AGEING WELL

Kia eke kairangi ki te taikaumātuatanga

2020 AGEING WELL YEAR IN REVIEW

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INTRODUCTION

Ageing Well *Kia eke kairangi ki te taikaumātuatanga* is one of eleven National Science Challenges (NSC) identified by the New Zealand Ministry of Business, Innovation, and Employment (MBIE). These National Science Challenges are used to direct science investment on issues that matter to all New Zealanders. The vision underpinning the Ageing Well National Science Challenge (AWNSC) is *to add life to years for all older New Zealanders*. In articulating this vision, the AWNSC recognizes increases in life expectancy have not been matched by an increase in healthy life expectancy. AWNSC has established a bibliography of New Zealand research on older adults (2000-2019). This paper is a continuation this activity, presenting a summary of 135 New Zealand-authored, peer-reviewed articles published 1 January to 31 December 2020.

METHODS

Search strategy

A systematic search for relevant publications was conducted, informed by the *Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA)* guidelines[1]. The following electronic databases were searched: Ovid Medline, Web of Science Core Collection, and Scopus. The keywords were (*ageing* OR *old adults* OR *old people* OR *elder* OR *kaumātua*) AND (*New Zealand* OR *Māori* OR *Aotearoa*) AND (*health* OR *wellbeing* OR *care* OR *frailty* OR *palliative* OR *spirituality* OR *religion* OR *housing* OR *loneliness* OR *community* OR *culture* OR *migrant* OR *fall* OR *stroke* OR *nutrition* OR *physical activity* OR *mental health* OR *peer education* OR *income* OR *retirement* OR *transport* OR *lifecourse* OR *equity* OR *medication* OR *pain*). Table 1 presents the search strategy.

Table 1. Search strategy for the Year in Review 2020

Ovid Medline	**Web of Science & Scopus**
1. aging/ or aging.mp. or ageing.mp. 2. old* adult*.mp. 3. old* people.mp. 4. elder*.mp. 5. Kaumatua.mp. 6. 1 or 2 or 3 or 4 or 5 7. New Zealand.mp. or New Zealand/ 8. Maori*.mp. 9. Aotearoa.mp. 10. 7 or 8 or 9	1. aging OR ageing OR "old* adult*" OR "old* people" OR elder* OR Kaumatua 2. "New Zealand" OR Maori* OR Aotearoa 3. #1 AND #2 AND PUBYEAR = 2020 4. health* OR wellbeing OR well-being 5. “home care agencies” OR “home care services” OR “hospice care” OR “dental care for aged” OR “advance care planning” OR caregiv* OR “caregiver burden” OR carer*

[1] Page M J, McKenzie J E, Bossuyt P M, Boutron I, Hoffmann T C, Mulrow C D et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews BMJ 2021; 372 :n71 doi:10.1136/bmj.n71

11. 6 and 10
12. limit 11 to yr="2020 -2020"
13. health*.mp.
14. wellbeing.mp.
15. well-being.mp.
16. 13 or 14 or 15
17. Home Care Agencies/ or Home Care Services/ or Hospice Care/ or Dental Care for Aged/ or Advance Care Planning/
18. caregiver*.mp. or Caregivers/ or Caregiver Burden/
19. carer*.mp.
20. caregiving.mp.
21. 17 or 18 or 19 or 20
22. Frailty/ or Frail Elderly/ or Geriatric Assessment/ or frail*.mp.
23. Palliative Care/ or palliative.mp. or "Hospice and Palliative Care Nursing"/ or Palliative Medicine/
24. Terminal Care/ or dying.mp.
25. 23 or 24
26. spiritual*.mp. or Spirituality/ or Spiritual Therapies/
27. Religion.mp. or Religion/ or "Religion and Psychology"/
28. home.mp.
29. housing.mp. or Housing/ or Housing for the Elderly/
30. residential.mp.
31. 28 or 29 or 30
32. “social isolation”.mp. or Social Isolation/
33. “social* connected*”.mp.
34. loneliness.mp. or Loneliness/
35. lonely.mp.
36. 32 or 33 or 34 or 35
37. communit*.mp.
38. Culture/ or cultur*.mp.
39. migrant*.mp.
40. Accidental Falls/ or fall*.mp.
41. stroke*.mp. or Stroke Rehabilitation/ or Stroke/
42. nutrition.mp.
43. “physical activit*”.mp.
44. Exercise/ or exercis*.mp
45. 43 or 44
46. “mental health”.mp. or Mental Health/
47. psychological.mp.
48. 46 or 47
49. “peer education”.mp.

6. “frail elderly” OR frail* OR “geriatric assessment”
7. "palliative care" OR palliative OR "hospice and palliative care nursing" OR “palliative medicine” OR "terminal care" OR dying
8. spiritual* OR “spiritual therapies”
9. religio*
10. home* OR hous* OR "housing for the elderly" OR residential
11. "social isolation" OR "social* connected*" OR loneliness OR lonely
12. communit*
13. cultur*
14. migrant*
15. "accident* fall*" OR fall*
16. stroke* OR "stroke rehabilitation"
17. nutrition
18. "physical activit*" OR exercis*
19. “mental health” OR psychological
20. "peer education" OR "peer group*"
21. income OR employment OR work OR volunteer*
22. retir*
23. transport OR mobility
24. lifecourse OR “life course”
25. “socioeconomic factors” OR equality OR “healthcare disparities” OR “health equity” OR equity
26. “medication errors” OR “medication adherence” OR medication* OR “medication reconciliation” OR prescription* OR “prescription drug misuse” OR “prescription drugs” OR “prescription drug overuse” OR prescrib* OR “drug prescriptions” OR polypharmacy
27. pain
28. #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27
29. #28 AND #3

50. Peer Group/ or “peer group”*.mp. 51. 49 or 50 52. Income.mp. or Income/ 53. Employment/ or employment.mp. 54. Work/ or work.mp. 55. volunteer*.mp. 56. 52 or 53 or 54 or 55 57. Retirement/ or retir*.mp. 58. transport.mp. 59. mobility.mp. 60. 58 or 59 61. lifecourse.mp. 62. “life course”.mp. 63. 61 or 62 64. Socioeconomic Factors/ or equality.mp. or Healthcare Disparities/ 65. Health Equity/ or equity.mp. 66. 64 or 65 67. Medication Errors/ or Medication Adherence/ or medication*.mp. or Medication Reconciliation/ 68. prescription*.mp. or Prescription Drug Misuse/ or Prescription Drugs/ or Prescription Drug Overuse/ 69. prescrib*.mp. 70. Prescriptions/ or Drug Prescriptions/ 71. polypharmacy.mp. or Polypharmacy/ 72. 67 or 68 or 69 or 70 or 71 73. pain.mp. or Pain/ 74. 16 or 21 or 22 or 25 or 26 or 27 or 31 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 45 or 48 or 51 or 56 or 57 or 60 or 63 or 66 or 72 or 73 75. 12 and 74	

Inclusion criteria

Only articles published in English and on humans were selected. Since the purpose of this research activity was to generate a bibliography of research in the ageing area conducted in New Zealand, no filters were placed based on the type of publications provided full texts are available. Articles identified in the search underwent a series of screening processes. Firstly, duplicate articles were removed. Assistant Research Fellow (Dr Lizhou Liu) independently selected and screened articles for potential eligibility based on titles and abstracts, and full texts. Consensus on inclusion was reached by discussion with secondary reviewer (Professor Louise Parr-Brownlie). After screening, articles were categorized under different subheadings. Both authors of this review were not blinded to the journals or authors of the included studies.

Categorisation

Publications were assigned to one or more of 18 categories, to reflect the primary relevance of the publication. Assignment to more than one category was used conservatively. In addition to the relevant categories, an ethnicity category (Māori, Pacific, Asian) was also assigned, if the publication *primarily* reported on one of these broad ethnic groups.

RESULTS AND DISCUSSION

Study selection

Figure 1 summarises the study selection process. The search strategy identified 1172 articles. After duplicate removals, 911 articles were screened by title and abstract. The full text of 150 articles were then assessed for eligibility, with 135 articles finally included in this Year in Review.

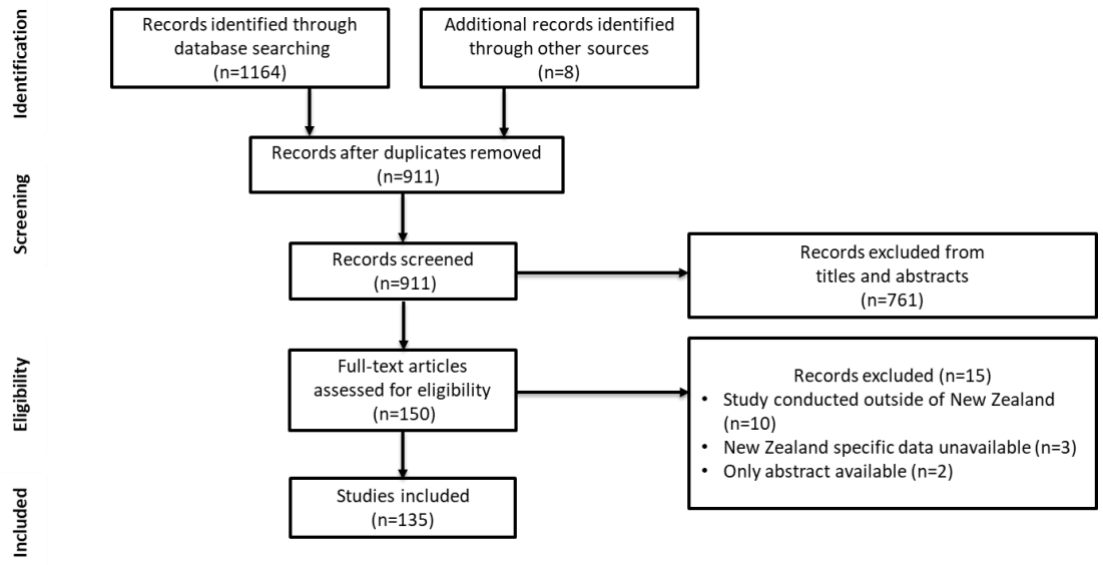

Figure 1. Study selection process

Table 2 summarises assignment of the 135 publications to the 18 relevant categories.

Table 2. Classification of publications

Category	Number of publications*	References
Bones and joints	1	(1)
Cardiovascular conditions	7	(2-8)
Central nervous system conditions	20	(9-28)
End-of-life, palliative care	12	(29-40)
Frailty, balance, falls	9	(3, 11, 41-47)
Health and social services	16	(26, 48-62)
Health, wellbeing and quality of life	10	(63-72)
Health workforce	10	(34, 37, 73-80)
Housing	3	(59, 81, 82)
Living and care facilities	11	(29, 30, 58, 77, 83-89)
Mental health	4	(90-93)

Nutrition	7	(86, 94-99)
Other conditions	15	(62, 100-113)
Prescribing	10	(83, 84, 114-121)
Social connection	4	(87, 122-124)
Transport and built environment	3	(43, 125, 126)
Work and finances	2	(127, 128)
Not otherwise classified	7	(129-135)
* 135 unique publications are classified, with 17 being assigned to two categories.		

Bones and joints

National annual reports from hip arthroplasty registers in ten countries (including New Zealand) were identified to explore changes of the use of fixation techniques in total hip arthroplasty. A decreasing use of uncemented fixation was reported in New Zealand, and for patients older than 75 years, the use of uncemented fixation was stable (1).

Cardiovascular conditions

A comparison of invasive treatments for peripheral arterial obstructive disease, by analysis of datasets from 11 countries including New Zealand, found marked differences in patterns of presentation and rates of intervention. The authors concluded that national societal guidelines should be reviewed (2).

A prospective study found that frailty, as assessed by the Edmonton Frail Score, in older patients (>65 years) undergoing cardiac surgery was predictive of a longer postoperative hospital stay and 12-month readmission (3).

The use of guidelines by general practitioners (GPs) for management of hypertension in frail older people was examined in 29 countries. There was significant variation in reported use of guidelines, but no differences in hypertension treatment decisions between GPs who used guidelines and those who did not (4).

A validation study examined the performance of the cardiovascular disease (CVD) risk prediction equations, which were developed in the age group of 30-74, among older people aged at 75-89 years old. The study found that the entire-population CVD risk equations developed among 30-74 year olds did not perform well among older people. Existing risk algorithms developed from primarily middle-aged or early-retirement cohorts should be used with caution for people aged ≥75 years until they are carefully validated to avoid masking poorer performance in older age groups (5).

A single-centre observational study determined the duration and effects of fasting prior to cardiac catheterisation. The study found that most patients were fasted for significantly longer than recommended and pre-hydration was underutilised in patients at high risk of contrast-induced nephropathy (6).

A study comparing the clinical features and outcomes of Takotsubo syndrome across five metropolitan hospitals in New Zealand found that there were not significant differences among the hospitals. A subset of patients had a complicated in-hospital course, but late deaths were almost all from non-cardiac causes and recurrence was infrequent. Mortality post-discharge and recurrence was similar between the hospitals (7).

The results of percutaneous coronary intervention (PCI) for left main coronary disease (LMS) disease were evaluated by using the All New Zealand Acute Coronary Syndrome-Quality Improvement registry. It was found that the LMS PCI cohort had high mortality rates, especially those presenting with ST-elevation myocardial infarction and an unprotected LMS (8).

Central nervous system conditions

Dementia and cognitive impairment

A pilot survey of 216 adults aged over 50 years of age found most did not know enough about dementia risk and protective factors, but many were willing to adopt lifestyle changes to reduce risk (9).

New Zealand interRAI data from more than 73,000 people (mean age 81 years) showed no seasonal variation in cognitive functioning, contrary to a previous report from North America (10).

A feasibility study investigated cognitive stimulation therapy combined with physical exercises to reduce falls for individuals living with dementia. The study found that difficulties with intervention fidelity, particularly around participants receiving limited balance training, meant that study design ought to be further considered before embarking on an RCT (11).

A commentary noted recent New Zealand court decisions meant that an increased demand for medical assessments of the capacity to make a will was likely for people with possible cognitive impairment, and set out the principles and clinical application to reduce the risk of contested wills (12).

Predictors of mortality in individuals with dementia were investigated in consecutive referrals to a New Zealand memory service. Risk of death increased by age and lower cognitive score at baseline, and was reduced by cholinesterase inhibitors. Antipsychotic medication increased death rate for Māori and Pacific participants, but not for New Zealand Europeans (13).

A survey of staff (n=304) working on acute medical and orthopaedic wards used the Approaches to Dementia questionnaire to look at attitudes towards people with dementia. The authors concluded that there were differences between different groups of staff, but that the questionnaire might not distinguish between education and knowledge of, and attitudes to, dementia (14).

Extracts of 15 native New Zealand flora were tested for inhibitory activity against acetylcholinesterase, butyrylcholinesterase and beta-secretase, enzymes associated with neurotransmission and possibly Alzheimer's disease. Extracts of several species showed a range of inhibitory enzyme and radical scavenging activities (15).

A cross sectional study looked at the socio-demographic characteristics, using interRAI data, which might be associated with undetected dementia in community living adults. Logistic regression identified potential risk factors of Asian ethnicity, living alone, no involvement with long standing social activities, major life stressors and limited accessibility of their house (16).

New Zealand's Integrated Data Infrastructure was used to derive national late-onset dementia estimates; approximately 2% of people >60 years of age had dementia, with higher rates in the North Island, in those aged 80-89 years, and for Māori (17).

A book chapter introduced TOI AKO, a creative ageing mentoring programme in Tāmaki Makaurau, New Zealand for older people and people living with dementia. The chapter summarised ways to move forward to develop Connect the Dots' existing projects to incorporate local communities to deliver programmes at a national level (18).

Parkinson's disease

A methylome-wide association study in two independent groups (totalling 1132 patients and 999 controls) identified two associations with Parkinson's disease. One region of hypermethylation was associated with down regulation of *SLC7A11*, a cysteine-glutamate anti-porter, a known target of environmental neurotoxins. The other strong positive association was near *ASSC1*, a transcriptional activator, for which there is evidence for its potential role in PD (27).

Nanopore sequencing of the glucocerebrosidase (GBA) gene in a New Zealand Parkinson's disease cohort was conducted. The work confirmed the utility of nanopore sequencing as a high-throughput method to identify known and novel GBA variants, and to assign precise haplotypes (28).

Stroke

An observational cohort study of patients undergoing stroke reperfusion therapy via thrombolysis looked at the effects of dabigatran reversal with idarucizumab. Idarucizumab-treated patients accounted for 6% of thrombolysed patients in 2018, and had slower "door-to-needle" times. There were no differences in incidence of symptomatic intracerebral haemorrhage, thrombotic complications or death at 7 days. The authors concluded that idarucizumab can facilitate thrombolysis in patients with stroke taking dabigatran, with similar early post-thrombolysis outcomes compared with patients not receiving idarucizumab (19).

Acute stroke endovascular thrombectomy (EVT) was reviewed in a series of procedures (n=210) performed by peripheral vascular interventionalists, rather than a specialised interventional neuroradiology service. The paper concluded that peripheral vascular

interventional radiologists with specific training can successfully perform EVT, thereby providing a pathway to significantly increase EVT provision (20).

Tenecteplase (a recombinant tissue plasminogen activator) use for thrombolysis in acute ischaemic stroke, following idarucizumab reversal of dabigatran anticoagulation was reviewed in 13 patients. The authors concluded that the drug may be safe in selected patients and recommended further studies to estimate efficacy and risks (21).

An RCT of a community-based self-directed stroke rehabilitation programme, “Take Charge”, in a non-Māori, non-Pacific population, found improved health-related quality of life and independence after 12 months. A dose effect was also observed, with better outcomes for those who had two Take Charge sessions six weeks apart, compared to one session (22).

A small observational study (n=6) of individuals with upper limb disability following stroke, found that the disability somewhat limited the use of information and communication technologies (ICT), particularly smart phones, although the individuals were still motivated to use ICT for daily living, social interaction, leisure and rehabilitation (23).

The predictors of slowed information processing speed (IPS), a frequent cognitive deficit after stroke, were examined in a population-based stroke incidence cohort. Older age, previous stroke, high cholesterol, hypertension, coronary artery disease and arrhythmia were all associated with slowed IPS 4 years post-stroke. Early identification of those at higher risk of slowed IPS should allow timely cognitive rehabilitation interventions, and better outcomes (24).

A qualitative study interviewed eight stroke survivors living in southern New Zealand regarding their perceptions of community reintegration. Key to successful community reintegration, irrespective of geography, culture and ethnicity, appeared to be involvement in meaningful activities, and reduced reliance on others whilst maintaining or developing good social relationships (25).

Ethnic differences in access to acute stroke reperfusion therapy in Northern New Zealand were examined over 21 months. This study showed equitable access to acute stroke reperfusion therapies and largely similar outcomes in different ethnic groups (26).

End-of-life, palliative care

Semi-structured interviews with staff from 49 residential aged care facilities identified themes around dying found tension between the needs of the people dying, caring for the dying and those that live. Dying alone was not seen as part of a “good death”, but staff had challenges preventing people from dying alone. The authors recommended that current practices in aged care facilities require attention (29).

Semi-structured interviews with 17 general practitioners explored their perspectives on end-of-life care in aged care facilities. Interactions were often limited by GP time and cost to the facilities. GPs reported that training in end-of-life care was often done through informal mentoring with other GPs (30).

Media articles from early 2018 were analysed to provide perspectives on the representation of assisted dying. “Autonomy”, “right” and “choice” were identified, along with the exclusion of those with mental illness. The authors also noted the absence of non-Western understandings, marginalisation of religious and spiritual considerations, and silence of the older person’s voice (31).

Hospice patients were sampled to explore religiosity, death anxiety and hope. Organised religion was not a major support factor, but the authors found spirituality more relevant in relieving existential distress. Hope for most came from joyful memories and meaningful relationships. Fear of being a burden and causing family suffering were significant causes of distress (32).

Low access to palliative care by Pacific populations in New Zealand was examined through semi-structured interviews with hospice patients, families and stakeholders. Themes included negative perceptions of hospice through lack of accurate information, the family’s role in looking after the sick, and the need for information and communication. Findings confirmed that hospice and palliative care services were under-utilised and commonly misunderstood. There is active support following appropriate information received, hence the need for community education and culturally appropriate hospice and palliative services (33).

Palliative care delivery by staff in long-term care facilities was examined by a survey and interviews. Confidence in delivering care was associated with mentorship, formal education, maturity and organisation context, suggesting strategies to help improve staff palliative care delivery (34).

Bereaved caregivers were surveyed to understand their experiences of palliative care services in New Zealand. Most caregivers gave a high overall satisfaction rating, with the highest ratings for hospice care. Satisfaction with care in the last two days of life was related to care and treatment with dignity and respect, privacy, sufficient pain relief and following the patient’s wishes (35).

The views of family carers who provided end-of-life care to people over 80 years of age were examined through kaupapa Māori thematic analysis. Good care was relationship-oriented and upheld the older person’s mana. The authors noted that the indigenous model of analysis was applicable for Māori and non-Māori and could be used to inform end-of-life care for all (36).

New Zealand and Australian geriatricians were surveyed to establish views on assisted dying. The survey had a 20% response rate; 24% supported voluntary dying legislation and 53% opposed it. If it was legalised, 12% of geriatricians would be willing to prescribe to appropriate

patients, and 61% would refer to a third party. The authors recommended that further training for doctors would be necessary prior to implementing legislation (37).

Māori end-of-life perspectives, and attaining ka ea (peace, fulfilment) were considered through analysis of qualitative findings. Themes included the need to live in the future and the value of spiritual end-of-life care (38).

The concordance between advanced care plans and care received during hospital admissions was retrospectively reviewed for 149 people. Increasing age effected the choice of goal-of-care, and was less influenced by comorbidity severity. For those admissions when the patient was classified as incompetent, treatment preferences and goal-of-care expressed in advanced care plans were adhered to in almost all cases, and the authors concluded that end-of-life care appeared to adhere in advanced care plan instructions (39).

Bereaved family member experiences of the Supportive Hospice Aged Residential Exchange (SHARE) intervention was explored in a semi-structured interview study. Findings indicated that SHARE benefited families (improved communication and support) through the end of life journey of their relatives, but challenges remained (40).

Frailty, balance and falls

Modelling was used to explore health gain, cost effectiveness and health system costs of cataract surgery as a falls prevention strategy. Both routine and expedited (reduced waiting time by 12 months) cataract surgery were found to create significant QALYs and to be very cost effective at preventing falls (41).

An online survey of adults aged over 50 years looked at the impact of the built urban environment on falls. Perceived accessibility and neighbourhood conditions were independently associated with fear of falling, and the authors concluded there was a need to understand more about the relationships between urban environment, mobility, fear of falling and falling (42).

A Cochrane review examined the effectiveness and safety of environmental and behavioural interventions in reducing physical activity limitation, preventing falls and improving quality of life amongst visually impaired older people. There is no evidence of effect for most of the environmental or behavioural interventions, probably because of the poor methodological quality and heterogeneous outcome measurements. The authors suggested that standardised ways of measuring physical activity and falls need to be adopted to improve reliably (43).

The trajectories of gait and cognition and their association with falls were examined over a five-year period in 408 Māori and 512 non-Māori over 80 years of age. The authors found fall frequency to be relatively stable and there was minimal decline in gait and cognition over the study period (44).

InterRAI data were used to look at relationships between incontinence (urinary and faecal) and falls in community living older individuals with complex needs. The authors concluded that screening in primary health care for both forms of incontinence should be routinely done because both were associated with falls risk (45).

Methodology for an RCT involving long term care residents of Staying UpRight, a progressive exercise programme targeting strength and balance, was reported. Efficacy and cost-effectiveness of the programme will be evaluated, with the primary outcome of the trial being the rate of falls within the 1-year intervention period (46).

Whole body vibration exercise was evaluated for effects on sarcopenia, mobility and function in frail older individuals. The intervention was delivered three times a week, over 16 weeks, to aged care residents. There was high compliance with the intervention, no adverse effects, and significant benefits were observed, and remained at the 12-month follow-up (47).

A study assessed frailty in a cohort of older cardiac surgery patients as a predictor of postoperative outcomes. Conclusions of this study have been reported in page 7 in this review under *Cardiovascular conditions* (3).

A study explored the feasibility of undertaking a full scale RCT to test the effectiveness of combining cognitive stimulation therapy and fall prevention exercise in older adults with mild to moderate dementia. Conclusions from this study have been reported in page 8 in this review under *Central nervous system conditions - Dementia and cognitive impairment* (11).

Health and social services

The perspective of general practitioners of medical fitness to drive assessment for older adults were analysed. The assessments were used to stage a clinical conversation about mobility and driving, but the process can challenge a patient-centric approach and impact relationships with patients. There was a lack of training and support for GPs involved in assessments (48).

A retrospective study of data from Auckland District Health Board (DHB) assessed acute and elective general and orthopaedic surgery in older adults between 2004-2016. The incidence of elective surgery increased by 5.4% annually over the period, with the rate of increase lower for Māori compared with other ethnic groups. The incidence of acute surgery in those aged 70 years and older decreased. Overall, the increasing number of procedures is beyond that expected for population growth alone (49).

The effect of a pilot social work position in rural Central Otago was examined through interviews with key individuals. The position was having an impact, but there was a clear need for more social support for older people in this community (50).

The protocols for two interventions were described: Kaumātua Mana Motuhake Poi, being a tuakana-teina peer educator model to support increased health service use by kaumātua; and

a physical activity and cultural knowledge exchange through intergenerational learning models (51).

Focus groups were used to explore the language barriers faced by older Chinese immigrants in Auckland. Language barriers and transportation problems were common obstacles to accessing social support and health services, indicating a need to support improvement in English language proficiency (52).

Data from the LiLACS study were analysed to ascertain the relationship between health service use and household living arrangements. After controlling for functional status, living alone was the strongest driver of health service use, whereas gender and ethnicity were not significant predictors (53).

Issues for primary care providers around caring for patients of advanced age were found to include poor lines of communication and fragmentation of services, as well as treatment and funding regimes (54).

Findings of Kaumātua Mana Motuhake, a peer education intervention to help Māori elders in key life transitions were reported. Kaumātua (n=121) completed the planned intervention; analysis showed most variables improved over time, and qualitative results showed impacts on mana motuhake, social connectedness, and tangible/information support related to services. The intervention was also cost effective (55).

The rate of ambulatory sensitive hospitalisations (ASH) varied between GP practices was investigated in three regions of New Zealand. Female GPs had lower ASH rates, whereas main urban centre practices had higher rates. Where there were significant associations, the contribution to overall variance was minimal and it was unclear whether lower ASH rates in older people represents underservicing or less overuse of hospital services (56).

An RCT was used to test whether referrals of older patients to a supported discharge team on leaving hospital would reduce health care costs, reduce length of hospital stay and reduce the risk of readmission. Those receiving the supported discharge intervention had shorter hospital stays and less hospital time in the subsequent 12 months. Healthcare costs were also lower (57).

A protocol was reported to prospectively study the healthcare trajectories of retirement village residents and to trial a multidisciplinary team intervention to decrease dependency and healthcare use. First hospitalisation will be the primary outcome of the trial (58).

Using New Zealand Health Survey data, the associations between housing tenure and health service use by older individuals was examined. Older renters were found to use public health services more often than owner-occupiers, but also to have greater unmet health needs (59).

The development, methods and findings of a pilot Kaumātua Mana Motuhake intervention, were presented. The peer education programme for older Māori showed the value of a strengths-based approach, and the value of kaumātua supporting others during life transitions (60).

Survival and six-month outcomes of those over 80 years of age following admission to intensive care were reviewed in the Waitematā DHB. Elective admissions were more likely to survive to discharge than emergency admissions, and standard ICU risk scores were predictive of survival to discharge. Most (79%) older adults survived to discharge and 72% survived for a further 6 months. Most survivors were discharged home where they were still living after 6 months, with the majority requiring no formal supports (61).

A study investigated patient characteristics and predictors of completion of a pulmonary rehabilitation programme in the Counties Manukau Health in Auckland. Compared to European people, Māori were 52% less likely and Pacific Island people were 40% less likely to complete the programme - significant findings for the Counties Manukau Health population. Further work needs to focus on determining how to make programmes more engaging to people of different cultures and how they can aim to reduce health inequities in these populations (62).

A study was conducted to check if access to acute stroke reperfusion therapy is equitable among ethnic groups. Conclusions of this study have been reported in page 10 in this review under *Central nervous system conditions – Stroke* (26).

Health, wellbeing and quality of life

Trajectories of living standards prior to and following pension eligibility, were examined in longitudinal data. The predominant group (81.5%) with good living standards also had good physical and mental health. The remainder experienced hardship, but those whose living standards had improved post-pension had improved mental health. Declining living standards were associated with poorer physical and mental health. The authors noted that current policy settings meant that most people can maintain good living standards and health, and that for some the alleviation of material hardship could reduce health inequalities in later life (63).

The methodology was reported for an observational study using interRAI data of how COVID-19 impacts health and psychosocial indicators and health service use (64).

A study of the attitudes of older Korean women in New Zealand towards ageing identified several themes, challenging the binary view of either acceptance or resistance to ageing (65).

Older adults were found to interact with cherished possessions to connect with their past selves, to help with challenges and, for some, to maintain ageing in place. For some, possessions disrupted the sense of self, attachment and daily life. The authors concluded that

simple interventions involving possessions could make a difference to quality of life for older adults (66).

Three month and one year mortality risk were developed from interRAI data using multivariate prediction models. The models accurately predict mortality in older adults with complex co-morbidities. The authors note the models could help policy development and clinical decision making (67).

Experiences of centenarians were examined through interviews; positive personalities were prominent as was acceptance and satisfaction with life and living in the present (68).

Longitudinal survey data and lifecourse history interviews were used to test a lifecourse predictors of physical, mental and social health in older adults. There was a link between childhood socio-economic status and later life health, mediated by education, occupation and adult wealth. There were different pathways for Māori men and women as well as non-Māori women, who did not obtain the same benefits from higher childhood socio-economic status and education as non-Māori men (69).

Interviews with community-living older adults identified a range of psychological strengths, including humility, which meant they found it difficult to identify their own strengths. The authors recommended adopting and implementing strength-based practices workable in daily practice, for example, in clinical assessment and health promotion programs, are required (70).

Based on a series of interviews with 85-90 year olds, home gardens were identified as a way of supporting wellbeing in older adults. Gardening was found to be a prominent activity even for those with complex co-morbidities, were therapeutic, and enabled expression and performance of agency in advanced age (71).

Circumstances of older people with diabetes and multiple chronic illnesses were compared to older people with no health issues in a cohort study. Positive neighbourhood qualities, social cohesion and housing satisfaction provided protection against depression and better quality of life, which the authors recommended should inform care guidelines and rehabilitation goals (72).

Health workforce

Meaningful increases in hourly rates of pay, and improved working time arrangements and provision for career progression have occurred for the previously low-paid aged care workforce. How this happened was analysed, with the authors identifying lessons from New Zealand's collaborative approach to equal pay in care work (73).

A postal survey was used to understand the sleep of family carers for older adults with cognitive impairment. Most carers reported disturbed sleep; predictors included disturbed

sleep by the care recipient, being female, poorer self-rated health, and considering transitioning the family member into formal care (74).

Posts to an older adult carer's forum were analysed for Nussbaum's ten essential capabilities. Carers identified that they valued these capabilities, although in some instances they struggled to achieve them in the context of providing care (75).

Data from the LiLACS study was used to investigate gender and ethnicity of older adult carers. Carers were mostly adult children or partners, with the majority being female. Māori and men received more hours of care. The authors concluded that policies for carer support should recognise demographic differences and cultural expectations (76).

The professional development needs of registered nurses working in the aged care sector were investigated. Findings were that the sector has unique requirements and a diversity of nursing workforce, that professional development and learning is not well assimilated, and a professional clinical pathway is missing. The authors noted there was a need for input from clinical and education providers (77).

A participatory action research approach was used to understand workplace engagement of caregivers in aged residential care. Several features encouraged positive engagement; for example, influencing communications, being heard and being listened to, feeling valued, and caring for oneself. The authors suggested that these factors could be recognised during any organisational change or service development (78).

Expert opinions on assuring performance and supporting career transitions among older surgeons were described. Assessing the performance of older surgeons is hindered by a lack of validated tools. Most older surgeons make career transition decisions with appropriate self-awareness, but regulatory action was needed for a small group. The authors concluded that developing robust processes to assess performance, remediate deficits and adjust scopes of practice are desirable (79).

Registered nurses were interviewed to gain their perspectives of the use of interRAI, 18 months after its use became mandatory. They expressed mostly positive attitudes, but limited value was seen in dementia and end-of-life care. Duplication in data entry, insufficient training, and the annual competency tests caused the most stress and negative feelings (80).

A mixed-methods study explored the factors that predict the confidence of palliative care delivery in long-term care staff. Conclusions of this study have been reported in page 11 in this review under *End-of-life, palliative care* (34).

A survey examined geriatricians' attitudes towards voluntary assisted dying. Conclusions of this study have been reported in page 12 in this review under *End-of-life, palliative care* (37).

Housing

A study, involving interviews with 13 older rental tenants, found diverse and sometimes precarious circumstances, associated with health, financial and personal circumstances, highlighting issues around ageing well and ageing in place (81).

Interviews with 108 older age tenants, and national data on renting trends among older age groups, found that homelessness risk is central to older tenants experiences of the rental market. The authors concluded that tenure insecurity is generated through unaffordable rents, no-cause termination, poor dwelling conditions and housing that is unsuitable for an ageing population (82).

A study explored the association between tenure and the health service use of older New Zealanders. Conclusions of this study have been reported in page 14 in this review under *Health and social services* (59).

Living and care facilities

Aged care facilities

Medication omission rates in 375 residential aged care homes were reported; 4 medication doses were omitted per 100 dispensed doses. The most common category was “not administered”, followed by “refused”. Most residents (73%) had at least one omission episode in the 12 months of the study. Analgesics and laxatives were most frequently omitted (83). Findings from the same study were also reported elsewhere, stating that only 48% of omissions had a recorded reason (84).

The current state of bariatric services to treat extreme obesity within aged residential care was evaluated by conducting an environmental scan to identify bariatric resident needs and gaps in service provision, and to inform development of policy and service provision. Significant investment is required to address care concerns of older adults with extreme obesity at government and organisational levels (85).

The prevalence and use of texture modified diets (TMDs) in aged care residential facilities was determined from interRAI data, mealtime observations, and meal and menu audits. One third of residents had TMDs, and feeding assistance was more common than for those on regular diets. TMD diets did not comply with carbohydrate and protein serving standards (86).

The social practices and rituals of death in residential aged care were explored in a qualitative study. Conclusions of this study have been reported in page 10 in this review under *End-of-life, palliative care* (29).

A study examined GPs’ perspectives on delivering end-of-life care in the New Zealand residential aged care context. Conclusions of this study have been reported in page 11 in this review under *End-of-life, palliative care* (30).

The needs of continued education and professional development for registered nurses working in aged residential care were evaluated. Conclusions of this study have been reported in page 17 in this review under *Health workforce* (77).

Retirement villages

A resident survey and data from interRAI were used to investigate loneliness in 578 residents of 33 retirement villages. Some (37.4%) residents reported loneliness, with associated factors being widowed, being divorced/separated/never married, poor quality of life, depression risk and moving to a retirement village to gain more social connections (87).

A cross-sectional study of retirement village residents described the profile and health of residents in 33 retirement villages in Auckland. Hypertension, heart disease, arthritis and pain were reported by over 40% of residents, with cardiorespiratory symptoms and pain the commonest unmet needs. Downsizing, access to healthcare and less stress were the most common reasons for entering a village (88).

The impact of a volunteer-led animal visits programme was assessed through interviews of seven residents of retirement villages. Themes included that villages are a “sad environment” and animal visits provided “fleeting pleasure” (89).

The methodology of a survey and randomised trial of a multi-disciplinary invention that designed to avoid adverse outcomes for older people in retirement villages was reported (58).

Mental health

Review of Coroner service data on suicide between 2011-2019 showed a consistently high suicide rate for people aged 85 years and older, greater or comparable with teenage and young adult male groups (90).

Analysis of interRAI data found that minor sleep problems were commonly reported by older community living people, and 15% reported severe fatigue. There was only a weak association between depression and fatigue (91).

InterRAI data were also used to examine predictive factors for nonfatal self-harm. A small proportion (0.27%) of 93,000 older adults had one or more self-harm episodes in a four year period. Depression, at-risk alcohol use and bipolar disorder were the most significant predictors of self-harm (92).

There is increased depression risk of newly admitted aged residential care facility. The methodology for a brief intervention trial based on self-determination theory was described. The trial’s primary outcomes were depression symptoms and disorders (93).

Nutrition

The prevalence of risk for undernutrition in community-living older adults was compared in three countries; the Netherlands, Canada and New Zealand, using the same validated tool. Overall, 66.3% of older adults were found to be at high nutrition risk across countries (68.2% in New Zealand), with some variation in risk factor items between the three countries (94).

A qualitative study looked at factors that influence vulnerability to malnutrition risk in older adults. Several themes were identified including; eating less because of reduced physical activity, eating is a chore, low appetite, difficulty in accessing favourite foods, and healthy eating meaning more vegetables and less fat and sugar. The authors noted that a range of sociocultural and health related factors contributed to lower food intake, which should inform strategies to prevent vulnerability to malnutrition (95).

Associations between dietary patterns and socio-demographic and lifestyle factors were examined in a study of 367 older adults. Three patterns were characterised, Mediterranean (associated with female, higher physical activity and higher education), Western (male, higher alcohol intake, living with others, secondary education), and prudent (higher physical activity, lower alcohol intake). The authors noted that socio-demographic and lifestyle factors were associated with dietary patterns, and understanding these relationships could help in health promotion (96).

Data from the LiLACS study showed that one third of octogenarians (both men and women) had low protein intake. Intake was lowest at breakfast and highest at dinner. Being a woman and having depression symptoms were associated with consuming less protein. Having your own teeth or partial dentures improved the probability of an adequate protein intake (97).

A vitamin D supplementation RCT (median duration of 3.3 years) involving more than 5,000 participants aged 50-84 at recruitment, found no effect on cardiovascular disease, acute respiratory infections, non-vertebral fractures, falls, or cancer. Participants who had low 25-hydroxyvitamin D levels had bone mineral density and arterial function benefits, and smokers showed lung function gains (98).

The activities of the Joint Action Malnutrition in the Elderly (MaNuEL) Knowledge Hub, which involved research groups from seven countries, were described and showed how it helped advance efforts to manage the problem of protein-energy malnutrition in the older population (99).

A study characterised the prevalence and practice of texture modified diets (TMD) in residential aged care facilities. Conclusions of the two studies have been reported in page 18 in this review under *Living and care facilities* (86).

Other conditions

Diabetes

Data from six waves of the New Zealand Health, Work and Retirement Survey, Health-Related Quality of Life (HRQUALITY OF LIFE) were compared between older adults with and without diabetes. Diabetes was associated with poorer physical and mental HRQUALITY OF LIFE (103).

Long-term outcomes for older adults receiving diabetes medications were examined using linked hospitalisation and mortality data. Over a 7-year follow-up, 16% experienced hypoglycaemia, 36% had a CVD event and 31% died. Compared to metformin, other drugs (including insulin) were associated with significantly greater risks of hypoglycaemia, CVD and death (104).

Older adult abuse

An attempt was made to determine the extent of older adult abuse using interRAI data, however, the authors concluded that the interRAI assessment was neither sensitive nor specific enough, and called for changes to aid case identification (105).

Another study described perceptions and experiences of elder abuse among New Zealand Pacific elders. Spiritual and cultural abuse were often overlays, with intergenerational differences contributing (106).

Oral health

A national survey of the oral health of residents in aged care facilities found that they could validly self-rate their oral health, although conclusions about periodontal status required further investigation (101).

Access to dental service for community-living older adults receiving living support was examined through semi-structured interviews of 40 adults. The expense of dental care was seen as the major barrier to accessing service, along with social isolation (102).

Other

A retrospective review of breast cancer outcomes for women over 70 years of age (n=2,128) was conducted to determine the benefits, or otherwise, of mammography screening in this age group. Mammography screening detected cancers at a younger age (median 74 years) than clinically detected tumours (median 79 years), and at an earlier stage, and these women had better 5 year disease-specific (93.7% vs 81.9%) and overall survival (84.7% vs 57.4%) demonstrating the continued benefit of mammography screening in this age group (100).

Socio-demographic and lifestyle factors associated with multi-morbidity were examined in a population-based cohort study (n=1,673). With a ten-year follow-up, predictors of multi-morbidity were age, ethnicity, living alone, obesity, hypertension and having one chronic condition at baseline. A higher incidence of multi-morbidity was found in Māori, socio-economically disadvantaged groups, those with low physical activity and who were obese (107).

Sleep was examined at baseline and four years later in people aged over 80 years of age from the LiLACs New Zealand study. The study found that 25% of people reported sleep problems at both times, and those with problems at baseline were more likely to still experience problems four years later than those who did not report sleep issues at baseline, and had poorer indicators of physical health and pain. For Māori, mortality was associated with problem sleep (108).

A study investigated risk factors for health events during vitamin D supplementation, and from withdrawal of vitamin D supplementation. Data were analysed from the ViDA study of 5,110 adults with a mean follow-up of 3.3 years. Vitamin D, compared to placebo, was not associated with adverse events, and there was no clear pattern of the factors associated with self-reported adverse events. Reporting adverse events was not associated with study withdrawal (109).

An outbreak of an invasive group A Streptococcus infection was described in an eldercare facility resulting in five deaths. The responsible organism was identified by whole genome sequencing and bioinformatic approaches (110).

A retrospective cohort study analysed surgical intervention rate (SIR), best spectacle-corrected visual acuity (BSCVA) and disparities in access to public-funded cataract surgery in New Zealand. New Zealand's cataract SIR is lower than most OECD countries and patients have significantly worse BSCVA when prioritised for surgery. Māori and Pacific peoples present younger with worse BSCVA, suggesting potential barriers in accessing timely referral and prioritisation (111).

A study reported a retrospective analysis of eligibility for denosumab in patients presenting with osteoporotic fractures and renal impairment treated by the orthogeriatric service at Middlemore Hospital. Results highlighted the need for further review and revision of the current PHARMAC criteria to improve access to denosumab for older adults with renal impairment and osteoporotic fractures (112).

Respiratory conditions

A study investigated patient characteristics affecting engagement with the Counties Manukau Health pulmonary rehabilitation programme and identify factors predicting completion of the programme. Conclusions of this study have been reported in page 15 in this review under *Other conditions - Respiratory conditions* (62).

Semi-structured interviews were undertaken with 23 patients with severe chronic obstructive pulmonary disease (COPD) in the Southern Health Region (Otago and Southland). It was revealed that living with severe COPD is a 'balancing act' between insecurity (loss and isolation) and resilience (adaptation and social support). Health-care providers need to be proactive in identifying and managing patients' unmet health needs and promote activities that reduce social isolation (113).

Prescribing

Pharmacist-applied criteria were used to identify potentially inappropriate prescribing (PIP) (either inappropriate medicines, or prescribing omissions). Data taken from the LiLACS study showed PIP prevalence was 66% at baseline for Māori, increasing to 75% and 72% 1 and 2 years later, respectively. Prevalence was similar for non-Māori. There were more omissions than inappropriate medicines. PIP was associated with increased risk of hospitalisation and mortality (114).

LiLACS study data were also used to investigate anticholinergic and sedative medication exposure. A higher Drug Burden Index was significantly associated with a greater risk of mortality (in Māori and non-Māori) and impaired cognitive function (in non-Māori), highlighting the importance of managing use of these classes of medication in older adults (115).

Older people's polypharmacy and medication use was examined in a national representative sample (the 2012 Older People's Oral Health Survey). Most (53.2%) older people took between 5-9 medications, and 13.9% took more than 10. The authors identified that pain was often undertreated (116).

The methodology of a non-randomised, non-controlled feasibility study of a pharmacist-led medicines review intervention in community-living Māori older adults was reported (117).

The experiences of ten kaumātua with medicines and medicine-related services were collected. The authors reported that kaumātua have the ability, desire and right to control their medication journey in a way that is relevant to their experiences of medicines, and that they value support from authentic healthcare partnerships in enabling this (118).

An association between anticholinergic burden and cognitive function was found in a nationwide community-dwelling older adult sample. The authors noted that the anticholinergic burden is a modifiable risk factor and should be routinely targeted during geriatric risk assessments (119).

Potentially inappropriate medicine (PIMs) prescribing by New Zealand nurse practitioners to older adults was examined. The authors found that the nurse practitioners prescribe lower rates of PIMs to older adults than other prescribers. However, they noted prescribing practices could be improved and there could be an educational focus on prescribing to older adults (120).

The national pharmaceutical claims database was analysed to assess changing patterns of prescribing to primary care patients aged over 65 years, comparing 2010 to 2015. Overall prevalence of medicine use was 92% in 2010 and 93% in 2015. Patients over 85 years of age had double the number of prescriptions compared to the 65-74 year old age group. Over the five years, use of systemic antibiotics increased by 2%, while use of antithrombotics, beta blockers, diuretics, nitrates and antiarrhythmics reduced (121).

Medication omission rates in New Zealand residential aged care homes were reported. Conclusions of the two studies have been reported in page 18 in this review under *Living and care facilities* (83, 84).

Social connection

The experiences of older Chinese, Indian and Korean immigrants were explored through focus groups and interviews. Themes included being unsettled, feeling side-lined and wanting to communicate and join with others in the community (122).

A focused ethnography approach was taken to understand the expectations of older Filipino immigrants with respect to filial piety from their adult children. The researchers found that older immigrants had moved away from filial piety expectations, and valued not being a burden and wished to maintain positive family relationships (123).

The meanings of loneliness and social isolation were examined in older adults (Māori, Pacific, Asian and New Zealand European) through interviews and focus groups. Participants had complex and culturally nuanced understandings and experiences with loneliness and social isolation, underpinning the need for more culturally appropriate support and mental health services, with access expanded to weekends and evenings (124).

The prevalence of loneliness and associated factors for old people living in New Zealand retirement villages were investigated. Conclusions of this study have been reported in page 19 in this review under *Living and care facilities* (87).

Transport and the built environment

Data from two waves of a longitudinal study on ageing found that perceptions of greater neighbourhood accessibility and more trust among neighbours were associated with better mental health-related quality of life after two years, but not to changes in physical health-related quality of life. Those reporting lower neighbourhood access experienced a stronger impact of intrinsic capacity on physical health-related quality of life. The authors concluded that the neighbourhood environment is important to wellbeing of older people (125). A companion paper described the data used in the analysis (126).

A review evaluated the effectiveness and safety of environmental and behavioural interventions in reducing physical activity limitation, preventing falls and improving quality of life amongst visually impaired older people. Conclusions of this study have been reported in page 12 in this review under *Frailty, balance, falls* (43).

Work and finances

A paper reported the motivations of a group of older academics, who while notionally retired, continue to be globally mobile and work internationally. These individuals found greater

satisfaction than with their previous work, and intended to remain working as long as opportunities and health permitted (127).

A book reviewed the international gender and health perspectives on extended working life policies. There are many calls for a comprehensive approach to the challenges and opportunities of workforce ageing in New Zealand, many from government agencies, but few provide a gender perspective. Much depends on the extent to which individual employers recognise the implications of workforce ageing and respond with appropriate policies and practices (128).

Not otherwise classified

In the LiLACS cohort study of octogenarians, technology use (cell phones, internet and pay-per-view TV) was relatively low, and less for Maori than non-Māori, showing that access may limit the potential for health technology innovations for this age group (129).

Several indicators of old-age structure were calculated and compared between New Zealand and Australia. The authors concluded that there is an advantageous ageing structure in Australia, and that Māori and Australian Aboriginal groups are significantly disadvantaged compared with the general population (130).

Interviews with people of older sexual and gender minorities found that changes in legislation and social policy have not provided protection from social stigma and bias (131).

Perspectives of members of the Senior Advisory Panel for Auckland's Age Friendly City project were collated. Recommendations included a sustainable co-governance framework for an independent steering group and a succession plan to allow knowledge transfer to incoming Senior Advisory Panel members (132).

Eleven older adults were interviewed about their views on the use of the term "elder orphans". The term was beneficial to alerting care services, and in promoting awareness among healthcare providers; it is realistic and practical, although there was some ambivalence (133).

A review presented the demographics, inequalities, areas of gerontology research strengths, models of research funding, and policies and emerging issues relating to ageing in New Zealand. The authors concluded that New Zealand needs to continue to fund research that identifies unique and courageous service delivery solutions that result in positive social, financial, psychological, and physical ageing for older New Zealanders (134).

An interview study with 20 older New Zealanders revealed that "keeping up" with the times, changing Information and Communication Technology (ICT), and with others shapes aged subjectivities. Understanding the nuanced and situated nature of meanings of ICT practice is

necessary to interrogate normative assumptions associated with "more than human" possibilities of ageing well (135).

Ethnicity

In addition to the classification into primary categories, when relevant, publications were assigned to a broad ethnicity category (Māori, Pacific, Asian). Many publications involved, or were relevant to one or more ethnic groups, but the ethnicity category was used only when the publication was *primarily* addressing one of these groups (Table 3).

Table 3. Publications relate primarily to a broad ethnic group

Ethnicity	Number of publications	References
Māori	6	(38, 51, 55, 60, 117, 118)
Pacific	2	(33, 106)
Asian	4	(52, 65, 122, 123)

In addition, we mention publications reporting findings from the LiLACS New Zealand (Te Puāwaitanga O Ngā Tapuwae Kia Ora Tonu/ Life and Living in Advanced Age, a Cohort Study in New Zealand) project. While the project involves Māori and non-Māori older adults, the cohort of Māori is large. For 2020, there were seven publications included in this bibliography (44, 53, 76, 108, 114, 115, 129).

REFERENCES

1. Bunyoz KI, Malchau E, Malchau H, Troelsen A. Has the Use of Fixation Techniques in THA Changed in This Decade? The Uncemented Paradox Revisited. Clinical Orthopaedics and Related Research. 2020;478(4):697-704.

2. Behrendt CA, Sigvant B, Kuchenbecker J, Grima MJ, Schermerhorn M, Thomson IA, et al. International Variations and Sex Disparities in the Treatment of Peripheral Arterial Occlusive Disease: A Report from VASCUNET and the International Consortium of Vascular Registries. European Journal of Vascular and Endovascular Surgery. 2020;60(6):873-80.

3. Lal S, Gray A, Kim E, Bunton RW, Davis P, Galvin IF, et al. Frailty in Elderly Patients Undergoing Cardiac Surgery Increases Hospital Stay and 12-Month Readmission Rate. Heart Lung and Circulation. 2020;29(8):1187-94.

4. Roulet C, Rozsnyai Z, Jungo KT, M AvdP, Floriani C, Kurpas D, et al. Managing hypertension in frail oldest-old-The role of guideline use by general practitioners from 29 countries. PLoS ONE [Electronic Resource]. 2020;15(7):e0236064.

5. Mehta S, Jackson R, Poppe K, Kerr AJ, Kerr AJ, Pylypchuk R, et al. How do cardiovascular risk prediction equations developed among 30-74 year olds perform in older age groups? A validation study in 125 000 people aged 75-89 years. Journal of Epidemiology and Community Health. 2020;74(6):527-33.

6. Bacus S, Parsons J, Benatar J, Somaratne J, Webster M, Parke R. Fasting prior to cardiac catheterisation: a single-centre observational study. New Zealand Medical Journal. 2020;133(1510):16-22.

7. Looi JL, Verryt T, McLeod P, Chan C, Pemberton J, Webster M, et al. A comparison of the clinical features and outcomes of Takotsubo syndrome across five metropolitan hospitals in New Zealand. New Zealand Medical Journal. 2020;133(1520):73-82.

8. Wang TKM, Kerr A, Kasargod C, Chan D, Cicovic S, Dimalapang E, et al. Percutaneous Coronary Intervention for Left Main Coronary Disease in New Zealand: National Linkage Study of Characteristics and In-Hospital Outcomes (ANZACS-QI 38). Cardiovascular Revascularization Medicine. 2020;21(5):573-9.

9. Barak Y, Gray AR, Rapsey C, Scott K. The Dunedin dementia risk awareness project: pilot study in older adults. International Psychogeriatrics. 2020;32(2):241-54.

10. Barak Y, Leitch S, Gale C, Glue P. No seasonal influence on cognitive performance in a national sample of older adults in New Zealand. Australasian Journal on Ageing. 2020;39(2):e201-e4.

11. Binns E, Kerse N, Peri K, Cheung G, Taylor D. Combining cognitive stimulation therapy and fall prevention exercise (CogEx) in older adults with mild to moderate dementia: a feasibility randomised controlled trial. Pilot and Feasibility Studies. 2020;6(1).

12. Casey J, Grant A. The assessment of testamentary capacity. New Zealand Medical Journal. 2020;133(1522):133-7.

13. Cullum S, Varghese C, Coomarasamy C, Whittington R, Hadfield L, Rajay A, et al. Predictors of mortality in Maori, Pacific Island, and European patients diagnosed with dementia at a New Zealand Memory Service. International Journal of Geriatric Psychiatry. 2020;35(5):516-24.

14. de Vries K, Drury-Ruddlesden J, McGill G. Investigation into attitudes towards older people with dementia in acute hospital using the Approaches to Dementia Questionnaire. Dementia. 2020;19(8):2761-79.

15. Majid H, Silva FVM. Inhibition of enzymes important for Alzheimer's disease by antioxidant extracts prepared from 15 New Zealand medicinal trees and bushes. Journal of the Royal Society of New Zealand. 2020;50(4):538-51.

16. Martinez-Ruiz A, Huang Y, Gee S, Jamieson H, Cheung G. Individual risk factors for possible undetected dementia amongst community-dwelling older people in New Zealand. Dementia-International Journal of Social Research and Practice. 2020;19(3):750-65.

17. Walesby KE, Exeter DJ, Gibb S, Wood PC, Starr JM, Russ TC. Prevalence and geographical variation of dementia in New Zealand from 2012 to 2015: Brief report utilising routinely collected data within the Integrated Data Infrastructure. Australasian Journal on Ageing. 2020;39(3):297-304.

18. Gaskin A. Connection through creativity: TOI AKO, a creative ageing mentoring programme in Tamaki Makaurau, Aotearoa, New Zealand for Older people and people living with dementia. Arts & Dementia: Interdisciplinary Perspectives2020. p. 66-83.

19. Barber PA, Wu TY, Ranta A. Stroke reperfusion therapy following dabigatran reversal with idarucizumab in a national cohort. Neurology. 2020;94(19):E1968-E72.

20. Beharry J, Fink J, Colgan F, Laing A, Mann D, Collecutt W, et al. Endovascular Therapy for Ischemic Stroke Can Be Successfully Performed by Peripheral Vascular Interventionalists. Journal of Vascular and Interventional Radiology. 2020;31(12):1978-83.

21. Beharry J, Waters MJ, Drew R, Fink JN, Wilson D, Campbell BCV, et al. Dabigatran Reversal Before Intravenous Tenecteplase in Acute Ischemic Stroke. Stroke. 2020;51(5):1616-9.

22. Fu V, Weatherall M, McPherson K, Taylor W, McRae A, Thomson T, et al. Taking Charge after Stroke: A randomized controlled trial of a person-centered, self-directed rehabilitation intervention. International Journal of Stroke. 2020;15(9):954-64.

23. Lemke M, Rodríguez Ramírez E, Robinson B, Signal N. Motivators and barriers to using information and communication technology in everyday life following stroke: a qualitative and video observation study. Disability and Rehabilitation. 2020;42(14):1954-62.

24. Mahon S, Faulkner J, Barker-Collo S, Krishnamurthi R, Jones K, Feigin V. Slowed Information Processing Speed at Four Years Poststroke: Evidence and Predictors from a Population-Based Follow-up Study. Journal of Stroke and Cerebrovascular Diseases. 2020;29(2).

25. Becker I, Maleka MD, Stewart A, Jenkins M, Hale L. Community reintegration post-stroke in New Zealand: understanding the experiences of stroke survivors in the lower South Island. Disability and Rehabilitation. 2020.

26. Samuels I, Wang MTM, Chong KP, Davis A, Ranta A, Barber PA, et al. Ethnic Differences in Access to Stroke Reperfusion Therapy in Northern New Zealand. Neuroepidemiology. 2020;54(5):427-31.

27. Vallerga CL, Zhang F, Fowdar J, McRae AF, Qi T, Nabais MF, et al. Analysis of DNA methylation associates the cystine–glutamate antiporter SLC7A11 with risk of Parkinson's disease. Nature Communications. 2020;11(1).

28. Graham OEE, Pitcher TL, Liau Y, Miller AL, Dalrymple-Alford JC, Anderson TJ, et al. Nanopore sequencing of the glucocerebrosidase (GBA) gene in a New Zealand Parkinson's disease cohort. Parkinsonism and Related Disorders. 2020;70:36-41.

29. Balmer DG, Frey R, Gott M, Collier A, Boyd M. A Place to Live and to Die: A Qualitative Exploration of the Social Practices and Rituals of Death in Residential Aged Care. Omega-Journal of Death and Dying. 2020.

30. Balmer D, Frey R, Gott M, Robinson J, Boyd M. Provision of palliative and end-of-life care in New Zealand residential aged care facilities: general practitioners' perspectives. Australian Journal of Primary Health. 2020;26(2):124-31.

31. Booth A, Blake D. Assisted dying in the Aotearoa New Zealand media: a critical discourse analysis. Mortality. 2020.

32. Byrne CM, Morgan DD. Patterns of Religiosity, Death Anxiety, and Hope in a Population of Community-Dwelling Palliative Care Patients in New Zealand—What Gives Hope If Religion Can't? American Journal of Hospice and Palliative Medicine. 2020;37(5):377-84.

33. Foliaki S, Pulu V, Denison H, Weatherall M, Douwes J. Pacific meets west in addressing palliative care for Pacific populations in Aotearoa/New Zealand: a qualitative study. Bmc Palliative Care. 2020;19(1).

34. Frey R, Balmer D, Robinson J, Boyd M, Gott M. What factors predict the confidence of palliative care delivery in long-term care staff? A mixed-methods study. International Journal of Older People Nursing. 2020;15(2):e12295.

35. Frey R, Robinson J, Old A, Raphael D, Gott M. Factors associated with overall satisfaction with care at the end-of-life: Caregiver voices in New Zealand. Health & Social Care in the Community. 2020;28(6):2320-30.

36. Moeke-Maxwell T, Collier A, Wiles J, Williams L, Black S, Gott M. Bereaved Families' Perspectives of End-of-Life Care. Towards a Bicultural Whare Tapa Wha Older person's Palliative Care Model. Journal of Cross-Cultural Gerontology. 2020;35(2):177-93.

37. Munday T, Poon P. Geriatricians' attitudes towards voluntary assisted dying: A survey of Australian and New Zealand Society for Geriatric Medicine members. Australasian Journal on Ageing. 2020;39(1):e40-e8.

38. Nelson-Becker H, Moeke-Maxwell T. Spiritual Diversity, Spiritual Assessment, and Maori End-of-Life Perspectives: Attaining Ka Ea. Religions. 2020;11(10).

39. Speelberg HB, Shand B, Goodwin J, Wiseman R, Belluscio L, Grundy K. An evaluation of the contents of advance care plans and their use in patients admitted to a public hospital. The New Zealand medical journal. 2020;133(1526):55-66.

40. Frey R, Barham S, Balmer D, Boyd M, Robinson J, Gott M. Palliative care delivery in residential aged care: Bereaved family member experiences of the Supportive Hospice Aged Residential Exchange (SHARE) intervention. BMC Palliative Care. 2020;19(1).

41. Boyd M, Kvizhinadze G, Kho A, Wilson G, Wilson N. Cataract surgery for falls prevention and improving vision: modelling the health gain, health system costs and cost-effectiveness in a high-income country. Injury Prevention. 2020;26(4):302-9.

42. Curl A, Fitt H, Tomintz M. Experiences of the Built Environment, Falls and Fear of Falling Outdoors among Older Adults: An Exploratory Study and Future Directions. International Journal of Environmental Research and Public Health. 2020;17(4).

43. E JY, Li T, McInally L, Thomson K, Shahani U, Gray L, et al. Environmental and behavioural interventions for reducing physical activity limitation and preventing falls in older people with visual impairment. The Cochrane database of systematic reviews. 2020;9:CD009233.

44. Lord S, Moyes S, Teh R, Port W, Muru-Lanning M, Bacon CJ, et al. Gait, cognition and falls over 5 years, and motoric cognitive risk in New Zealand octogenarians: Te Puawaitanga o Nga Tapuwae Kia Ora Tonu, LiLACS NZ. Bmc Geriatrics. 2020;20(1).

45. Schluter PJ, Askew DA, Jamieson HA, Arnold EP. Urinary and fecal incontinence are independently associated with falls risk among older women and men with complex needs: A national population study. Neurourology and Urodynamics. 2020;39(3):945-53.

46. Taylor L, Parsons J, Taylor D, Binns E, Lord S, Edlin R, et al. Evaluating the effects of an exercise program (Staying UpRight) for older adults in long-term care on rates of falls: study protocol for a randomised controlled trial. Trials. 2020;21(1).

47. Wadsworth D, Lark S. Effects of Whole-Body Vibration Training on the Physical Function of the Frail Elderly: An Open, Randomized Controlled Trial. Archives of Physical Medicine and Rehabilitation. 2020;101(7):1111-9.

48. Butler M, Brookland R, Shope JT, Kerse N, Connolly MJ. Medical fitness to drive assessment with older drivers: A qualitative study with general practitioners in New Zealand. Journal of Transport & Health. 2020;17.

49. Deng C, Mitchell S, Paine SJ, Kerse N. Retrospective analysis of the 13-year trend in acute and elective surgery for patients aged 60 years and over at Auckland City Hospital, New Zealand. Journal of Epidemiology and Community Health. 2020;74(1):42-7.

50. Diamond S, Jaye C. Meeting the social support needs of older rural people in Central Otago: The impact of a pilot social work position. Aotearoa New Zealand Social Work. 2020;32(4):116-30.

51. Hokowhitu B, Oetzel JG, Simpson ML, Nock S, Reddy R, Meha P, et al. Kaumātua Mana Motuhake Pōi: A study protocol for enhancing wellbeing, social connectedness and cultural identity for Māori elders. BMC Geriatrics. 2020;20(1).

52. Kan KL, Connor H, Beddoe L. Accessing social service support: Barriers experienced by Chinese migrants living in Auckland, Aotearoa New Zealand. Aotearoa New Zealand Social Work. 2020;32(4):131-44.

53. Lapsley H, Kerse N, Moyes SA, Keeling S, Muru-Lanning ML, Wiles J, et al. Do household living arrangements explain gender and ethnicity differences in receipt of support services? Findings from LiLACS NZ Maori and non-Maori advanced age cohorts. Ageing & Society. 2020;40(5):1004-20.

54. Miskelly P, Kerse N, Wiles J. Joining-the-dots: caring for patients in advanced age. Quality in Ageing and Older Adults. 2020;21(1):15-27.

55. Oetzel JG, Cameron MP, Simpson ML, Reddy R, Nock S, Greensill H, et al. Kaumatua Mana Motuhake: peer education intervention to help Maori elders during later-stage life transitions. Bmc Geriatrics. 2020;20(1).

56. Palapar L, Wilkinson-Meyers L, Lumley T, Kerse N. GP- and practice-related variation in ambulatory sensitive hospitalisations of older primary care patients. Bmc Family Practice. 2020;21(1).

57. Parsons M, Parsons J, Pillai A, Rouse P, Mathieson S, Bregmen R, et al. Post-Acute Care for Older People Following Injury: A Randomized Controlled Trial. Journal of the American Medical Directors Association. 2020;21(3):404-+.

58. Peri K, Broad JB, Hikaka J, Boyd M, Bloomfield K, Wu Z, et al. Study protocol: older people in retirement villages. A survey and randomised trial of a multi-disciplinary invention designed to avoid adverse outcomes. Bmc Geriatrics. 2020;20(1).

59. Pledger M, Dunn P, McDonald J, Cumming J, Saville-Smith K. Is the use of health services by older adults in New Zealand associated with their housing tenure? New Zealand Medical Journal. 2020;133(1510):23-34.

60. Simpson ML, Greensill HM, Nock S, Meha P, Harding T, Shelford P, et al. Kaumatua mana motuhakein action: developing a culture-centred peer support programme for managing transitions in later life. Ageing & Society. 2020;40(8):1822-45.

61. Tsang J, Bloomfield K, Lawrey Y, Wu Z, Connolly MJ. The very old in intensive care: Admission characteristics, mortality and supports needed at six months postdischarge. Australasian Journal on Ageing. 2020;39(3):305-9.

62. Candy S, Jepsen N, Coomarasamy C, Curry J, Dodson G, Pomelile J, et al. Patient characteristics and predictors of completion of a pulmonary rehabilitation programme in Auckland, New Zealand. New Zealand Medical Journal. 2020;133(1522):30-41.

63. Allen J, Alpass FM. Trajectories of material living standards, physical health and mental health under a universal pension. Journal of Epidemiology and Community Health. 2020;74(4):362-8.

64. Cheung G, Rivera-Rodriguez C, Martinez-Ruiz A, Ma'u E, Ryan B, Burholt V, et al. Impact of COVID-19 on the health and psychosocial status of vulnerable older adults: study protocol for an observational study. Bmc Public Health. 2020;20(1).

65. Chung S. Resistance and acceptance: Ambivalent attitudes toward the aging body and antiaging practices among older Korean migrants living in New Zealand. Journal of Women & Aging. 2020;32(3):259-78.

66. Coleman T, Wiles J. Being With Objects of Meaning: Cherished Possessions and Opportunities to Maintain Aging in Place. Gerontologist. 2020;60(1):41-9.

67. Pickering JW, Abey-Nesbit R, Allore H, Jamieson H. Development and validation of multivariable mortality risk-prediction models in older people undergoing an interRAI home-care assessment (RiskOP). EClinicalMedicine. 2020;29-30.

68. Ratan A, de Vries K. 'Just another day': the lived experience of being a hundred years old for ten New Zealanders. Ageing & Society. 2020;40(7):1387-404.

69. Stephens C, Szabo A, Breheny M. Social inequalities over the lifecourse and healthy ageing in Aotearoa/New Zealand: Differences by Māori ethnicity and gender. Ageing and Society. 2020.

70. Waterworth S, Raphael D, Gott M, Arroll B, Jarden A. Uncovering strengths within community dwelling older adults: What does it mean for health care practice? Health and Social Care in the Community. 2020;28(3):932-40.

71. Wiles J, Miskelly P, Stewart O, Rolleston A, Gott M, Kerse N. Gardens as resources in advanced age in aotearoa NZ: More than therapeutic. Soc Sci Med. 2020.

72. Yeung P, Severinsen C, Good G, O'Donoghue K. Social environment and quality of life among older people with diabetes and multiple chronic illnesses in New Zealand: Intermediary effects of psychosocial support and constraints. Disability and Rehabilitation. 2020.

73. Charlesworth S, Heap L. Redressing gendered undervaluation in New Zealand aged care: Institutions, activism and coalitions. Journal of Industrial Relations. 2020;62(4):608-29.

74. Gibson R, Gander P. Factors associated with the sleep of carers: A survey of New Zealanders supporting a family member with cognitive impairment or dementia. Dementia. 2020.

75. Horrell B, Breheny M, Stephens C. Using Nussbaum's central capabilities to understand caring for older people in New Zealand. International Journal of Care and Caring. 2020;4(4):531-47.

76. Lapsley H, Hayman KJ, Muru-Lanning ML, Moyes SA, Keeling S, Edlin R, et al. Caregiving, ethnicity and gender in Maori and non-Maori New Zealanders of advanced age: Findings from LiLACS NZ Kaiawhina (Love and Support) study. Australasian Journal on Ageing. 2020;39(1):E1-E8.

77. Page M, Pool L, Crick DM, Leahy R. Empowerment of learning and knowledge: Appreciating professional development for registered nurses in aged residential care. Nurse Education in Practice. 2020;43.

78. Prentice J, Weatherall M, Grainger R, Levack W. 'Tell someone who cares': Participation action research on workplace engagement of caregivers in aged residential care, NZ. Australasian Journal on Ageing. 2020.

79. Sherwood R, Bismark M. The ageing surgeon: a qualitative study of expert opinions on assuring performance and supporting safe career transitions among older surgeons. Bmj Quality & Safety. 2020;29(2):113-21.

80. Vuorinen M. Registered Nurses' experiences with, and feelings and attitudes towards, the International Resident Assessment Instrument for Long-Term Care Facilities in New Zealand in 2017. Journal of Research in Nursing. 2020;25(2):141-55.

81. Bates L, Kearns R, Coleman T, Wiles J. 'You can't put your roots down': housing pathways, rental tenure and precarity in older age. Housing Studies. 2020;35(8):1442-67.

82. James BL, Bates L, Coleman TM, Kearns R, Cram F. Tenure insecurity, precarious housing and hidden homelessness among older renters in New Zealand. Housing Studies. 2020.

83. Garratt SM, Kerse NM, Peri K, Jonas MF. Medication omission rates in New Zealand residential aged care homes: a national description. Bmc Geriatrics. 2020;20(1).

84. Garratt SM, Kerse NM, Peri K, Jonas MF, Scahil SL. Pharmacoepidemiology of medications omitted in New Zealand Residential Aged Care Homes. Australasian Journal on Ageing. 2020;39(4):E490-E7.

85. Hales C, Amankwaa I, Gray L, Rook H. Providing care for older adults with extreme obesity in aged residential care facilities: An environmental scan. Nursing Praxis in Aotearoa New Zealand. 2020;36(3):24-36.

86. Miles A, Liang V, Sekula J, Broadmore S, Owen P, Braakhuis AJ. Texture-modified diets in aged care facilities: Nutrition, swallow safety and mealtime experience. Australasian Journal on Ageing. 2020;39(1):31-9.

87. Boyd M, Calvert C, Tatton A, Wu Z, Bloomfield K, Broad JB, et al. Lonely in a crowd: Loneliness in New Zealand retirement village residents. International Psychogeriatrics. 2020.

88. Broad JB, Wu Z, Bloomfield K, Hikaka J, Bramley D, Boyd M, et al. Health profile of residents of retirement villages in Auckland, New Zealand: findings from a cross-sectional survey with health assessment. BMJ open. 2020;10(9):e035876.

89. Wong G, Breheny M. The experience of animal therapy in residential aged care in New Zealand: A narrative analysis. Ageing and Society. 2020.

90. Barak Y, Cheung G, Fortune S, Glue P. No country for older men: ageing male suicide in New Zealand. Australasian Psychiatry. 2020;28(4):383-5.

91. Barak Y, Leitch S, Greco P, Glue PP. Fatigue, sleep and depression: An exploratory interRAI study of older adults. Psychiatry Research. 2020;284.

92. Cheung G, Chai Y, Troya MI, Luo H. Predictive factors of nonfatal self-harm among community-dwelling older adults assessed for support services. International Psychogeriatrics. 2020.

93. Davison TE, McCabe MP, Busija L, O'Connor DW, Costa VC, Byers J. A cluster randomised trial of the program to enhance adjustment to residential living (PEARL): a novel psychological intervention to reduce depression in newly admitted aged care residents. Bmc Geriatrics. 2020;20(1).

94. Borkent JW, Keller H, Wham C, Wijers F, de van der Schueren MAE. Cross-Country Differences and Similarities in Undernutrition Prevalence and Risk as Measured by SCREEN II in Community-Dwelling Older Adults. Healthcare. 2020;8(2).

95. Chatindiara I, Sheridan N, Kruger M, Wham C. Eating less the logical thing to do? Vulnerability to malnutrition with advancing age: A qualitative study. Appetite. 2020;146.

96. Mumme K, Conlon C, von Hurst P, Jones B, Stonehouse W, Heath AM, et al. Dietary Patterns, Their Nutrients, and Associations with Socio-Demographic and Lifestyle Factors in Older New Zealand Adults. Nutrients. 2020;12(11):08.

97. Ram A, Kerse N, Moyes SA, Muru-Lanning M, Wham C. Dietary Protein Intake and Determinants in Maori and Non-Maori Octogenarians. Te Puawaitanga o Nga Tapuwae Kia Ora Tonu: Life and Living in Advanced Age: A Cohort Study in New Zealand. Nutrients. 2020;12(7).

98. Scragg R. The Vitamin D Assessment (ViDA) study – Design and main findings. Journal of Steroid Biochemistry and Molecular Biology. 2020;198.

99. Volkert D, Visser M, Corish CA, Geisler C, de Groot L, Cruz-Jentoft AJ, et al. Joint action malnutrition in the elderly (MaNuEL) knowledge hub: summary of project findings. European Geriatric Medicine. 2020;11(1):169-77.

100. Ip EC, Cohen-Hallaleh RB, Ng AK. Extending Screening in "Elderly" Patients: Should We Consider a Selective Approach? Clinical Breast Cancer. 2020;20(5):377-81.

101. Lundbeck HJ, Smith MB, Thomson WM. Clinical validity of self-rated oral health among New Zealand nursing home residents. Gerodontology. 2020;37(3):253-7.

102. Smith LA, Smith M, Thomson WM. Barriers and enablers for dental care among dentate home-based older New Zealanders who receive living support. Gerodontology. 2020;37(3):244-52.

103. Shamshirgaran SM, Stephens C, Alpass F, Aminisani N. Longitudinal assessment of the health-related quality of life among older people with diabetes: results of a nationwide study in New Zealand. Bmc Endocrine Disorders. 2020;20(1).

104. Wallis KA, Wells S, Selak V, Poppe K. Long-term follow up of older people on diabetes medications: observational study using linked health databases. Australian Journal of Primary Health. 2020;26(4):306-12.

105. Hall Y, Greco P, Hau K, Barak Y. Older adults abuse: analysis of a New Zealand national dataset. International Psychogeriatrics. 2020;32(8):1003-8.

106. Thaggard S, Boon-Nanai J, Tautolo E, Montayre J. Experiences of Elder Abuse in Pacific Island Communities of Aotearoa New Zealand: a Cultural Lens. Journal of Population Ageing. 2020.

107. Aminisani N, Stephens C, Allen J, Alpass F, Shamshirgaran SM. Socio-demographic and lifestyle factors associated with multimorbidity in New Zealand. Epidemiology and Health. 2020;42.

108. Gibson R, Gander P, Kepa M, Moyes S, Kerse N. Self-reported sleep problems and their relationship to life and living of Maori and non-Maori in advanced age. Sleep Health. 2020;6(4):522-8.

109. Malihi Z, Wu Z, Lawes CMM, Sluyter J, Waayer D, Toop L, et al. Risk factors for reporting adverse events and for study withdrawal in a population-based trial of vitamin D supplementation. Journal of Steroid Biochemistry and Molecular Biology. 2020;197.

110. Worthing KA, Werno A, Pink R, McIntyre L, Carter GP, Williamson DA, et al. Biphasic Outbreak of Invasive Group A Streptococcus Disease in Eldercare Facility, New Zealand. Emerging Infectious Diseases. 2020;26(5):841-8.

111. Chilibeck C, Mathan JJ, Ng SG, McKelvie J. Cataract surgery in New Zealand: access to surgery, surgical intervention rates and visual acuity. The New Zealand medical journal. 2020;133(1524):40-9.

112. Kang MY, Besley J, Sun T, Paul S. Retrospective analysis of eligibility for denosumab in patients presenting with osteoporotic fractures and renal impairment treated by orthogeriatric service at Middlemore Hospital. The New Zealand medical journal. 2020;133(1515):16-24.

113. Tumilty E, Doolan-Noble F, Latu ATF, McAuley K, Dummer J, Baxter J, et al. 'A balancing act'. Living with severe chronic obstructive pulmonary disease in Southern New Zealand: A qualitative study. Journal of Primary Health Care. 2020;12(2):166-72.

114. Cardwell K, Kerse N, Hughes CM, Teh R, Moyes SA, Menzies O, et al. Does potentially inappropriate prescribing predict an increased risk of admission to hospital and mortality? A longitudinal study of the 'oldest old'. Bmc Geriatrics. 2020;20(1).

115. Cardwell K, Kerse N, Ryan C, Teh R, Moyes SA, Menzies O, et al. The Association Between Drug Burden Index (DBI) and Health-Related Outcomes: A Longitudinal Study of the 'Oldest Old' (LiLACS NZ). Drugs & Aging. 2020;37(3):205-13.

116. Ferguson CA, Thomson WM, Smith MB, Kerse N, Peri K, Gribben B. Medication taking in a national sample of dependent older people. Research in Social & Administrative Pharmacy. 2020;16(3):299-307.

117. Hikaka J, Hughes C, Jones R, Connolly MJ, Martini N. A pharmacist-led medicines review intervention in community-dwelling Māori older adults– a feasibility study protocol. Research in Social and Administrative Pharmacy. 2020;16(9):1264-71.

118. Hikaka J, Jones R, Hughes C, Martini N. "It is through shared conversation, that I understand"-Maori older adults' experiences of medicines and related services in Aotearoa New Zealand. New Zealand Medical Journal. 2020;133(1516):33-46.

119. Nishtala PS, Allore H, Han L, Jamieson HA, Hilmer SN, Chyou TY. Impact of Anticholinergic Burden on Cognitive Performance: A Cohort Study of Community-Dwelling Older Adults. Journal of the American Medical Directors Association. 2020;21(9):1357-+.

120. Poot B, Nelson K, Zonneveld R, Weatherall M. Potentially inappropriate medicine prescribing by nurse practitioners in New Zealand. Journal of the American Association of Nurse Practitioners. 2020;32(3):220-8.

121. Tomlin AM, Woods DJ, Reid JJ, Tilyard MW. Trends in prescription medicine use by older people in New Zealand 2010- 2015: a national population-based study. New Zealand Medical Journal. 2020;133(1513):61-72.

122. Wright-St Clair VA, Nayar S. Resettling amidst a mood of loneliness: later-life Chinese, Indian and Korean immigrants in New Zealand. Ageing & Society. 2020;40(11):2393-409.

123. Montayre J, Neville S, Wright-St Clair V, Holroyd E, Adams J. Older Filipino immigrants' reconfiguration of traditional filial expectations: a focus ethnographic study. Contemporary Nurse. 2020;56(1):1-13.

124. Morgan T, Wiles J, Moeke-Maxwell T, Black S, Park HJ, Dewes O, et al. 'People haven't got that close connection': meanings of loneliness and social isolation to culturally diverse older people. Aging and Mental Health. 2020;24(10):1627-35.

125. Stephens C, Allen J, Keating N, Szabo A, Alpass F. Neighborhood environments and intrinsic capacity interact to affect the health-related quality of life of older people in New Zealand. Maturitas. 2020;139:1-5.

126. Allen J, Alpass F, Stephens C. Dataset comprising indices of healthy ageing among older New Zealand adults from the 2016-2018 waves of the Health, Work and Retirement longitudinal survey. Data in Brief. 2020;31.

127. Hutchings K, Wilkinson A, Brewster C. Ageing academics do not retire - they just give up their administration and fly away: a study of continuing employment of older academic international business travellers. International Journal of Human Resource Management. 2020.

128. Davey JA, Phillips H, Alpass F. New Zealand. Extended Working Life Policies: International Gender and Health Perspectives2020. p. 351-61.

129. Atlas A, Muru-Lanning M, Moyes S, Kerse N, Jatrana S. Cell phone and technology use by octogenarians. Journal of Primary Health Care. 2020;12(1):35-40.

130. Barak Y, Neehoff S, Glue P. Ageing badly: indicators of old-age structure in Australia and New Zealand. Journal of Primary Health Care. 2020;12(3):272-6.

131. Betts D. "Civil rights? Yeah, right!": Reflections on legislative changes from older sexual and gender minorities in Aotearoa New Zealand. Aotearoa New Zealand Social Work. 2020;32(1):5-16.

132. Blakey J, Clews J. Knowing, Being and Co-Constructing an Age-Friendly Tamaki Makaurau Auckland. International Journal of Environmental Research and Public Health. 2020;17(23).

133. Montayre J, Thaggard S, Carney M. Views on the use of the term 'elder orphans': A qualitative study. Health and Social Care in the Community. 2020;28(2):341-6.

134. Parr-Brownlie LC, Waters DL, Neville S, Neha T, Muramatsu N, Meeks S. Aging in New Zealand: Ka haere ki te ao pakeketanga. Gerontologist. 2020;60(5):812-20.

135. Mansvelt J, Elms J, Dodds S. Connecting meanings of ageing, consumption, and information and communication technologies through practice. Geographical Research. 2020;58(3):289-99.