcome.[42] The main supporter for men in LiLACS NZ was their spouse. Social support is gender dependent.

The prevalence of living alone varies around the world. Fewer non-Māori participants in LiLACS NZ (85 years old) lived alone (48%) than in the Newcastle 85+ study, where 61% lived alone, predominantly women.[43] These two studies had similar eligibility criteria and thus this comparison is fair.

Correlates of HRQoL

Women more often reported unmet need for practical help and had lower physical HRQoL than men. Living alone requires more resources, and reported unmet need for practical and emotional support is associated with lower QoL. Social support may mediate the association between lower physical HRQoL and poor outcomes,[21] as there was no gender interaction for unmet need. The importance of support for emotional and practical needs is emphasised by these results, confirming other research.[44]

It is interesting that reported discrimination among those identifying as 'other-European' was associated with higher mental HRQoL. When Māori of all ages[45] and the Māori cohort of those in advanced[23] report discrimination, it is associated with worse outcomes. Further work is needed to understand this finding in non-Māori.

It is also intriguing that living in residential aged care was associated with higher physical HRQoL both in the brief and in the full models. Those in residential care had the lowest functional status and both models are adjusted for this. One interpretation is that as functional status is the strongest predictor, the relative difference in HRQoL between the living arrangements is driven by function. For those in advanced age with low function, those in residential care have the highest physical HRQOL. Demand for physical support may be reduced when taken care of by paid care providers, and this relief may improve HRQOL.

Functional status is reinforced here as a key component of physical and mental HRQoL and will be a key outcome to be followed in the longitudinal study.

Strengths and weaknesses

This study is the first to engage a large number of people aged 85 years old in New Zealand. However, the findings are subject to some limitations. First, this study reports cross-sectional analyses which prohibit drawing causal conclusions. Follow-up data will allow conclusions regarding the direction of effects, allowing causal inferences to be drawn more confidently.

Second, although the population-based sampling is a strength, selection bias might arise in our analyses for the poorly represented group (eg, those in residential care), hence interpretation should be cautious. The response rate was 59%, and 78% of these answered all the questions (overall 46%). Although the demographic profile is similar to that of the total population, response bias may be operating[24] as those less able to answer are not as well represented. Our response rate is similar to the Newcastle 85+ study.[43] The proportion of our sample living in long-term residential aged care is within the estimated range of 3.4% and 9.2%, though lower than an age group comparison which reported 22% and 15% for women and men respectively in care in 2008.[46] Third, although we have adjusted for many confounding variables, it is possible that the differences we found in outcome and exposure variables could be the result of other factors associated with outcome variable that we did not measure.

Implications for practice and policy

These findings support the need for maintaining and improving financial resources for those in advanced age, particularly for those living alone. Support for those living alone is needed, but this report does not specify exactly the best combination of supports. More work is needed. Supportive care appears helpful, both for practical and emotional support. Potentially finding ways to buttress informal support with access to formal support, respite care, training for informal caregivers, adaptations to environment, supply of equipment, may facilitate maintenance of QoL.

Concluding statements

At age 85 years, non-Māori in New Zealand on average, are reasonably able in activities of daily living and have a moderate socioeconomic status. Those with more social support (both practical and emotional support); who have a perception that family and roles in the community are important to their wellbeing and those with perceived comfort with their money situation also have high HRQoL. Those who report unmet needs have poor mental HRQoL. This information can be used for development of strategies to improve health and QoL for people living in advanced age in New Zealand.

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