National SCIENCE Challenges

2022 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 NSCs 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 recognises 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 (2000-2021). This paper is a continuation of same activity, presenting a summary of 165 New Zealand-authored, peer-reviewed articles published 1 January to 31 December 2022.

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 2022

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 11. 6 and 10	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 = 2022 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

12. limit 11 to yr="2022 -2022"
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

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

49. "peer education".mp. 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. 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 categorised 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 1176 articles. After duplicate removals, 902 articles were screened by title and abstract. The full-text of 176 articles were then assessed for eligibility, with 165 articles finally included in this Year in Review.

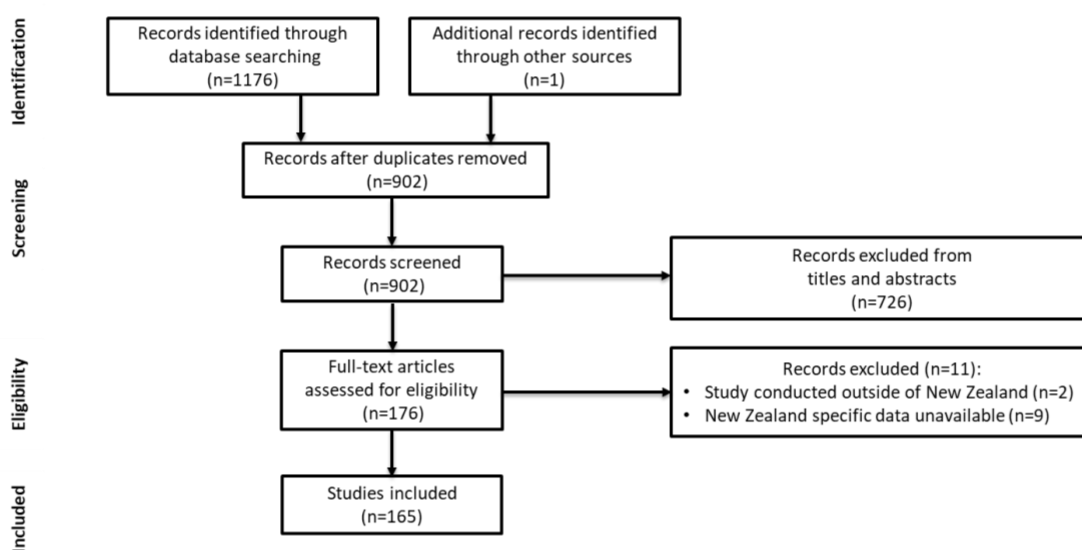


Figure 1. Study selection process

Table 2 summarises the assignment of the 165 publications to the 18 relevance categories.

Table 2. Classification of publications

Category	Number of publications
Bones and joints	6
Cardiovascular conditions	8
Central nervous system conditions	24
End-of-life and palliative care	10

Category	Number of publications
Frailty, balance, falls	10
Health and social services	7
Health, wellbeing and quality of life	6
Health workforce	11
Housing	5
Living and care facilities	22
Mental health	4
Nutrition	7
Other conditions	16
Prescribing	3
Social connection	10
Transport and built environment	4
Work and finances	2
Not otherwise classified	26

Bones and joints

A narrative review described the development and implementation of a systematic approach to care and prevention for New Zealanders with fragility fractures, and those at high risk of first fracture (1).

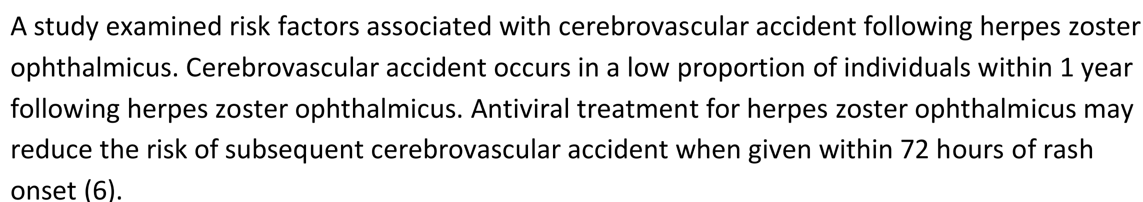
The prescription of bone protection medication before and early after hip fracture was compared between Australia and New Zealand. Bone protection medication prescription early after hip fracture is low. Opportunities exist to increase the rate of prescription of medications known to prevent future fractures in this high-risk population (2).

A cross-sectional survey determined the predictors of work ability and quality of life in older New Zealanders with and without an arthritis diagnosis. Pain and fatigue were associated with poorer outcomes for all participants. Pain moderated the relationship between arthritis and work ability (3).

A narrative review summarised recent studies (published between July 2019 and May 2022) that characterise the burden of fragility fractures, current care gaps and quality improvement initiatives intended to improve the care and prevention of fragility fractures across the Asia Pacific region (4).

Cardiovascular conditions

The association of type of stressor and medium-term outcomes after Takotsubo Syndrome was explored. Takotsubo syndrome associated with physical stressor has a post-discharge mortality risk as high as after myocardial infarction. In contrast, prognosis for Takotsubo Syndrome triggered by an emotional stressor is excellent, and similar to that of those without known cardiovascular disease (5).



A study examined risk factors associated with cerebrovascular accident following herpes zoster ophthalmicus. Cerebrovascular accident occurs in a low proportion of individuals within 1 year following herpes zoster ophthalmicus. Antiviral treatment for herpes zoster ophthalmicus may reduce the risk of subsequent cerebrovascular accident when given within 72 hours of rash onset (6).

A cross-sectional data analysis identified the predictors of health-related quality of life (HRQOL) in older New Zealanders with cardiovascular health problems. Physical activity is the strongest predictor of HRQOL in older adults with cardiovascular problems. Older female New Zealanders with cardiovascular health problems have lower perceptions of their health status (7).

A proof-of-concept study found that adding a biomarker to a risk model based on standardised needs assessment of older people improved prediction of 1-year mortality. Brain Naturetic Peptide added value to a risk prediction model based on the interRAI-HC assessment in those patients without a diagnosis of congestive heart failure (8).

Māori health outcomes in intensive care (ICU) following cardiac surgery in New Zealand were audited. Significant inequity for Māori at cardiothoracic ICU was noted: Māori are sicker on presentation for planned cardiac surgery, as evidenced by higher admission severity scores, and experience higher unadjusted mortality up to 1-year compared to non-Māori. Māori also appear under-represented despite a greater burden of cardiovascular disease in the community (9).

A qualitative study investigated older peoples' views on cardiovascular disease medication. Findings raised questions about older people's agency in decision-making regarding cardiovascular disease medication (10).

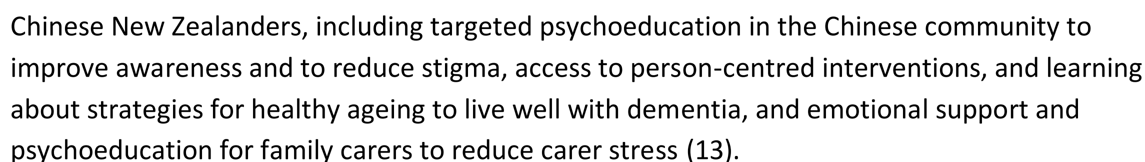
The management and outcomes of patients with and without prior coronary artery bypass grafts (CABG) were examined. Despite half of the patients with acute coronary syndrome and prior CABG receiving percutaneous coronary intervention, the outcomes remain poor compared with those without prior CABG (11).

Ethnic differences in incidence and outcomes of acute aortic syndromes in the Midland region of New Zealand was explored. While Māori presenting at a younger age and with a greater incidence compared with other ethnicities, the survival outcomes when stratified by ethnicity were comparable in the present cohort (12).

Central nervous system conditions

Dementia and cognitive impairment

A qualitative study explored the understanding and experiences of living with dementia in Chinese New Zealanders. Findings provided insight into ways to improve dementia care for



Chinese New Zealanders, including targeted psychoeducation in the Chinese community to improve awareness and to reduce stigma, access to person-centred interventions, and learning about strategies for healthy ageing to live well with dementia, and emotional support and psychoeducation for family carers to reduce carer stress (13).

A population-based descriptive study provided the best estimate to date for dementia prevalence in New Zealand. The findings suggested that diagnosed dementia prevalence is higher in Māori and Pacific Islanders and called for a nationwide NZ community-based dementia prevalence study to confirm the findings of this study (14).

A study found that plasma nervonic acid levels are negatively associated with attention levels in community-living older adults in New Zealand (15).

A population-based study evaluated the incidence of young onset dementia in Waikato, and found the incidence is similar to global estimates (16). Another study using nationwide analysis of routinely collected data found the prevalence of young-onset dementia in New Zealand is similar to reported global prevalence, validating previous estimates. Prevalence differed by ethnicity, which has important implications for service planning (17).

Interviews were conducted to explore the lived experiences of New Zealand Indians living with dementia and their caregivers. Future health services should prioritise a timely diagnosis, and dementia care services should consider specific cultural needs to maximise uptake and benefit for Indian families living with dementia (18).

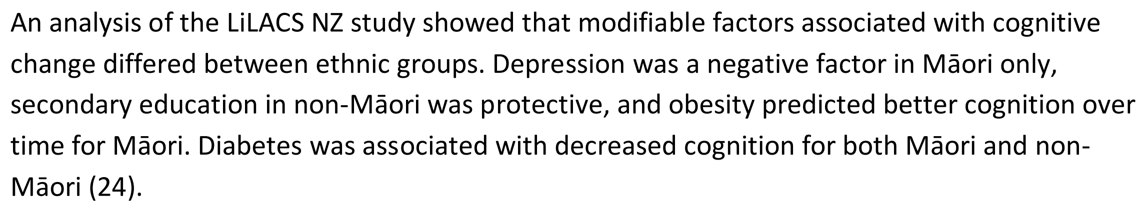
The diagnostic accuracy of *10/66 dementia protocol* in Māori kaumatua living in New Zealand was examined. The study results provided preliminary evidence that the Māori-friendly *10/66 dementia protocol* has adequate discriminatory abilities for the diagnosis of dementia (19).

A Randomised Controlled Trial (RCT) investigated the effects of docosahexaenoic acid (DHA) supplementation on cognition and wellbeing in mild cognitive impairment. Despite no effect on cognition, the positive result in apolipoprotein E e4 carriers on depression and anxiety scores and on systolic blood pressure justifies further DHA trials (20).

A qualitative study investigated Māori understandings of dementia and developed a framework to inform assessment of cognitive impairment. The findings embedded in cultural values improve understanding of dementia in Māori (21).

A descriptive analysis of the initial interRAI assessment for adults older than 55 years was undertaken. The results reinforced a need to be alert to the differential care needs of older adults with moderate/severe cognitive impairment (22).

The key aspects of the *Dementia Prevention Research Clinic*'s research, an overview of data collection, and a summary of 266 participants recruited to date were reported (23).



An analysis of the LiLACS NZ study showed that modifiable factors associated with cognitive change differed between ethnic groups. Depression was a negative factor in Māori only, secondary education in non-Māori was protective, and obesity predicted better cognition over time for Māori. Diabetes was associated with decreased cognition for both Māori and non-Māori (24).

The associations between dietary patterns and metabolic syndrome in older adults were identified in the REACH study. In the cohort of community-dwelling, older adults in New Zealand, current dietary patterns were not associated with cognitive function (25).

A study applying a case-time-control design found that oxybutynin but not solifenacin is associated with a risk of new-onset delirium in older adults. The higher blockade of M1 and M2 receptors by oxybutynin is likely to contribute to delirium than solifenacin, which is highly selective for the M3 receptor subtype. Therefore, the treatment choice with an M3 selective agent must be given due consideration, particularly in those with pre-existing cognitive impairment (26).

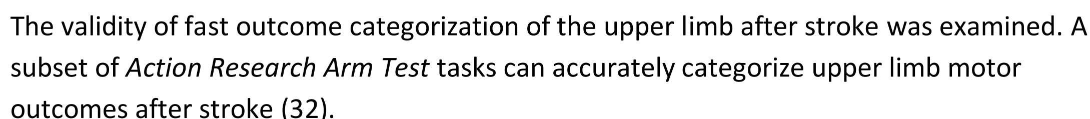
A study demonstrated that older hospital inpatients that screen positive for delirium and dementia using *4AT* and *AQ* have longer lengths of stay and higher mortality. Identification may lead to more timely interventions that help to improve health outcomes and reduce hospital costs (27).

A mixed-methods study investigated barriers to completing the *4AT* for delirium and its clinical implementation in two hospitals. Adherence to the *4AT* was high and sustainable in both hospitals. Most barriers to completing the *4AT* were potentially avoidable. Education about the *4AT* in relation to these barriers may improve its implementation (28).

Stroke

A secondary analysis of the AFFINITY RCT found that clinically significant symptoms of depression were present in 95 % of participants with recurrent self-harm thoughts (29). The sociodemographic and clinical factors associated with early, late, and persistent clinically significant symptoms of depression during the first year after a stroke in the AFFINITY trial were reported (30).

Interviews were conducted to explore perceptions about community reintegration of stroke survivors living in southern New Zealand. Key to successful community reintegration, irrespective of geography, culture and ethnicity, appears to be involvement in meaningful activities, and reduced reliance on others whilst maintaining or developing good social relationships (31).



The validity of fast outcome categorization of the upper limb after stroke was examined. A subset of *Action Research Arm Test* tasks can accurately categorize upper limb motor outcomes after stroke (32).

A New Zealand nationwide observational study evaluated the impact of ethnicity on stroke care access and patient outcomes. Non-Europeans, especially Māori, had poorer access to key stroke interventions and experience poorer outcomes. Further optimisation of stroke care targeting high-priority populations are needed to achieve equity (33).

A nationally representative observational study demonstrated that patients managed at nonurban hospitals experience poorer stroke outcomes and reduced access to key stroke interventions across the entire care continuum. Efforts to improve access to high quality stroke care in nonurban hospitals should be a priority (34).

End-of-life and palliative care

A critical discourse analysis of assisted dying in the New Zealand media found that a particularly western and privileged subject was representative of those in favour of legitimating the practice. Non-western understandings were absent, religious and spiritual considerations marginalised, the disabled body let die, and the older adult voice silent (35).

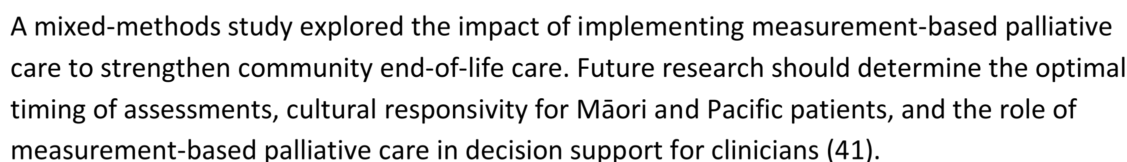
A survey explored the views of New Zealand adults over 60 years regarding the *End of Life Choice Act 2019*. Results indicated that most participants were concerned about potential abuses and coercive practices if assisted dying became legally available in New Zealand (36).

Interviews were conducted to investigate the impact of and response to COVID-19 for hospice community services in New Zealand. Implications for hospice practice and recommendations for future research were discussed (37).

A survey of New Zealand medical schools regarding palliative and end of life care in undergraduate medical education. There has been significant progress towards integrating this content into the curriculum, although further development is needed to address barriers and maximise learning opportunities to ensure graduates are as well prepared as possible (38).

The current landscape of specialist palliative care services across New Zealand was described. Areas of inconsistency were highlighted including afterhours access and cultural support for Māori. The capacity of the present system to address current and future shortages of palliative medicine specialist was questioned (39).

A qualitative study explored the carer's experience of looking after a terminally ill adult under 65 years of age. This research advocated for strength-based assessments to support carers during the illness of their family member (40).



A mixed-methods study explored the impact of implementing measurement-based palliative care to strengthen community end-of-life care. Future research should determine the optimal timing of assessments, cultural responsivity for Māori and Pacific patients, and the role of measurement-based palliative care in decision support for clinicians (41).

A study explored the centrality of culture in how Māori extended families in New Zealand interpret and enact family-based care roles within the Māori world. The study problematized the notion of a single 'primary caregiver', privileges whanau as an inter-woven relational, dynamic care network, and encourages health professionals to recognize the cultural embeddedness of dominant approaches to palliative care (42).

A systematic review and narrative synthesis evaluated hospice care access inequalities. Barriers of prognostic uncertainty, institutional cultures, particular needs of certain groups and lack of public awareness of hospice services remain substantial challenges to the hospice movement in ensuring equitable access for all (43).

Frailty, balance and falls

The development and validation of a frailty index compatible with three interRAI assessment instruments were reported (44).

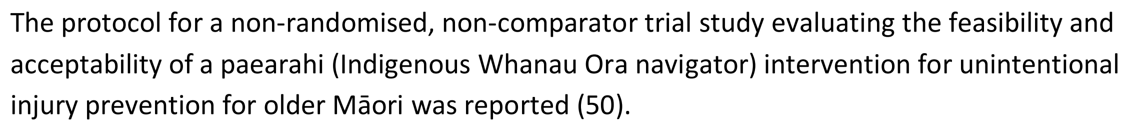
By using routinely collected electronic health information, it was noted that the prevalence of frailty is high in the rehabilitation setting. Association of frailty with shorter length of stay and lack of association found with shorter-term outcomes warrant further study (45).

The short and long-term impact of sarcopenia on outcomes from emergency laparotomy were examined. It was found that sarcopenia does not provide useful short-term prognostic information in old emergency laparotomy patients (46).

A prospective cohort study demonstrated that an interRAI derived frailty index predicts acute hospitalizations in older adults residing in retirement villages. The findings added to the growing literature of use of interRAI tools in this way and may assist healthcare providers with rapid identification of frailty (47).

Recommendations from the Australian and New Zealand Society for Sarcopenia and Frailty Research Expert Working Group were reported regarding the screening, diagnosis and management of sarcopenia and frailty in hospitalized older adults (48).

A study investigated the prevalence of sarcopenia and associated risk factors among older adults living in three residential aged care facilities within Auckland. Findings highlighted the need for regular malnutrition screening in residential aged care to prevent the development of sarcopenia, where low weight or unintentional weight loss should prompt sarcopenia screening and assessment (49).



The protocol for a non-randomised, non-comparator trial study evaluating the feasibility and acceptability of a paearahi (Indigenous Whanau Ora navigator) intervention for unintentional injury prevention for older Māori was reported (50).

The methodology for a randomised control study testing the efficacy of a motor analogy designed to promote safe landing by older adults who fall accidentally was reported (51).

The impact of the 2020 New Zealand COVID-19 lockdown on participants in a community-based, peer-led fall prevention program was explored. Three recommendations to address the challenges of maintaining existing peer-led exercise classes in the context of prospective lockdowns were generated (52).

Two case reports were reported regarding the hospital admissions with significant injuries due to falls resulting from wearing masks for old people. Strategies to reduce the risks of falls with face masks for old people were suggested (53).

A RCT evaluated the effectiveness of a complex intervention of group-based nutrition and physical activity to prevent frailty in pre-frail older adults. The study did not find that the combined nutrition and physical activity programme was effective in reducing frailty in pre-frail older adults (54).

Health and social services

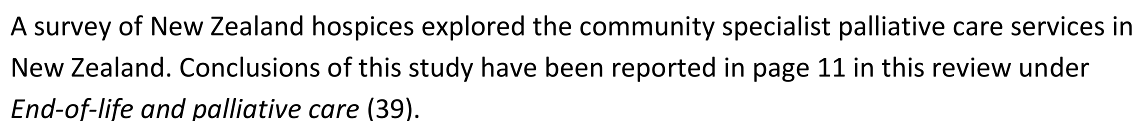
A scoping review of evidence from high income countries was conducted to investigate the primary eye health services for older adults as a component of universal health coverage. Insufficient access for population subgroups was common; several examples of horizontal and vertical integration of eye health services within the health system were described (55).

A study discussed whether older people should be discharged from hospital at night. The key principles or values involved act as a possible framework for further research and discussion of normative aspects of hospital discharge (56).

The establishing processes and the pragmatic profile of an acute admission unit for older people at a Dunedin Hospital were reported (57).

Barriers to older Pacific peoples' participation in the health-care system in New Zealand were examined. Improving older Pacific peoples' participation in health care will require a commitment to partnership and inter-sectoral collaboration identified in recent ageing strategies (58).

The prevalence, trend over time and vulnerability of older adults in mixed gender accommodation in hospitals were examined. Eliminating mixed bedding should be a priority for our hospital system (59).



A survey of New Zealand hospices explored the community specialist palliative care services in New Zealand. Conclusions of this study have been reported in page 11 in this review under *End-of-life and palliative care* (39).

Health, wellbeing and quality of life

The *Health, Work, and Retirement* study and its potential to support our understanding of ageing in New Zealand were described (60).

A review examined the current state of knowledge and the progress made over recent years in achieving kaumātua health and wellbeing. This review considered the methodological and theoretical approaches that have been developed to understand the social and environmental contexts of older Māori and argues for approaches that centre the kaumātua voice in addressing the persistent inequities in Māori health outcomes (61).

The protocol for a study exploring intergenerational, integrative and intellectual Pacific properties and pathways for life was reported (62).

The methodology for an integrated research programme in New Zealand optimising function and well-being in older adults was reported (63).

A qualitative study on indigenous conceptualisations of wellbeing among older Māori adults was conducted aiming to re-orientating health and nursing care in New Zealand. Nursing models of care should prioritise Indigenous ways of knowing; this research offers nursing-focused recommendations to improve care (64).

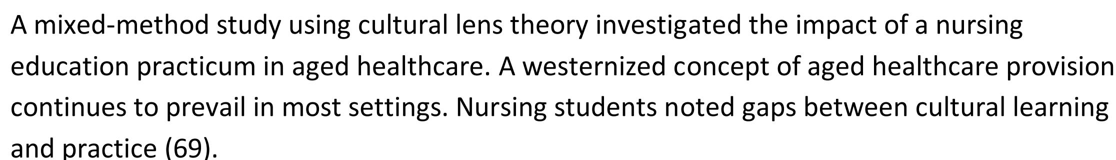
Health workforce

A longitudinal cohort study evaluated depression and anxiety among older informal caregivers following the initial COVID-19 pandemic response in New Zealand. Economic hardship and social capital provide targets for supporting psychological wellbeing of older caregivers during periods of pandemic restrictions (65).

The protocol for a qualitative study investigating health equity and wellbeing among older people's caregivers in New Zealand during COVID-19 was reported (66).

Interviews were conducted to explore staff accounts of how they made meaning of and responded to residents' unwanted sexual behaviours directed towards staff in residential care facilities. Policy, education and clinical leadership are recommended to augment practice wisdom and ensure staff and resident safety and dignity and to determine how best to intervene with residents' unwanted sexual behaviours (67).

A qualitative study explored how nurse education practices may influence nursing students' perception of working in aged care as a registered nurse. It was argued that there is a collective need to go beyond curricula and uncover what is actually conveyed through the educational process to students about working in aged care (68).



A mixed-method study using cultural lens theory investigated the impact of a nursing education practicum in aged healthcare. A westernized concept of aged healthcare provision continues to prevail in most settings. Nursing students noted gaps between cultural learning and practice (69).

An exploratory study of workers in the residential aged care sector of New Zealand explored the factors that drive staff to stay or leave. Results of this study can be used to develop more relevant labour and migration policies that reflect a more grounded insight into the experiences of those who are directly and personally affected by these policies (70).

A national population study examined carer distress among community living older adults with complex needs in the pre- and post-COVID-19 era. Policies and services providing efficacious on-going strategies to support caregivers deserves specific attention (71).

The knowledge of nursing graduates on oral health care for older people in the long-term care was evaluated in a survey. A revision of curricula to improve oral health education in nursing programs is strongly recommended (72).

A qualitative study with family care givers and people living with dementia presented the experience of dementia in the New Zealand Indian community. Conclusions of this study have been reported in page 9 in this review under *Central nervous system conditions - Dementia and cognitive impairment* (18).

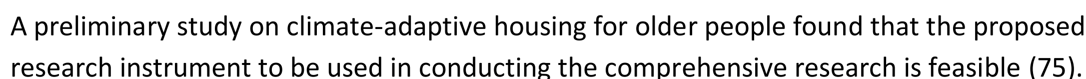
Module conveners in New Zealand were surveyed for palliative and end of life care in undergraduate medical education. Conclusions of this study have been reported in page 11 in this review under *End-of-life and palliative care* (38).

The strengths of family carers who are living with their spouse under 65 years of age during their final illness were accessed. Conclusions of this study have been reported in page 11 in this review under *End-of-life and palliative care* (40).

Housing

A summertime thermal analysis of New Zealand Homestar certified apartments for older people demonstrated that the building exhibits significant signs of overheating in the two warmest months of the year (January and February) with two-thirds of apartments failing the CIBSE TM59 overheating criteria (73).

By reporting on a dataset drawn from a larger project, it was concluded that homelessness risk is central to older tenants' experience of New Zealand's under-regulated rental market. Tenure insecurity is generated through unaffordable rents, no-cause termination, poor dwelling condition and housing that is unsuitable for an ageing population (74).



A preliminary study on climate-adaptive housing for older people found that the proposed research instrument to be used in conducting the comprehensive research is feasible (75).

The processes of codesigning a culture-centred age-friendly community for Māori Kaumatua were reported (76).

Two statistical models were tested with a sample of community-dwelling participants (aged 55-89) in New Zealand. The findings showed that housing and neighbourhood environments are a very practical focus for social policy change at local and national levels (77).

Living and care facilities

Aged care facilities

A retrospective analysis of nationwide InterRAI data demonstrated the association between body mass index, multi-morbidity and activities of daily living among New Zealand nursing home older adults (78).

A mixed methods systematic review identifies elements or models of care that promote QoL for Indigenous and First Nations peoples in long-term care (79).

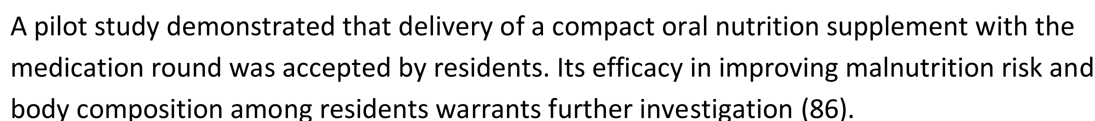
Semi-structured interviews were conducted to explore resident and family spirituality in New Zealand residential aged care. Findings of this study highlighted the importance of creating a balance between biomedical and spiritual aspects of care in residential aged care especially for culturally diverse residents and families (80).

A mixed-method study exploring porneia in residential aged care found that staff opinions about sex work and pornography were inconclusive; nevertheless, access to sex workers occurs in many RAC facilities across the country (81). Responses to sexual diversity in residential aged care among staff, residents and family members were also reported (82).

An exploratory cohort study found that ethnicity was not associated with aged care service assessment access once people were referred for publicly funded services, nor was it associated with time to assessment or mortality in this exploratory study (83).

Using the central tenets of whakawhanaungatanga (Māori process of establishing relationships), the methodology of how to explore old Māori experiences of aged residential care was reported (84).

The prevalence and predictors of influenza vaccination in long-term care homes were investigated in a cross-national retrospective observational study. Enhanced vaccine administration monitoring programmes in long-term care homes that leverage interRAI assessment systems should be widely adopted (85).



A pilot study demonstrated that delivery of a compact oral nutrition supplement with the medication round was accepted by residents. Its efficacy in improving malnutrition risk and body composition among residents warrants further investigation (86).

An observational mixed-method study established the barriers and enablers to *International Dysphagia Diet Standardization Initiative* adoption in aged care facilities (87).

The dietary intake and nutritional status between aged care residents consuming texture-modified diets with and without oral nutritional supplements were compared. Aged care residents requiring texture-modified diets are at high risk of malnutrition as a result of inadequate dietary intake. Administration of oral nutritional supplements may be an effective strategy to optimise nutrition intake (88).

The prevalence of sarcopenia and risk factors among residents in aged care were examined. Conclusions of this study have been reported in page 12 in this review under *Frailty, balance and falls* (49).

Residential care staff responses to older adults' unwanted behaviours were explored. Conclusions of this study have been reported in page 14 in this review under *Health workforce* (67).

A Foucauldian discourse analysis explored the impacts of undergraduate nurse education on nursing students' perception of working in aged care. Conclusions of this study have been reported in page 14 in this review under *Health workforce* (68).

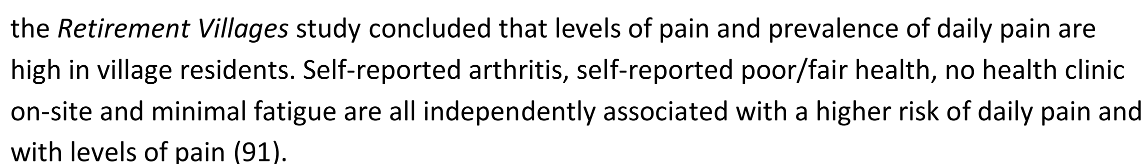
A study explored the extent to which a national vision of bi-culturalism and inclusivity is evident in students' quality improvement project topic selection and practice in an aged residential care facility. Conclusions of this study have been reported in page 14 in this review under *Health workforce* (69).

A survey analysed the different factors contributing to the retention and turnover of local- and overseas-born workers in the residential aged care sector of New Zealand. Conclusions of this study have been reported in page 14 in this review under *Health workforce* (70).

A cross-sectional study was conducted among third year nursing graduates evaluating their knowledge on oral health care for older people in the long-term care. Conclusions of this study have been reported in page 14 in this review under *Health workforce* (72).

Retirement villages

The RCT part of the *Retirement Villages* study failed to find the effectiveness of a multidisciplinary team intervention in reducing the incidence rate of acute hospitalizations for retirement village (RV) residents (89), even though the acceptability of that multidisciplinary intervention to RV residents was positive (90). A cross-sectional analysis of baseline data from



the *Retirement Villages* study concluded that levels of pain and prevalence of daily pain are high in village residents. Self-reported arthritis, self-reported poor/fair health, no health clinic on-site and minimal fatigue are all independently associated with a higher risk of daily pain and with levels of pain (91).

The factors associated with healthcare utilization and trajectories in RV residents were reported. A large proportion of cognitively intact RV residents are admitted to hospital in mean 2.5 years of follow-up. On-site clinics were associated with reduced risk and should be considered in RV development (92).

A study assessed the predictive validity of a frailty index derived from interRAI Community Health Assessment for outcomes in older adults residing RVs. Conclusions of this study have been reported in page 12 in this review under *Frailty, balance and falls* (47).

Mental health

A Delphi consensus study provided a set of 20 key recommended considerations to prevent old people suicide. The major addition to existing recommendations is the need for 'A suicide prevention strategy for old people' to enhance the national all-ages suicide prevention strategy (93).

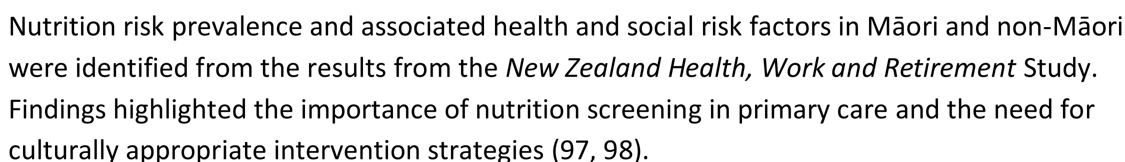
Predictive factors of nonfatal self-harm among community-dwelling older adults assessed for support services were established. Findings can be used to inform healthcare professionals for timely identification of people at high risk of self-harm and the development of more efficient and targeted prevention strategies (94).

The association between life-course persistent antisocial behaviour and accelerated biological aging was examined in the Dunedin Study. It was found that while older adults typically age-out of crime, life-course persistent offenders will likely age-into the healthcare system earlier than their chronologically same-aged peers (95).

The prevalence of self-harm ideation among stroke survivors of the AFFINITY trial was evaluated. Measures associated with early, late, and persistent clinically significant symptoms of depression 1 year after stroke among the AFFINITY participants were also explored. Conclusions have been reported in page 10 in this review under *Central nervous system conditions – Stroke* (29, 30).

Nutrition

An observational study found that the acute postprandial response of homocysteine to multivitamin and mineral supplementation with a standard meal is not impaired in older compared to younger adults (96).



Nutrition risk prevalence and associated health and social risk factors in Māori and non-Māori were identified from the results from the *New Zealand Health, Work and Retirement* Study. Findings highlighted the importance of nutrition screening in primary care and the need for culturally appropriate intervention strategies (97, 98).

A cross-sectional study evaluated the relative validity and reproducibility of a semi-quantitative food frequency questionnaire for assessing energy and nutrient intake in older adults. It was concluded that the food frequency questionnaire has acceptable relative validity and good reproducibility for ranking nutrient intakes in older New Zealand adults, but is less suitable for assessing absolute nutrient intakes (99). Associations between dietary patterns and the metabolic syndrome in older adults were also identified (100).

The effectiveness of a complex intervention of group-based nutrition and physical activity to prevent frailty in pre-frail older adults was investigated in a RCT. Conclusions have been reported in page 13 in this review under *Frailty, balance and falls* (54).

The acceptability of delivering a compact oral nutrition supplement with the medication round among residents in aged care was tested. Conclusions have been reported in page 15 in this review under *Living and care facilities - Aged care facilities* (86).

A cross-sectional study investigated the dietary intake and nutritional status of residents consuming texture-modified diets with and without oral nutritional supplements. Conclusions have been reported in page 15 in this review under *Living and care facilities - Aged care facilities* (88).

Other conditions

Cancer

Using national-level data, the ethnic differences in place of death among New Zealanders dying of cancer was examined. Further research is required to identify these differences (101).

Eye care

The evidence-based strategies for improving the provision of cataract surgery in New Zealand were discussed (102).

The causes of de novo uveitis and the incidence of intraocular lymphoma in individuals 60 years and older presenting to the uveitis service at Auckland DHB between 2006 and 2020 were reviewed (103).

A retrospective cohort study evaluated the association between ethnicity and *Impact on Life* questionnaire responses for patients need cataract surgery in New Zealand. There are no meaningful ethnic specific differences in patient reported QoL for patients with cataract in New Zealand after controlling for other factors (104).

Oral health

The residual dentition among home-based older New Zealanders receiving living support was examined. It was found that residual dentition patterns in older people are diverse and complex, and meeting their prosthodontic needs is not straightforward (105).

A qualitative provided recommendations for improving dental care for dentate home-based older people. It was suggested that multiple structural changes are necessary, but these should primarily focus on reducing the cost and increasing accessibility (106).

Other

A prospective study evaluated the health-related QoL and disability among older New Zealanders with kidney failure. It was recommended that the assessment of mobility and self-care, in conjunction with existing disabilities in the clinical review and pre-dialysis education of individuals with kidney failure as they approach the need for kidney replacement therapy (107).

Strategies to improve detection of older adult abuse using the interRAI-Home Care were present. Improved identification will facilitate enhanced protection of this vulnerable population (108).

A population-based retrospective cohort study explored the incidence and clinical presentation in of giant cell arteritis in Canterbury (109). The diagnostic use of ultrasound in giant cell arteritis in Counties Manukau District Health Board was reported (110).

A retrospective comparative study demonstrated that endoscopic retrograde cholangiopancreatography is relatively safe in old patients, but comorbidities should be considered to avoid subjecting vulnerable individuals with a short life expectancy to unnecessary procedures (111).

A systematic review assessed the effects of magnesium sulphate for acute exacerbations of chronic obstructive pulmonary disease in adults. It was concluded that Intravenous magnesium sulphate may be associated with fewer hospital admissions, reduced length of hospital stay and improved dyspnoea scores compared to placebo (112).

The association between the social environment, psychosocial support and constraints, and overall QoL among older people with and without with diabetes and multiple chronic illnesses was explored. It was found that perceived neighbourhood advantages, along with the focus on increasing social support, enhancing purpose in life and supporting one's capability to achieve, may serve as protective factors against depression (113).

Prescribing

An updated analysis of psychotropic medicine utilisation in older people in New Zealand from 2005 to 2019 revealed that while only a marginal increase in psychotropic medicines utilisation, there was a five-fold increase in the utilisation of antipsychotic medicines (114).

The process evaluation of the *Safer Prescribing and Care for the Elderly (SPACE)* cluster RCT in New Zealand general practice was reported. Recommendations to improve the effectiveness of the trial included ensuring searches are current and relevant, repeating cycles of search and feedback, and integrating pharmacists into general practices (115).

The comparison of the prescription of bone protection medication before and early after hip fracture in Australia and New Zealand was presented. Conclusions have been reported in page 15 in this review under *Bones and joints* (2).

Social connection

Older Chinese immigrants were surveyed regarding the association between loneliness and acceptance of using robots and pets as companions among during the COVID-19 pandemic. It was found that the level of loneliness increased during the COVID-19 pandemic. Further evidence of the specific dimensions of loneliness and the utility of technology to alleviate loneliness among immigrant groups is needed (116).

A qualitative descriptive study revealed a deep sense of loneliness among Chinese late-life immigrants in New Zealand. Their experiences highlighted the importance of using cultural framing that takes into account beliefs and adaptations to host societies anticipated during the process of late-life immigration (117).

A mixed-method study identified the relationship between theories of person-environment fit and QoL focusing on the role of the built environment in facilitating social connectedness (118).

An online survey revealed the impact of COVID-19 lockdown on social support status among older New Zealanders with hearing impairment (119).

The perspectives of culturally diverse older New Zealanders on socially cohesiveness of New Zealand first lockdown period was evaluated. Future pandemic planning should aim to strengthen targeted culturally-specific community initiatives already in action whilst improving aspects of inclusion and participation for all older New Zealanders (120).

New Zealand LiLACS study established the prevalence of loneliness and its association with general and health-related measures of subjective wellbeing in a longitudinal bicultural cohort of older adults in advanced age living in New Zealand, highlighting loneliness as a prime

candidate for intervention-appropriate to cultural context-to improve well-being for adults in advanced age (121).

A systematic review of qualitative studies accessed community-based responses to loneliness in older people. Several implications for policymakers and future research emerged, urging future interventions to take a more contextual approach that encompasses community-level considerations before establishing a user-led and tailored setting that facilitates social engagement (122).

An analysis of the 2016 *Health and Lifestyle* survey data was conducted to explore social connectedness and associations with self-perceived health amongst older adults in New Zealand at a population level. Findings revealed target areas that would benefit by intervention and support by health professionals and policy makers (123).

A survey of 917 people aged 60-100 years in New Zealand demonstrated that older people's neighbourhood perceptions are related to social and emotional loneliness and mediated by social network type (124).

Transport and built environment

A cluster analysis of a longitudinal study of aging demonstrated that older people who stop driving can have positive health and wellbeing outcomes, particularly if they can access social support and volunteering activities (125).

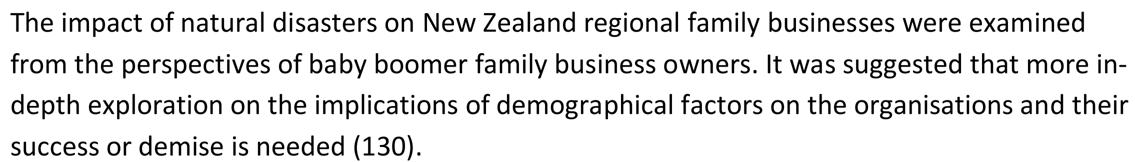
A study in Christchurch drew on a novel mixed-methods approach, including on-site environmental audits, desktop spatial analyses, and subjective auditor observations, to track support for active aging over a decade of post-disaster rebuilding in 10 aging neighbourhoods (126).

A systematic review demonstrated positive results of horticultural therapy on human health and wellbeing, particularly in a psychological dimension and to a smaller but still significant extent physiological aspect (127).

A survey with 1170 community dwelling drivers aged 65+ in New Zealand found that higher driving anxiety was associated with lower quality of life and lower odds of 'very good' self-reported health, but no difference in odds of multi-comorbidity (128).

Work and finances

The development process of *Older Persons' Index of Multiple Deprivation* which measures the deprivation circumstances of older populations in New Zealand was described. The *Older Persons' Index of Multiple Deprivation* has the potential to inform policies concerning resource allocation for the older population (129).



The impact of natural disasters on New Zealand regional family businesses were examined from the perspectives of baby boomer family business owners. It was suggested that more in-depth exploration on the implications of demographical factors on the organisations and their success or demise is needed (130).

Not otherwise classified

Older New Zealanders' perspectives on their own risk, resilience, and relationships in the national COVID-19 responses were explored. It was argued that 'older' New Zealanders are a more diverse group than was acknowledged at the time and also a more agentive one, playing a critical contributing role in the pandemic response rather than merely acting as a rationale for public health measures (131).

A critical gerontological framing analysis of persistent ageism in New Zealand online news media provided recommendations to support re-framing societal attitudes towards age equality through non-discriminatory, respectful language (132, 133).

By using the data from the Dunedin Study, it was found that *DunedinPACE (for Pace of Aging Calculated from the Epigenome)* is a novel blood biomarker of the pace of aging for gerontology and geroscience (134).

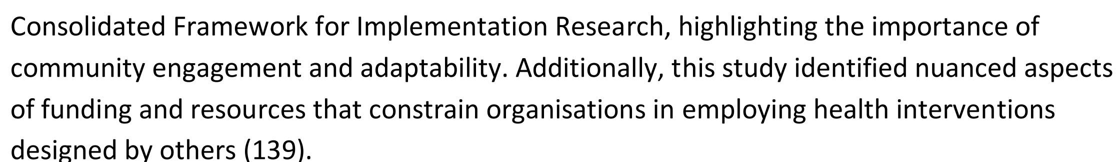
Perceptions of childminding among Pacific grandparents living in New Zealand were explored. Pacific Island grandparents embraced their roles as the knowledge holders of cultural treasures; responsible for teaching children and grandchildren their genealogy and language, and for upholding the protocols of their cultural heritage. However, they felt their contributions were not reciprocated nor valued, but instead exploited (135).

Interviews were conducted to investigate older people's experiences, attitudes and behaviours of sleep health. The study findings provided the foundation for future participatory research to co-design sleep health messages which are meaningful for ageing well across ethnicities (136).

The characteristics of older defendants referred for forensic evaluations were reported. It was argued that a better understanding of this group is needed to ensure forensic assessments and health and social services meet their various psychiatric needs (137).

The impacts of genetic control of serum 25(OH)D levels and its association with ethnicity were explored. It was found that significant ethnic variations exist in the distribution of alleles associated with serum 25(OH)D concentration, particularly rs12785878, in a multi-ethnic community sample from New Zealand (138).

A study identified the facilitators and barriers in implementing a health intervention developed by a community-academic partnership. Study findings supported key elements within the



Consolidated Framework for Implementation Research, highlighting the importance of community engagement and adaptability. Additionally, this study identified nuanced aspects of funding and resources that constrain organisations in employing health interventions designed by others (139).

The content validity of the revised *Health of the Nation Outcome Scales 65* was assessed. Further psychometric testing of the scale was recommended (140).

Providing a Foucauldian analysis, an articile suggested a function of biopower is to naturalise discourses such as the poor Māori health statistic to appear based on factual evidence and thus are apolitical (141).

A study considered the entanglement of embodied, emplaced ageing, nature-based recreation and green and blue spaces in exploring the experiences and sensibilities of agers. It was argued that the perceived vulnerability of 70+ folk is considered in light of government policy discourses emanating as a consequence of the pandemic (142).

A qualitative study evaluated older Chinese and Korean migrants' experiences of the first COVID-19 lockdown in New Zealand. Future pandemic responses should seek to improve connectedness between the national government COVID-19 response and older Korean and Chinese later-life migrants (143).

An observational study demonstrated that older adults have difficulty decoding emotions from the eyes, whereas easterners have difficulty decoding emotion from the mouth (144).

A Delphi study was conducted to develop an internationally accepted definition of reablement. It was suggested that future research should focus on evaluating the implementation of agreed reablement components to inform practice, education and policy (145).

A systematic review described the characteristics of older homicide offenders. The findings suggested that there is an increasing need for care of older offenders and a need for specialist forensic services for elderly offenders (146).

The utilisation of a student naturopathic clinic in New Zealand older adults was accessed. Findings suggested that older clients were predominately seeking naturopathic treatment for the management of their chronic health conditions (147).

A letter-writing study with older New Zealanders during the first COVID-19 lockdown highlighted narratives of mutual concern and positive interactions between generations while also hinting at some underlying age-related tension on a societal level (148).

A scoping review explored the experiences of ageing in place in Australia and New Zealand. It was concluded that ageing in place should not be considered a “one size fits all” approach to

ageing; policymakers, researchers, and governments should acknowledge that older adults are a diverse group (149).

A qualitative study provided new insights into the increasing phenomenon of grandleisure events when grandparents and grandchildren spending special time together (150).

The adaptation and implementation processes of a culture-centred community-based peer-education programme for older Māori were described. This study offered a valuable case study in how to translate, adapt, and implement a research-based health programme to Indigenous community settings through co-design processes (151).

A qualitative study showed the diverse experiences among older adults in New Zealand during COVID-19 lockdown. It was concluded that concerns about the plight of older people focus on stereotypes of isolated old people, ignoring the needs of workers and carers (152).

A life course model of predictors of physical, mental and social health in older age was tested. Findings pointed to the importance of considering the mediators of lifelong impacts on health in older age, and recognition of how membership of different socially structured groups produces different pathways to late-life health (153).

Ethnicity

In addition to 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. References relating primarily to a broad ethnic group

Ethnicity	Number of publications	References
Māori	12	(9, 19, 21, 42, 50, 61, 64, 76, 84, 139, 141, 151)
Pacific	3	(58, 62, 135)
Asian	5	(13, 18, 116, 117, 143)

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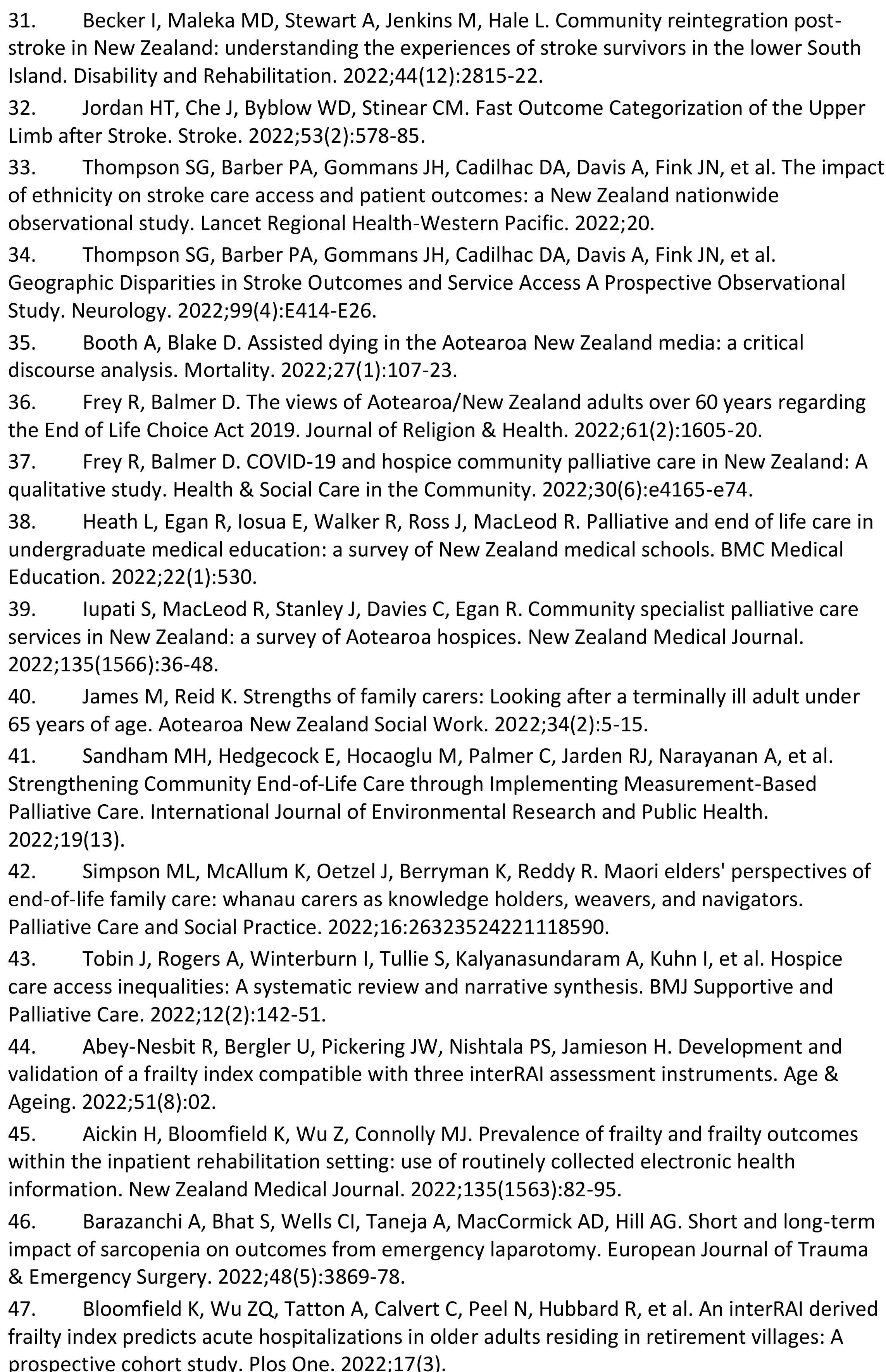

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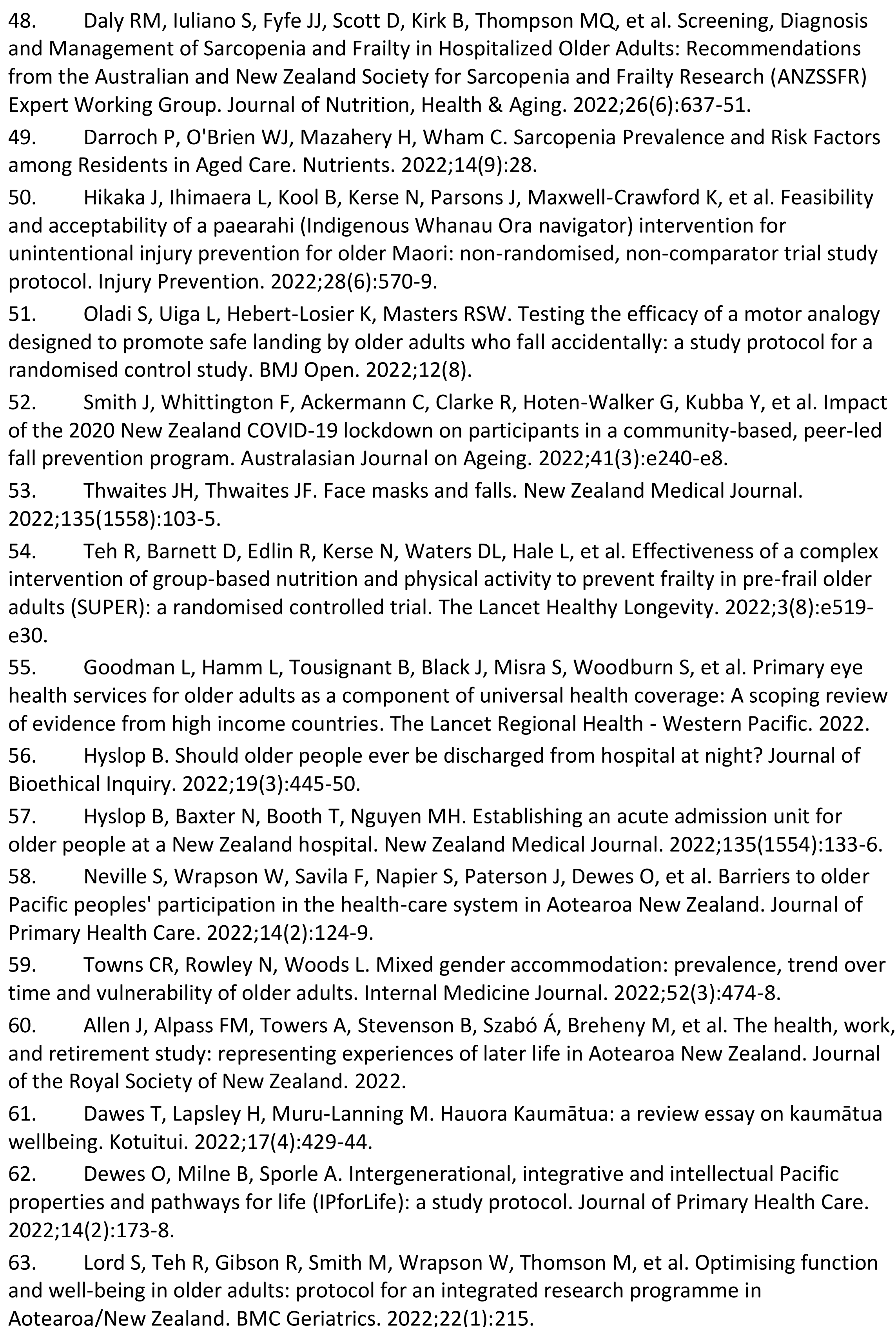

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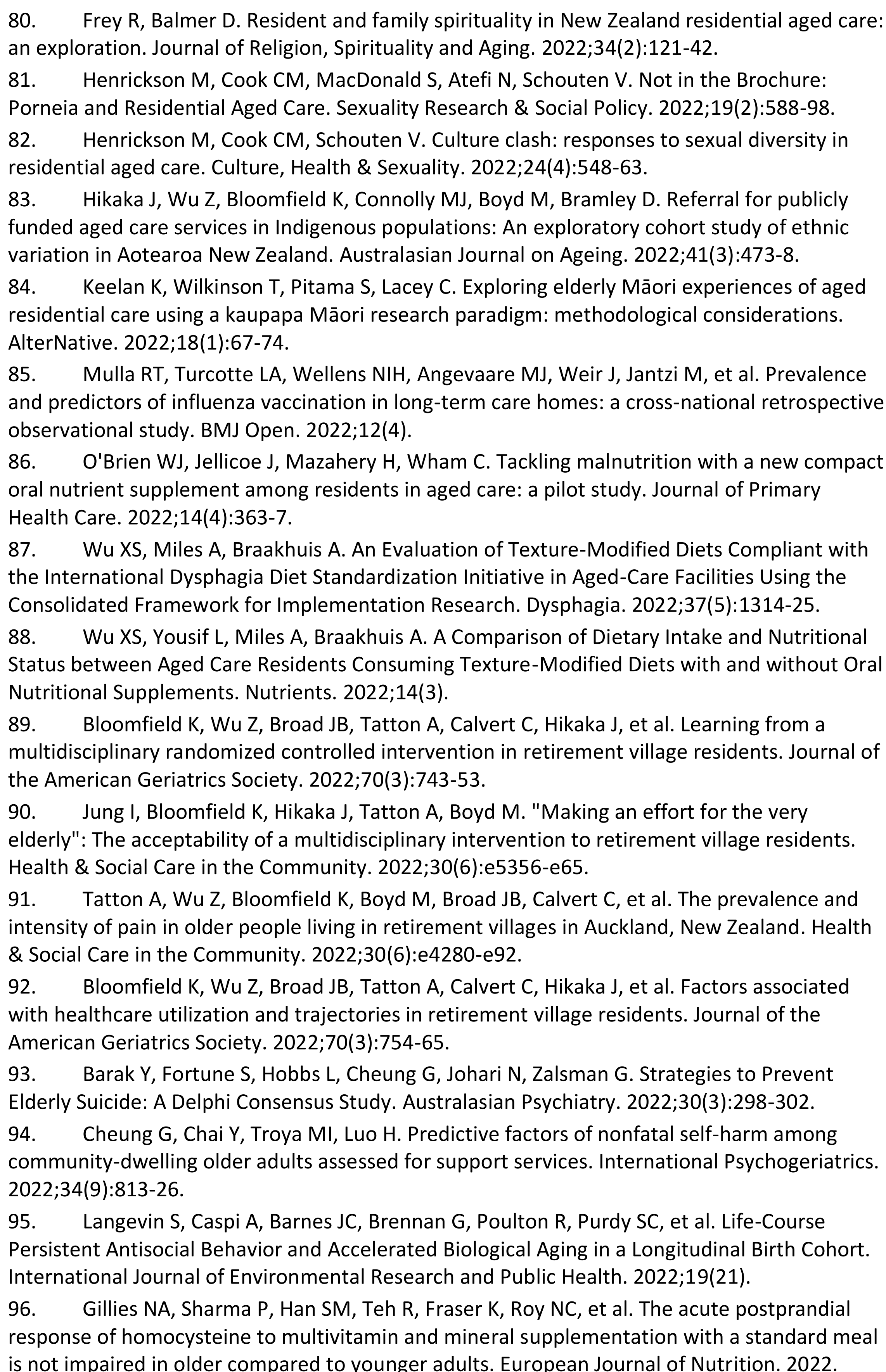

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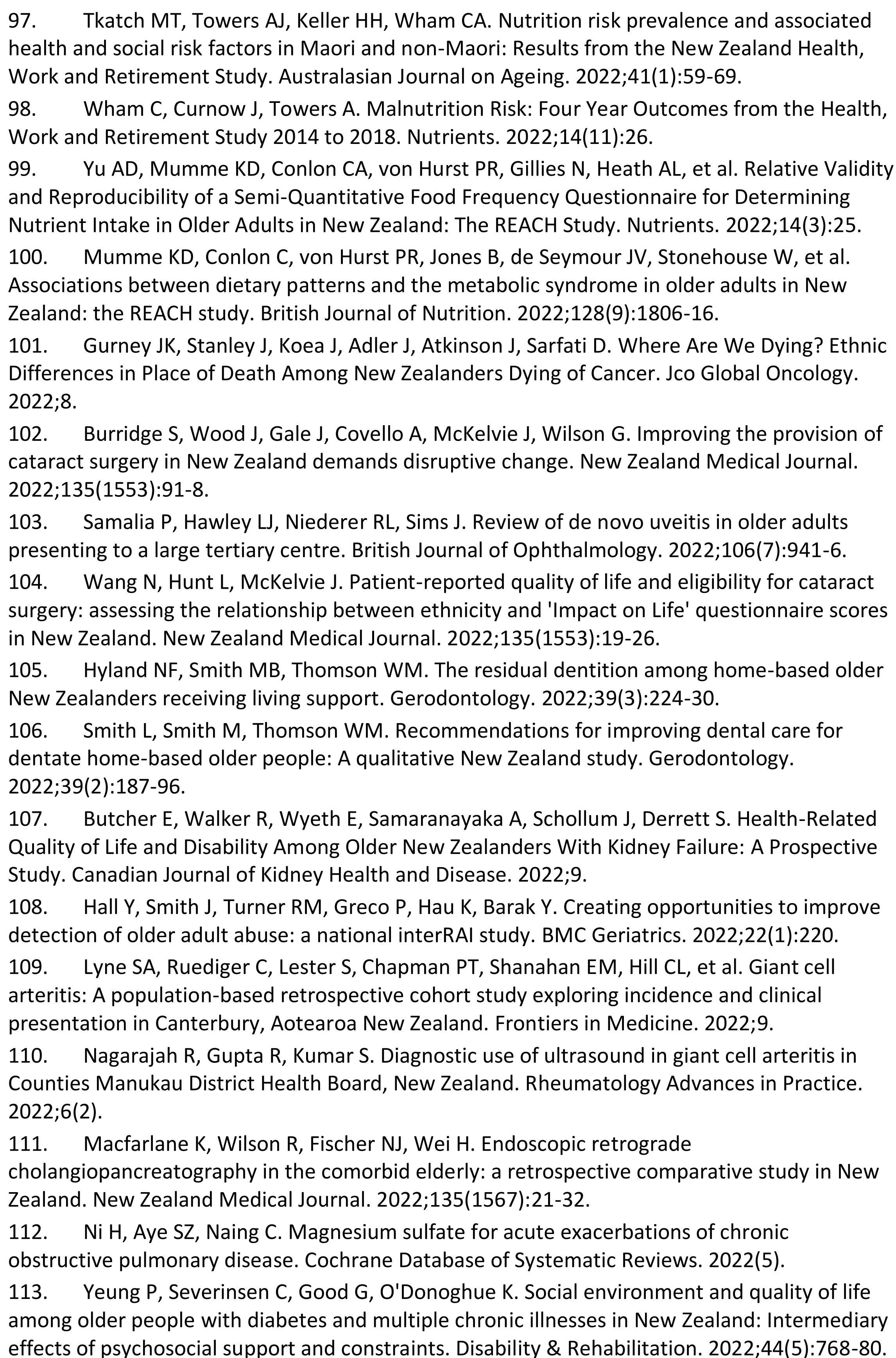
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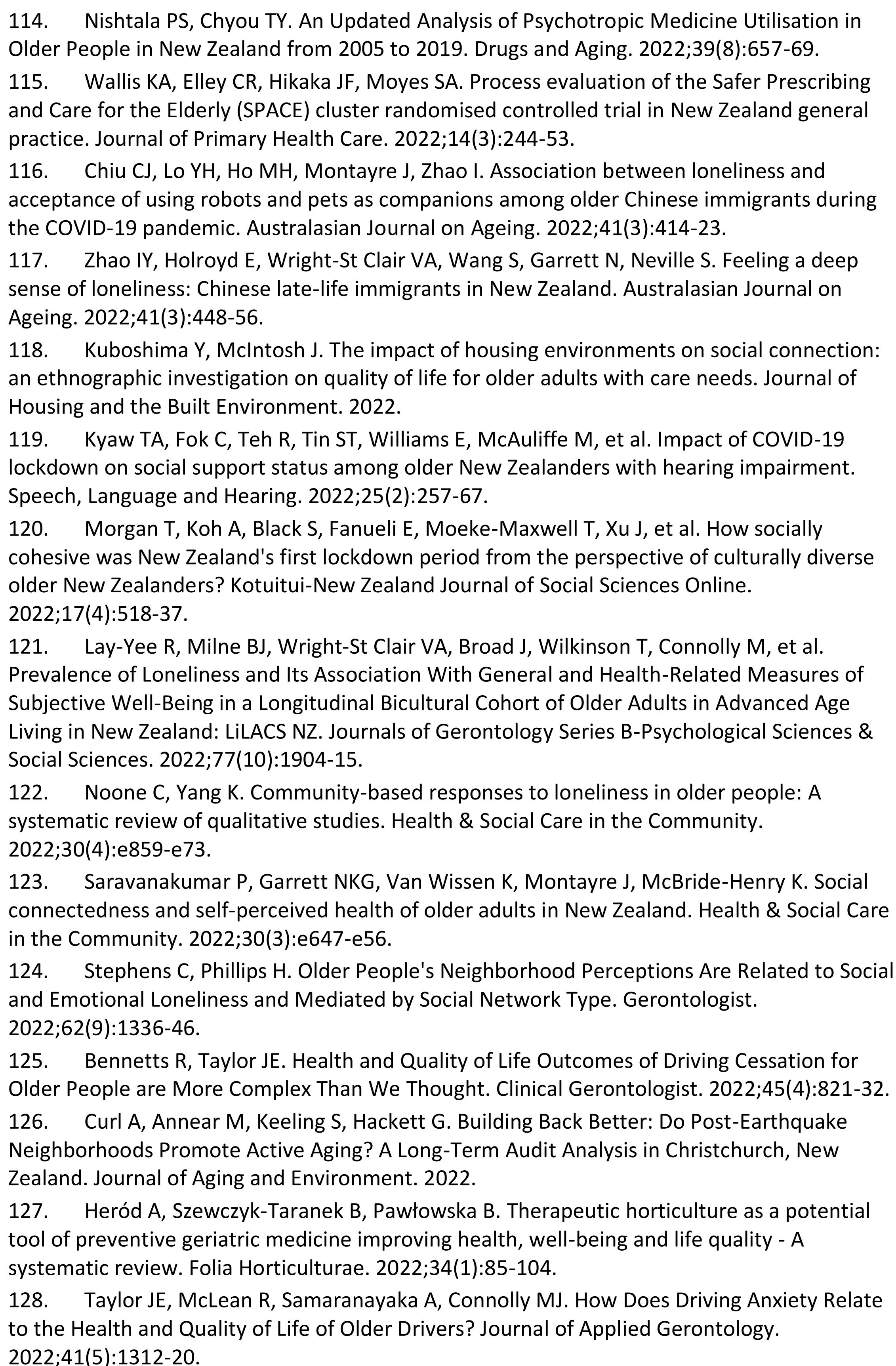

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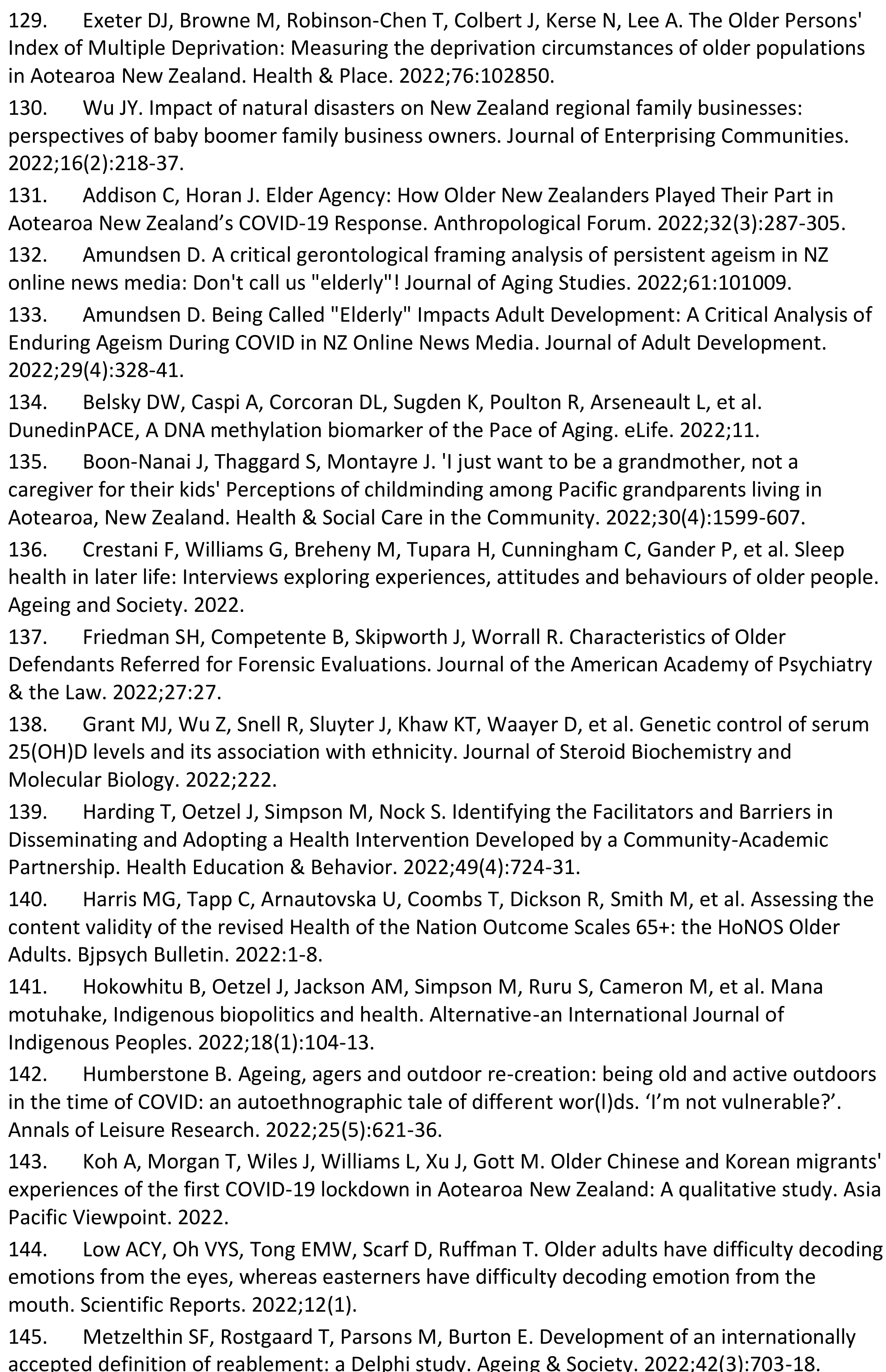
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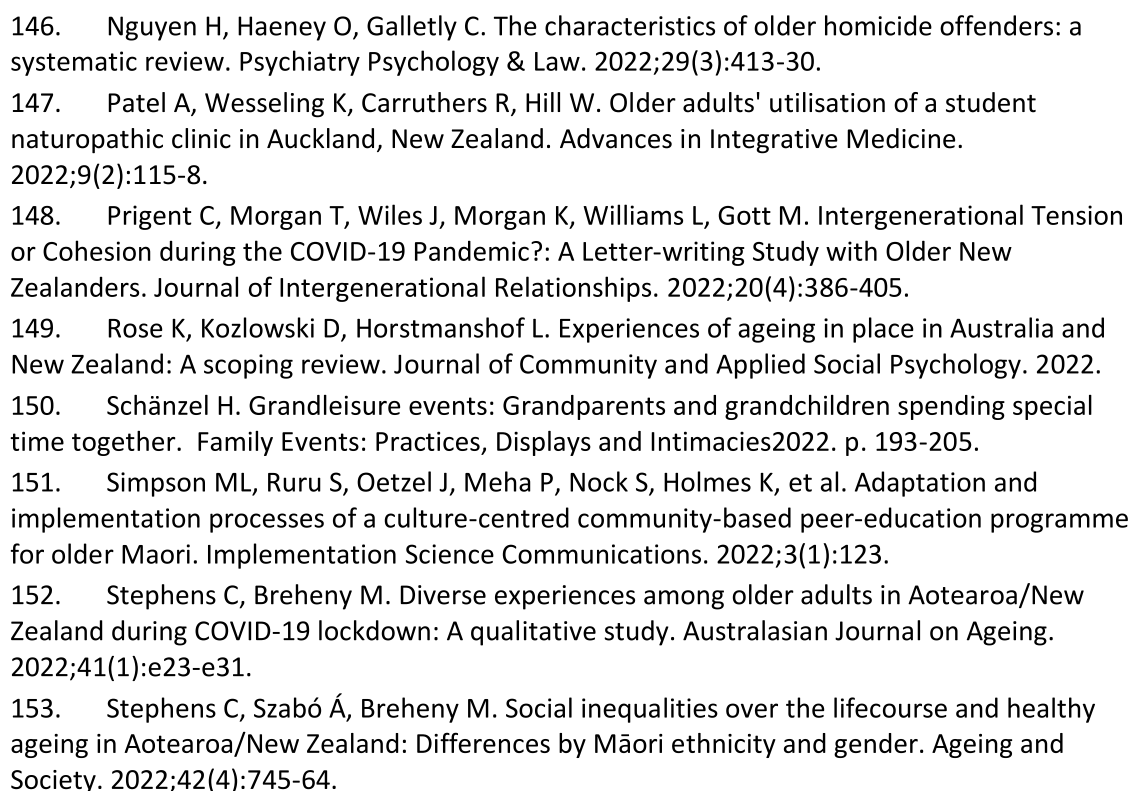

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