AGEING WELL

Kia eke kairangi ki te taikaumātuatanga

2023 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 105 New Zealand-authored, peer-reviewed articles published 1st January 2023 to 31st December 2023.

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 2023

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 12. limit 11 to yr="2023 -2024"	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 = 2023 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* 6. “frail elderly” OR frail* OR “geriatric assessment”

[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

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.

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. Articles identified in the search underwent a series of screening processes. Firstly, duplicate articles were removed. Assistant Research Fellow (David S. Jackson) 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 David Baxter). 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 15 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 478 articles. After duplicate removals, 429 articles were screened by title and abstract. The full-text of 113 articles were then assessed for eligibility, with 105 articles finally included in this Year in Review.

Figure 1. Study selection process

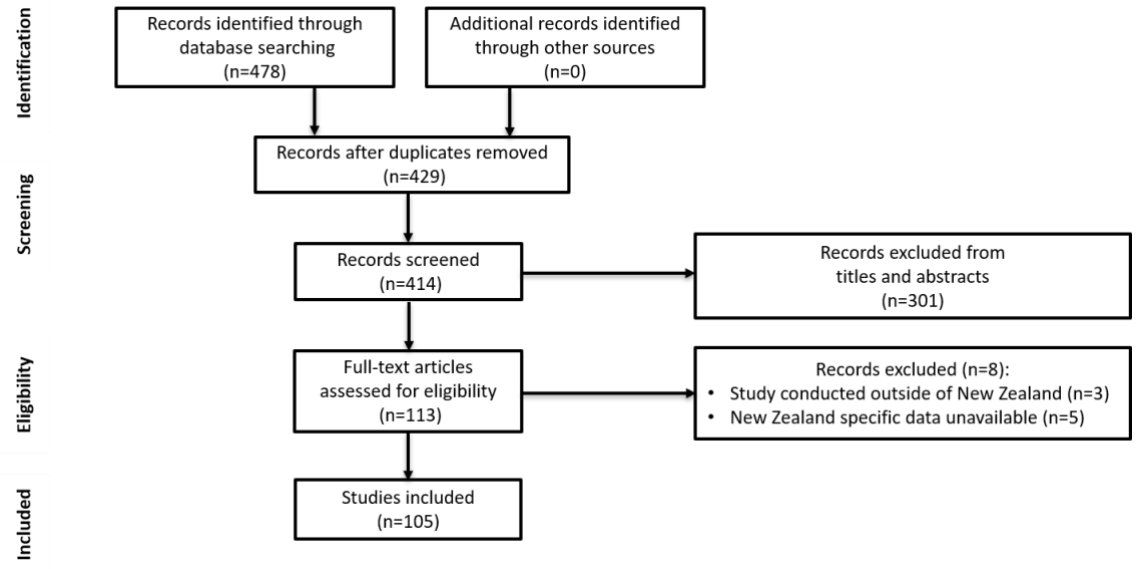

Table 2 summarises the assignment of the 105 publications to the 15 relevant categories.

Table 2. Classification of publications

Category	Number of publications
Bones and joints	2
Cardiovascular conditions	1
Frailty, balance, falls	5
Health and social services	2
Health, wellbeing and quality of life	17
Health workforce	4
Housing	2
Living and care facilities	7
Mental health	16
Nutrition	10
Other conditions	10
Prescribing	11
Social connection	6
Transport and built environment	4
Not otherwise classified	8

Bones and joints

A comparative review of hip replacement techniques, specifically around the use of implant technology, and their associated survival and functional outcomes for patients greater than 75 years old. The study employed data from the New Zealand Joint Registry.(1)

A review of an orthopaedic and geriatric shared care model in the Southland region of New Zealand. The model reduced length of stay for older adults, but did not significantly reduce rates of mortality for this cohort.(2)

Cardiovascular conditions

One study in this category examined the likelihood of returning to baseline function in older adults who have experience acute ischaemic stroke, and who underwent endovascular thrombectomy surgery. While all cause 90-day mortality is greater in older adults with this condition, return to baseline function for survivors was similar to that seen in younger patients.(3)

Frailty, balance and falls

Two studies examined mortality rates and predictions associated with frailty. In one, it was found that frailty was in general associated with worse long-term survival. This study suggested a more comprehensive post-intensive care management strategy. Data was retrospectively derived from the Australia and New Zealand Intensive Care Society Adult Patient registry.(4)

In the second study in this category, frailty was found to be a strong independent predictor of mortality in older adults who had experienced an upper gastrointestinal bleed.(5)

Two further studies explore physical performance in relation to risk of falling. In one it was overwhelmingly determined that supportive footwear was preferred to minimalist footwear with regard to feeling more stable, despite evidence that showed similarity of balance performance and walking stability for each mode of footwear.(6)

A second study found that an exercise prescription – the Staying UpRight program – intended to reduce the rate of fall in older people living in long-term care, did not reduce the fall rate. However, as the study was interrupted by COVID-19 pandemic restrictions, the results should be treated with caution.(7)

One final study employed a Delphi-survey approach to examine consumer preferences for interventions, sarcopenia outcome priorities, and consultation processes. Results indicated key factors, including: physical performance, living situation, morale, quality of life and social connectedness. The study was conducted as part of the Australian and New Zealand Society for Sarcopenia and Frailty Research.(8)

Health and social services

Two studies addressed issues in this category. The first developed an age-specific measure of socio-economic position for older adults in New Zealand. This measure is intended to inform policy makers on allocation of needs-based resources, and supersedes previously used working-age indicators.(9)

The second study examined the relationship between rates of amenable deaths and enrolment in the primary health organisation (PHO) network. Amenable causes of death were determined as those preventable through healthcare interventions). It was found that rates of amenable deaths were higher among those adults who were not enrolled in the PHO network in the year prior to death.(10)

Health, wellbeing and quality of life

Seventeen studies examined various aspects of health, wellbeing and quality of life.

Physical and mental activities

Seven studies focussed on physical and/or mental activity as a means to slow the decline of health due to ageing.

The Active for Life intervention utilising FitBit technology was well received and participants reported greater awareness and accountability for their fitness, although there was also sentiment for more personal contact between participants and intervention providers, and better tailoring to requirements.(11)

The University of the Third Age was promoted, from an historical perspective, as a model for continuing active engagement in older adults with activities that promote wellbeing and quality of life.(12)

Another study found that older adults' understanding of the importance of physical activity was heavily influenced by active discourse on ageing, and suggested increased promotion of physical activity should 'foreground feelings of connection, productivity, pleasure, and recognising their diversity'.(13)

A scoping review found self-reported positive impact of recreational activity on memory, feelings of control, negative emotions, life satisfaction, cognitive performance, body image, self-efficacy, enjoying life, and delaying ageing. (14)

One study examined the outcomes of change in lifestyle (exercise and diet) in obese men as part of the Rugby Fans in Training New Zealand (RUFIT NZ) program. There were positive and sustained effects on weight, waist circumference, overall fitness (self-reported physical activity), diet and health related quality of life.(15)

Physical activity uptake in retirement facilities was examined and found to be related to both environmental and personal factors. It was suggested that promotion of physical activity should be individualised appropriately to risk factors and levels of PA.(16)

Men with Parkinson's disease expressed that there should be connection between men's motivation for PA – physical health, mental wellbeing, and social connection – and how PA health messages are promoted for them.(17)

Predicting decline in health

Five studies searched for predictors for declining health. Intersectional perspective was sought on factors influencing healthy ageing in older men, and the key finding suggested that life engagement/purpose was universally influential for this cohort. (18)

A health, work and retirement study showed that models that 'characterise change by birth cohort' demonstrate some slower age-related health decline in more recent birth cohorts when compared with models for all participants.(19)

Trajectories of successful ageing were highlighted better through longitudinal studies. While determinants for successful ageing, such as functional capacity and life engagement, were important. Only age predicted the latent slope of the health-related ageing curve.(20)

One study examined the stages in life where the self-perceived impact of relative deprivation is most prevalent – suggesting these loci as important predictors of poorer health and wellbeing, as well as likely highlighting intergroup biases.(21)

A further study determined that young adults exaggerate their participation in physical activity, and that this is a public health concern as low levels of PA is associated with poorer health outcomes as people age, and this will also impact on healthcare resources and cost.(22)

Improving tools for determining health and wellbeing

Three studies sought to update existing tools to better serve in determining the needs of older adults. Two examined process evaluation and refinement for the Early Detection of Deterioration in Elderly Residents (EDDIE+) instrument,(23, 24) and the other assessed revisions to the Health of the Nation Outcome Scales 65+ (HoNOS Older Adults) tool.(25)

The remaining two studies addressed sleep (as a component contributing to waking productivity),(26) and how independence in continence care has greater positive impact on activities of daily living than autonomy.(27)

Health workforce

Of the four studies focussing on the health workforce, one examined the importance of developing confidence in student nurses for therapeutic engagement and clinical assessment of older adults.(28)

Two further studies (both conducted by the same authors) examined the impact of being a care worker when there exists the need to balance this work with other, potentially conflicting, life activities (such as family commitments, other primary employment).(29, 30) Both of these studies pointed toward policy provision to encompass these issues.

Shortages in the healthcare workforce were identified in one study, which then presented the novel solution of filling the gap with robotic technology. This particular study was conducted with an Asian cohort and identified the need to explore the cultural acceptance of forms of technology in healthcare.(31)

Housing

A Wintertime thermal analysis of New Zealand Homestar certified apartments for older people revealed issues in multi-habited spaces for older adults whereby not all spaces are thermally equal at the desired level.(32)

Cold housing, with evidence that older people are at especial risk of poorer health because of it, has helped shaped policy in the UK. More is needed for better understanding of the risks, and research continues to draw on New Zealand data.(33)

Living and care facilities

Real world data is being used to develop support for the next generation of healthcare workers, those in care and their families to make decisions and contributions to improved care for older adults.(34)

Two further studies examined the types of environments represented by aged care facilities, and how environmental factors aligned with the needs of the residents. Particular emphasis is given to the holistic and multifaceted nature of an individual's needs.(35, 36)

One study explored how the geographical location of residential facilities impacts on both choice of healthcare services and uptake of resources.(37)

Greater numbers of older adults are moving into retirement facilities, however, although there is no reliable claim for causality, relocation to a retirement village for older people is associated with a significant but non-sustained reduction in hospitalisation.(38)

Decline in quality-of-care leads to increases in complaints to the Health and Disability Commission (NZ) office. Common indicators of decline should be addressed speedily, and while not generalisable, they can be applied at the individual institute level.(39)

One study noted the lack of equity available to Māori residents and their whanau, linking this to obligations that must be met under Te Tiriti o Waitangi. Specifically this was drilling down inot how culturally safe care has a critical impact on organisational barriers.(40)

Mental health

Policy, Interventions and modifiable factors

Three studies described: policy implications in view of the fact that persons with serious mental illness at a younger age were significantly more likely to exhibit onset of frailty at a younger age; (41) alternative health frameworks such as Te Whare Tapa Wha have shown provision for wellbeing (during the COVID-19 pandemic) beyond the biomedical model of health for older adults and their families;(42) patients with differing levels of cognitive impairment (moderate or severe) require differential care needs.(43)

A web-based program was found to have the potential to enable access to evidence-based memory interventions for older adults worldwide. Critical in view of the increasing number of adults with cognitive concerns.(44)

Two studies examined medication usage: in one, lithium was found to be underutilised by adults with known bipolar disease;(45) and in the other, bipolar disease was associated with medication adherence and cognitive impairment to the same degree irrespective of age.(46)

Cognitive impairment was the most common condition in community dwelling older adults who had an interRAI assessment. CVD has the highest mortality risk for all ethnic groups, and in non-Māori/non-Pacific group of advanced age, risk of mortality with cognitive impairment is as high as CVD risk. Inverse for cancer mortality risk with age. Important differences between ethnic groups.(47)

Cataract surgery may decrease the risk of dementia onset, suggesting a need for recognition as part of an overall ageing response by policymakers and health professionals.(48)

A study of a National Dataset explored and analysed modifiable risk factors associated with the onset of dementia. However, the cross-sectional nature of the study was a potential limitation.(49)

One study examined the stigma of mental health issues as they pertain to the cultural values held by Chinese people. The study suggested interventions to increase knowledge and understanding of mental health for this population.(50)

Care planning

There is an urgent need to address official government data discrepancies and POA service resource inequalities, ensuring the *postcode* system that determines psychiatric care for older adults can be effectively eliminated.(51)

One study demonstrated the need for informed design of the Mate Wareware application, and these findings should further inform other Māori focussed digital health interventions.(52)

Two studies made the case for specialist integrated psychiatric care teams and heterogenous approaches to psychiatric care for older adults who are medically ill.(53, 54)

Coping strategies were examined among older adults who were vulnerable to mental stress and lived through the stresses of the COVIS-19 pandemic, and the general resilience of this cohort.(55)

A National Dataset analyses showed the need for more research on the processes that lead to a diagnosis of dementia in older adults with schizophrenia, particularly for policy and service providers to be able to apply data to care planning and quality control of services.(56)

Nutrition

Dietary intake

A 24-hour multiple pass recall dietary assessment is an appropriate and accessible tool for capturing dietary data in adults greater than 80 years old.(57)

Deer milk may lead to greater improvement of nutritional status and physical performance in women at risk of malnutrition and/or with lower BMI, and improve muscle mass in women with a higher BMI, in comparison with an oral nutritional supplement.(58)

The Nutrition for Healthy Living study showed that there was substantial nutritional inadequacy in adults aged 65 to 75 years, despite this cohort having a higher socio-economic level; (59) and in Dietary Protein Intake and Physical Function in Māori and Non-Māori Adults of Advanced Age in New Zealand (LiLACS NZ), reduction in protein intake in all participants.(60)

Dietary risk factors

In a study of sociodemographic and health indicators for diet quality in a population of pre-frailty older adults, key indicators such as BMI and living arrangements were shown to be independent predictors of diet quality, with BMI as the most impactful variable when all factors were considered together.(61)

Three further studies examined dietary risk factors: The need to measure a broader profile of 1C nutrients when monitoring the nutritional and health status of aging populations;(62) Relative protein intake is positively associated with BMI-muscle strength in females older adults aged between 65 and 74 years, but not for males; (63) and the Findings from Life and Living in Advanced Age Cohort Study in New Zealand (LiLACS NZ) show that nutrition risk, but not malnutrition diagnosed by the GLIM criteria was significantly associated with mortality for Māori. Both nutrition risk and malnutrition were significantly associate with mortality for non-Māori.(64)

Biomedical markers for diet

Three studies focussed on the biomedical markers associated with diet for: Older adults appear to maintain postprandial responsiveness of 1C metabolism similar to younger adults, supported by a similar postprandial decline in homocysteine concentrations;(65) The contribution and role of diet in modifying inflammation in postmenopausal women.(66)

Other conditions

Cancer

Patients diagnosed within the Australia & New Zealand National Bowel Screening Program were found to be younger and have earlier stage colorectal cancer. Diagnosis within the NBSP is an independent predictor of survival for patients with CRC.(67)

Wider dissemination of information about early-onset colorectal cancer at primary care level is imperative given the increasing incidence of the disease, the frequency of diagnostic delay, the rates of late-stage diagnosis and the dissatisfaction with patient experience reported by patients whose diagnosis is delayed.(68)

Early detection and better management of stage I–III breast cancer can lead to better outcome and lower costs in follow-up years.(69)

Sleep

Indicators of sleep disturbance among care recipients are associated with increased likelihood of carer distress. This has implications for managing the overall home-care situation and long-term care needs, as well as the well-being of both parties.(70)

Indicators of negative lifestyle and health factors remain consistent predictors of atypical sleep with ageing. Demographic disparities are less apparent among older atypical sleepers. Individual and contextual factors associated with atypical sleep patterns may be important for age-appropriate recognition and management of sleep problems.(71)

Oral health

Self-reported approaches are discriminative for poor oral health. Standardised assessment tools used in residential care facilities should consider including a self-assessment component.(72)

Five-year-olds with greater caries experience were more likely to have poorer self-rated general health by midlife. A finding of The Dunedin Study. (73)

Other

Sarcopenia is highly prevalent in elderly haemodialysis patients but is not an independent predictor of mortality. Haemodialysis patients have multiple competing risks for mortality which was predicted by a lower mean arterial pressure and a higher total comorbidity score.(74)

A review that provides the practical and theoretical evidence that can direct policy makers in high-income countries towards achieving universal health coverage when designing new eye health services for older people.(75)

The apparent survival benefit associated with longer haemodialysis session length appears to be preserved in patients 65 years or older. In practice, the benefit of longer dialysis hours should be carefully weighed against other factors in this patient group.(76)

Prescribing

Pharmacists are in a prime position to monitor and ensure optimal drug therapy and improve health outcomes - but many self-care initiatives are unrecognized or un-remunerated by Government.(77)

A significant proportion of patients developed persistent opioid use (POU), and several factors were associated with POU. Findings will enable healthcare providers and policy makers to target early interventions to prevent POU and related adverse events.(78)

A study found that despite higher dementia prevalence in Māori and Pacific peoples, these cohorts were less likely to receive funded anti-dementia medication.(79)

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.(80)

In one study, no evidence was found to suggest the effectiveness of de-prescribing anticholinergic and sedative drugs to reduce polypharmacy for participants of any frailty level.(81)

PolyScan, an information technology triage tool, can support clinicians, clinics, and policymakers with allocation of resources, rational medicine campaigns, and identifying individuals prescribed potentially inappropriate medicines for review.(82) In a further study, the same authors found that NZ criteria provides 61 medication indicators, which NZ experts recommend should prompt formal, documented review. Criteria can be used to systematically identify patients at the highest risk of avoidable medication-related harm for proactive review.(83)

Prescribing omissions and inappropriate medications were found to be common in older inpatients. Differences were observed between ethnic groups, with NZ Europeans having fewer omissions.(84) The same authors found that most older inpatients wanted to be involved in decision-making about their medications and were willing to stop one or more medications if proposed by their prescriber.(85)

No evidence was found for the effect of pharmacist deprescribing intervention on reducing the anticholinergic burden. Post hoc analysis examined the impact of COVID-19 on the effectiveness of the intervention, and further research in this area may be warranted.(86)

Pharmacist-led deprescribing recommendations arising from an algorithm-based medication review are acceptable to doctors and can have a significant impact on reducing the number of inappropriate medications consumed by older people in residential aged care facilities.(87)

Social connection

Ageing in place has a practical and culturally sensitive application among Indigenous older adults. There are specific elements of physical and social environment that require further examination through research and design of Indigenous social policies. It is particularly important to consider improvements in housing conditions, the opportunity to live with or close to family and, especially, the significance for this group of being connected to the land.(88)

Another study highlights the need to consider health beyond the individual to the collective, embracing indigenous perspectives, and authentically nurturing relationships with Pacific health providers.(89)

Older Asian migrants engaged in a range of creative strategies to stay connected during COVID-19 lockdowns which drew heavily on pre-existing social capital. Future pandemic responses should seek

to improve connectedness between the national government COVID-19 response and older Korean and Chinese later-life migrants.(90)

From The Dunedin Study, although findings are associational, they indicate that preventing social isolation, particularly in mid-adulthood, may help to avert accelerated brain ageing associated with negative health outcomes later in life.(91) A further study from this group found that interrupting persistent social isolation may help to prevent adult depression whereas halting adult social isolation may ameliorate both depression and suicide outcomes. Again, the findings were associational.(92)

One study provides the baseline scores and correlates of important social and health outcomes for the He Huarahi Tautoko (Avenue of Support) programme, a strengths-based approach for enhancing cultural connection and physical activity.(93)

Transport and built environment

The overarching assessment of one audit showed that there has not been a substantial improvement in post-disaster urban conditions to support active ageing.(94)

Focus on enabling seniors' resilience through housing recognises the growing significance of structural population ageing for housing design and delivery and the central role of housing to ageing in place policies that underpin health and welfare provision.(95)

The realities of rurality mean that policies around ageing in place are not so easy to realise in rural communities given the practical challenges of distance and low population density. Yet this results in older adults having little choice but to leave their homes for the more accessible amenities and services in urban centres.(96)

Building on existing attributes should facilitate implementation and promote the sustainability of local age-friendly initiatives. To avoid undermining existing community strengths, older adults and stakeholders from rural communities should be actively engaged in planning and implementing age-friendly initiatives from the outset.(97)

Not otherwise classified

While the Staying Upright program was valued, the tight financial environment created by the current funding model in New Zealand did not support funding physical therapist delivered falls prevention exercise programs in long term care. This study may provide policy makers with important information on changes needed to support falls prevention service delivery in LTC.(98)

Extreme heat is consistently associated with a greater risk of cardiovascular morbidity and mortality. There is an urgent need to develop and disseminate evidence-based heat–health advice that is customised to vulnerable populations, such as people with CVD.(99)

Pain Clinic for Older People achieved significant and meaningful improvements in pain outcomes that satisfied the national benchmark. Advanced age, cognitive impairment, frailty and multimorbidity should not be regarded as barriers to benefit from a pain clinic specifically designed for older people.(100)

Total physical activity (PA) was higher in middle-aged adults, with diverse patterns by age within domains. Māori accumulated less leisure PA than NZ Europeans but higher total PA. Inequalities in PA varied by domain and sociodemographic group. These results should be used to inform interventions to improve PA.(101)

One study found general support from patients for the use of their routinely collected data for secondary purposes as long as its use will benefit the population from which the data are taken. It also highlights the necessity of including the perspectives of different cultures in the collection, storage, use and analysis of health information, particularly concerning Māori cultural considerations.(102)

Medication adherence improves morbidity and mortality-related outcomes in heart failure, and knowledge of patterns of medication adherence supports patient and clinician decision-making. There was a significant disparity between Māori and non-Māori concerning medication adherence.(103)

Companion animal fostering can be considered health-promoting for human and non-human animals, using a broad and multidimensional understanding of health.(104)

Results from one study highlight the disparity between how older Pacific adults and geriatric professionals perceive elder abuse, and the policies behind geriatric services that rely on indiscriminate Western health models to identify abuse.(105)

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	10	(40, 52, 60, 64, 79, 88, 93, 101-103)
Pacific	3	(79, 89, 105)
Asian	5	(31, 50, 90)

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