

HOUSING AND HEALTH IN OLDER PEOPLE: AGEING IN PLACE

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INTRODUCTION¹

Housing has a clear impact on the health of occupants (National Health Committee 1998, Howden-Chapman et al. 1996). Affordable and appropriate housing protects people from hazards and promotes good health and wellbeing (WHO 1989). The older population is as diverse as any other in our society and older people in New Zealand live in all kinds of dwellings: detached and semi-detached houses, apartments, units, boarding houses, institutions, papakainga housing clustered around marae and “granny flats” on the grounds of a family member’s home. But regardless of the diversity, there are a number of common housing hazards older people face, which could be minimised by creative public policies. Older people deserve special consideration in government policy, community support and industry response, but they are often a low priority for resource allocation or policy innovation because of their relative lack of economic and political power.

In this paper we briefly review the demography and housing patterns of older people in New Zealand. We describe the impact of New Zealand’s climate and housing construction on health, before reviewing some significant health problems exacerbated by the indoor environment: respiratory conditions, coronary disease and hypothermia. We then analyse a variety of policy measures that could be used to improve the housing conditions of older people, paying particular attention to the assistance older people can be given to age in the communities where they have lived during their adult lives.

THE OLDER POPULATION

While many older people do not require special consideration, as a group they do – clearly – have some distinct population characteristics, such as a higher incidence of disability. Demographically, the impact of the baby boom means that the proportion of the population 65 years and older will rise for the next few decades. Disability associated with ageing increases the possibility of housing and health problems, which can lead to stress and costs to older people, their families, the community and the government. Older people with dementia, whose numbers are growing, will need particular housing assistance.

During the next 30 years, the proportion of people aged 60 or over will increase from 15.4% in 1996 to 25.3% in 2030. Some of the key trends associated with population ageing are an increase in lone-person households (associated with longevity and

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widowhood) and an increasing proportion of people over the age of 80 (Zodgekar 1993).

As people age, their income is increasingly made up of self-employment and investment income, rather than wages and salaries (Statistics New Zealand 1998b). One-person-superannuitant households have among the lowest incomes of any household type in New Zealand. Further, the household types most concentrated in the bottom quintile of income in New Zealand, in addition to sole-parent households, are older people living alone and, to a lesser extent, older couples. There are also gender differences: women between 60 and 74 years have lower incomes than men in the same age group (Davey 1998).

The existing housing stock in New Zealand presents some significant issues for an ageing society. More than 35% of New Zealand houses were constructed before the Second World War (Isaacs et al. 1995). These houses, being older, often lack modern conveniences and therefore are potentially in need of significant repair and refurbishment. Housing built before April 1978 was not required to have insulation.

HOUSING TENURE AND THE HEALTH OF OLDER PEOPLE

The housing circumstances of older people are directly linked to the social and economic processes that govern the disposition of life chances. Ownership of a house is one of the results of life chances that favour the better educated, and those with more skilled jobs who have earned higher incomes for longer periods, but it also reflects the impact of the larger economic, policy and social cycles that generations live through. For example, those who have lived through prolonged periods of unemployment have had less opportunity to save the necessary deposit for home ownership. Those who have brought up children as sole parents, in a period where there has been a relative decline in government benefits, are also more likely to be tenants than homeowners in old age. For the present generation of young adults, high student debt may delay young adults' entry into the home buying market.

Housing is increasingly seen as part of an interlocking network of markets and institutions that can increase or mitigate the impacts of social and economic inequalities (Smith 1990). While the range of income distribution is narrower among older people, from the limited evidence we have, the disparities in wealth, in terms of assets, appear more marked in those over 65 than in other age groups.

Housing tenure has a direct impact on the health and life expectancy of occupants. People in rented properties, particularly those in the public-rental sector, have higher death rates than people in owner-occupied households, even after other key socioeconomic variables are considered (Macintyre 1998). What explains this relationship?

There is now overwhelming evidence of a social gradient in health. Those who are better educated, are employed in higher status jobs, have higher incomes and live in socioeconomically advantaged neighbourhoods, will have better health and longer life expectancy than those with less education, less-skilled jobs and less income, and who live in more deprived neighbourhoods (Evans et al. 1994, National Health Committee 1998). Yet, the contrast is not just between the extremes, there is a

consistent relationship throughout the gradient. The key factor seems to be not just material, but the degree of control people have over their lives. It is likely that home ownership provides a degree of control over accommodation – a secure sense of home – that is crucial to wellbeing. Chapman (1982), in a survey of Auckland private tenants, found that a desire for autonomy was an important factor in tenure choice. The autonomy afforded by owner-occupation was seen as highly advantageous: 95% of the tenants agreed that owners had more freedom and independence in what they do with their homes. This may be particularly true of older people, who are no longer in the paid workforce.

Historically, New Zealanders have had a strong ethic of home ownership. In 1996, three-quarters (76.4%) of New Zealanders were “owner-occupiers”. More adults lived in homes with a mortgage (41.7%) than without a mortgage (31.3%), with a quarter of households (23.6%) renting their accommodation. Most people over 65 live in their own homes, which are mostly mortgage-free, but there are ethnic differences. Three-quarters of Pakeha people lived in mortgage-free housing and 87% in owner-occupied housing in 1996, while at the same time only half of older Maori lived in mortgage-free housing and 70% lived in accommodation which they owned. For older Pacific people, only 25% lived in mortgage-free housing and 54% in accommodation which they owned. For the age group over 75 years, there is slightly less home ownership for each ethnic group, although the same ethnic pattern of differences in housing circumstances occurs. The marked differentials between ethnic groups have increased in the period 1981 to 1996 (Davey 1998).

Many older homeowners in New Zealand are dependent on government pensions for day-to-day living expenses, leaving little left over to pay for repairs and modifications to housing. Most older home owners would never seek any kind of government assistance to modify their home, either they can cope by themselves or with the help of their families or friends. But for those who are not so well placed, such assistance may well be crucial to their continued stay in the community and to their “healthy ageing.”

Housing for older people, both public and private, has typically been clusters of bed-sitter units, with little consideration of indoor or outdoor space or disability needs. The assumption that older people do not need or want much space has recently been challenged in Australian work, which has emphasised manageability rather than space and resulted in public housing authorities redeveloping many of their bed-sitter units to provide one- or two- bedroom accommodation (Roberts 1997). In New Zealand, qualitative work with older Pacific peoples has stressed the importance of acknowledging the reality of extended family living by providing appropriate public housing stock (Pene et al. 1999).

Compared with younger people, a smaller proportion of older people are tenants, living in private or public rental accommodation. A 1995 survey of local authorities found that all 74 had some pensioner housing with a total of nearly 14,000 units. Seven authorities had sold units in the previous five years although several were using pensioner units for other purposes (Department of Internal Affairs 1996). Currently, most councils are still committed to the provision of pensioner housing, although some councils are considering the possibility of sales (Mike Reid, Local Government New Zealand, personal communication).

While the number of institutional homes (non-private dwellings) for older people has increased by a third since 1986, the 1996 Census showed only a small proportion of older people lived in institutions, 1.3% of those aged 65 to 74 and 10% of those aged 75 years and over (Statistics New Zealand 1998a). These proportions have only slightly increased since 1986 (1% and 8.6% respectively).

CLIMATE AND HOUSING

New Zealand has a particularly humid climate. Ideally, the relative humidity for housing should be in the middle range (between 40% and 50%) and there should be adequate but not excessive ventilation (Collins 1993). The WHO (1984) recommends 18°C as the minimum indoor temperature for sedentary people. In Britain, the Ministry of Housing and Local Government (1969) advised older people to keep their living rooms at 21°C and the rest of the house at 18°C.

Field surveys of temperatures in NZ homes have suggested that few homes are fully maintained at these recommended levels. A 1989 New Zealand study of 36 units for older people found that more than one third of the minimum daily temperatures in the living room during the year were below 16°C (Isaacs and Donn 1993). Similarly, surveys in the UK have shown that houses occupied by older people are colder than average (Collins 1986b, Fox et al. 1973, Salvosa et al. 1971.).

HOUSING AND HEATING

There is now a considerable body of evidence to show that the design of buildings and features of the indoor environment affect residents' health (Mant and Gray 1986). The most common health hazards associated with poor housing are dampness and cold. A damp dwelling is more difficult to heat and a poorly heated dwelling more susceptible to damp. Cold air has a higher relative humidity, increasing the risk of condensation indoors and providing a more favourable environment for the growth of moulds and micro-organisms (Collins 1993).

Human thermal comfort is determined by a definable number of environmental, physiological and psychological factors, although there is still a component of individual idiosyncrasy. However, the use of comfort as a criterion by which older persons judge how much to heat their homes poses a special problem, as studies show old people do not judge temperature as well as younger people.

Heating costs rise exponentially as the differential between temperatures inside and outside the house increases. In an attempt to conserve resources by reducing expenditure on energy, some older people may keep the temperature of their living accommodation too low for comfort, encouraging what Collins (1993) calls a state of "voluntary hypothermia." There was anecdotal evidence during the oil crisis that many older people felt a heightened sense of civic consciousness and economised unduly on heating fuel. Do older people appreciate the health risks they take when they economise on heating and endure cold houses?

HOUSING AND HEALTH EFFECTS

A number of studies have found links between damp housing, the presence of mould and high rates of respiratory illness and asthma, especially among those who spend more time inside – children, women and older people (Strachan et al. 1986, McCarthy et al. 1985, Blackman et al. 1989). Studies in England, the U.S.A and the Netherlands have shown that both self-reported and objectively measured housing dampness was strongly associated with respiratory symptoms, long-standing illness and disability: that is, the damper the house, the greater the likelihood that the occupants were ill (Hunt 1993). The effects are most marked for children and older people, the latter being particularly vulnerable to low temperatures (Collins 1986a). Such studies exploring objective markers of dampness and objective evidence of respiratory disease are urgently required in New Zealand where no research has been undertaken to date. Given the high rates in New Zealand of respiratory morbidity, both asthma and respiratory infectious disease, and the anecdotal evidence of a high frequency of damp dwellings, surveys exploring these relationships would be of considerable value in relating housing to respiratory health.

The human body tries to maintain a constant body temperature despite environmental changes. When the body's core temperature, which usually stays within a few degrees of normal (37°C), drops suddenly below 35°C , hypothermia can occur and causes very high fatality rates. Older people do not feel temperature changes as well as younger adults because they have less efficient body temperature regulating mechanisms, so their core temperature can start dropping before they know they are cold (Anderson et al. 1996, Lipsky 1984). When a person's body starts to cool, a sympathetic nervous reflex is triggered which attempts to increase blood flow to the body core and reduce heat loss from the skin. This reflex can cause vasoconstriction, increase the heart rate and result in increased blood pressure. Older people affected by hypothermia often live alone in poor circumstances and because of an accident, illness or mental confusion are unable to call for help (Salvosa et al. 1971).

There is evidence from a Medical Research Council Treatment Trial for Mild Hypertension that the seasonal variation in blood pressure is more marked in older people (Brennan et al. 1982). In an indoor investigation involving young and old subjects exposed at rest for four hours a day (in temperatures as low as 6°C), it was found that cold extremities and slightly lowered core temperature could lead to short-term increases in blood pressure, which could be damaging to people suffering from hypertension (Collins et al. 1986b). Taylor et al. (1995) also studied differences in thermoregulator control between young and old, and found that older people seemed to require more intense temperature changes before they appropriately adjusted the room temperature. This may be one of the factors that make older people more susceptible to hypothermia.

In Britain, Prescott et al. (1962) estimated that 68% of hospital admissions in winter among the aged were related to hypothermia. Hislop et al. (1995) studied patients presenting to hospital with hypothermia and found that "most of those who became hypothermic at home had heating available but were not using it" (p. 725).

There may also be an effect of the indoor environment on mortality. Excess winter mortality can arise from the combined effects of acute exposure to cold outdoors, as

well as more prolonged though less severe cold indoors (Collins 1993). For older people, it has been argued that damp, cold houses are an important factor in excess winter deaths in Britain (Boardman 1986) – not just through hypothermia, but also, through the mechanisms outlined above, from increased susceptibility to coronary and cerebral thrombosis and respiratory disease (Smith 1989). Seasonality of cardiovascular death has been observed by Douglas et al. (1990) and Marshall et al. (1988). Gyllerup et al. (1991) provide evidence from Sweden on a strong regional association between cold exposure and high coronary mortality. It has been estimated that 30,000 people aged over 65 die of hypothermia each year in Britain. Using similar assumptions, the estimate for hypothermia-related deaths each year in the U.S.A. is 25,000 people, making it the sixth leading cause of death for old people (Avery 1982).

Using New Zealand data, Taylor et al. (1994) analysed all hospital discharges (1979-1986) and deaths (1977-86) and found that 86.6% of the domestic hypothermia-related fatalities occurred in those over 65 years. Interestingly, New Zealand has greater seasonality of mortality than the more extreme climates of less temperate countries, particularly in those aged 65 and over (Isaacs and Donn 1993). Frost et al. (1992) studied cardiovascular deaths in Auckland during 1984 and 1985. They found that cold stress is the dominant climatic factor responsible for increasing cardiovascular deaths. They advised that those susceptible to cardiovascular disease should “remain in well-heated spaces and avoid exposure to external temperatures on the coldest days of the year” (p. 17).

It is not entirely clear how much excess winter mortality is due to indoor or outdoor environments, or older people’s behaviour moving between inside and outside. Keatinge (1986) considered that most of the excess mortality from arterial thrombosis in winter in England and Wales was due to older persons’ brief excursions outdoors rather than too low indoor temperatures. However, the Eurowinter Group (1997) examined winter mortality in eight European regions and showed that “the percentage increases in all-cause and respiratory disease mortality with fall in temperature were greater, and that protective measures against a given degree of cold were [paradoxically] fewer in regions with mild winters” (p.1345). They found evidence that linked mortality with lack of home heating independently of out-door cold stress. They noted that although researchers know that middle-aged and older people should wear protective clothing and keep active in cold weather outdoors, in relatively warm countries (such as New Zealand) they often fail to do so. They recommended educating older people to improve their protection from cold, particularly in countries with relatively warm winters, where the need for avoiding cold was less obvious, and measures taken against it less effective.

In a case study of cold-related deaths in eastern Russia, where the mean winter temperature is below -6°C , cold stress and excess mortality are prevented by a combination of simple protective measures against outdoor cold. These measures included warm clothing and physical exercise, and ensuring that houses are kept warm (Donaldson et al. 1998). The results of this study suggest that most of the increase in mortality associated with cold weather in Western Europe and New Zealand, which occurs mainly at temperatures above zero degrees Celsius, could be prevented.

Interestingly, there has been a substantial decline in excess winter mortality from 1979 to 1994 in southeast England. This can be attributed in part to improvement in non-seasonal background factors, such as general medical care and diet, but also to improvements in home heating and factors such as greater car ownership, which reduce outdoor exposure to cold (Donaldson and Keatinge 1997).

OCCUPANT BEHAVIOUR

Income has consistently been shown to be positively related to the demand for home maintenance for the population as a whole and specifically for older people (Reschovsky and Newman 1990). Reductions in income associated with old age have the effect of lowering demand for housing quality and subsequently for home repairs, particularly discretionary as against vital repairs.

Draughts, which increase with windy weather, make houses colder and increase the costs of heating. Damp increases heat loss, and while moisture in a house can come from leaking roofs or rising damp, in most houses, the major source of moisture comes from human behaviour such as steaming food or having a shower, without opening the window (Lloyd 1990). If the house insulation is poor, moisture generated from cooking, cleaning and drying will condense as dampness. If the bedroom is open, or if the home is a bedsit, and the room is significantly colder than other areas of the house, any moisture from cooking and washing will condense on the bed (Lloyd 1986).

Indoor temperatures are the result, not only of outdoor temperature and dampness, but also of the location and construction of the house **and** the behaviour of the occupants. Small indicative surveys, for example of pensioner housing in Blenheim, have shown that occupant behaviour makes a big difference to the temperatures of identically built houses (Isaacs and Donn 1993).

HOUSING AND COMMUNITY SUPPORT

Council pensioner housing is often deliberately clustered to encourage community support. Some researchers in housing and health maintain that a critical aspect of improving housing is to consider the impact of differential housing conditions on the aggregate health of whole communities, spatially defined. For example, a case study of two housing estates in West Belfast found that cold, damp and overcrowding did not fully explain bad health. The consistent differences in self-assessed health between housing areas could be explained more by the neighbourhood effects and the location of a dwelling than by the presence of structural defects (Blackman et al. 1989).

In the case of low-income superannuitants, it is particularly important to consider the effects of quality of housing at a community level as well as at an individual level. This is because superannuitants' age and social position mean that they are more likely to be tied to their flats than younger age groups so that interventions in pensioner housing are more likely to have an impact on neighbourhood morale, which in turn could influence the health of individual superannuitants. This concept of neighbourhood morale is a community or ecological variable, akin to social

capital, which is defined as the store of trust and goodwill that builds up in a community, but can also be depleted (Putnam 1993).

PUBLIC POLICY INTERVENTIONS

There are a variety of public policy interventions that have been implemented overseas to improve the housing quality of older people. These interventions impact both directly and indirectly on housing and health. They are used to support older peoples' usual preferences to "stay put" in their homes rather than having to move into institutions. These policy options include the provision of a stock of diverse housing in the same locality, shared equity or reverse equity schemes, "staying put" programmes, where older people are helped to maintain their homes, and housing allowances. For example, in order to increase older people's disposable income, an unencumbered house can be used as an asset that can be traded down for cash or against which a loan can be raised.

Reverse mortgages are one possibility, although they are not commonly used in New Zealand despite a successful pilot of such a scheme in 1990-1991 (Monitoring and Evaluation Research Associates 1991). This pilot, the "Helping Hand Loans Scheme" was implemented by the Housing Corporation, but not pursued by the new National Government. An important component of the scheme was the security of tenure afforded the participants. The lack of use of such schemes in New Zealand may be because there are few such policies available and we do not have a culture of using them, and because older people wish to leave some capital to their children. As the earlier pilot demonstrated, policies could be designed to facilitate the development of reverse mortgages and increase familiarity with them among older people.

In Australia, the Federal Department of Health and Family Services supports a number of initiatives aimed at older home-owners, called the Assistance with Care and Housing for the Aged Program (Roberts 1997). The initiatives are based on the premise that older people vary enormously in their needs, circumstances, housing preferences, living arrangements and financial capacities, and that different solutions are needed as a result. One of these initiatives is a "shared equity" scheme where older people are assisted into buying a more convenient house in the same locality. Some on-going rent is paid, but the move is facilitated.

Another policy involves state governments developing home maintenance and modification services which recognise that many older people, especially if they are frail, have concerns about dealing with trades people and the financial side of repairs. Means (1992) also describes a "care and repair" scheme that provides home improvement grants to help people with disabilities and older people who need repairs carried out.

Henard (1991) examined housing policy for older people in several European Community countries. He found a wide range of innovative policies intended to maintain older people in their own homes as they aged and have greater difficulties in meeting the demands of daily living. Several countries provide housing benefits, allocated according to income, that are available to pay part of the rent, or, in the case of Britain, the whole of the rent. In the Netherlands, a specific housing allowance is given to assist old people to move to more suitable housing.

In relation to the indoor temperature of older peoples' houses, lack of disposable income and economising on fuel is a major issue. In Britain, there has been considerable discussion of "fuel poverty" (Boardman 1991) and extra payments are made to older people to assist with heating costs (Donnison 1977).

NEW ZEALAND RESEARCH ON INSULATING PENSIONER FLATS

A pilot study is currently being funded by the Health Research Council, the Energy Efficiency and Conservation Authority, the Ministry of Social Policy and the Wellington City Council. It is being carried out by staff at the Wellington School of Medicine (including the authors of this current paper), the Building Research Association of New Zealand and Smartpower. It aims to determine the health effects of insulating pensioner units in Wellington and measure the impact of insulation on temperature and humidity within the dwelling. Insulation and thus more efficient use of heating should make houses drier and warmer. This should, in turn, lead to improved health outcomes among pensioners.

The most cost-effective and technically straightforward energy saving measures are being used in the pilot study. This involves insulating the ceilings and under floors, and draught-proofing the windows and doors. The study design involves experimental and control groups of council pensioner units. Outcome variables are occupants' self-assessed health (particularly in relation to respiratory and rheumatic illnesses), disabilities and thermal comfort (as measured by quantitative building science scales). Their general health is being measured on the SF36, which has been validated nationally (Ministry of Health 1999). In addition, the researchers have received the permission of the occupants to access their GP records and power bills.

Three-month baseline measures (June, July, August of 1999) were taken of the indoor daily temperatures and humidity in participants' homes. Participants' health and comfort have also been monitored by self-report for the three winter months, before their flats were insulated. In September 1999, a survey was conducted of participants' health and comfort and of their behaviour in relation to their house. In the spring of 1999, the experimental units were insulated and in the following winter (2000) the baseline measures will be repeated for both the experimental and control houses. In this pilot we are using measures of comfort as part of our broad public health approach to measuring the impact of our intervention. Comfort, particularly for older people, may be an important part of a holistic view of health, but may also be an important intervening factor in explaining the use of energy. For example, if the intervention increases comfort, it may (to a greater or lesser extent) reduce the pensioners' fuel bills, thus increasing their remaining disposable income, which may in turn have an impact on their health.

This New Zealand research is related to a Glasgow study of the impact of insulating housing (cited in Markus 1993). That study of experimentally insulated housing used comfort rather than health indicators as an outcome measure. The houses, which were draughty, cold, damp and mouldy, were thermally upgraded using passive solar energy. The improvements reduced the calculated weekly fuel bill required to maintain comfort standards from around £25 to £6.50. Markus (1993)

concluded that these and other similar interventions in Glasgow had a payback period of four years. The health gains, if any, were not recorded.

CONCLUSION

Good quality housing is an important determinant of health in older people as it is for the population as a whole. In addition, there are particular factors relating to the impact of housing on the health of older people that are important both for researchers and policy makers.

The indoor environment in older people's houses is likely to be colder than recommended for the maintenance of good health, and older people are at greater risk of respiratory disease, coronary events and accidental hypothermia. New Zealand has a relatively mild climate, but a high rate of excess winter mortality in older people. This may be related to the relatively high humidity of the New Zealand climate, the poor thermal performance of our houses, the cost of power for people on fixed incomes, and the lack of knowledge by older people of the risks of cold houses and subsequent behaviour which unknowingly worsens the situation. Policies that improve the thermal performance of houses, especially existing ones, that address the cost of power for older people, and that result in the education of older people about the risks of cold homes, should be considered.

Most older people live in the community. Only a small proportion of older people live in institutions. It is clear that many people enter residential homes, or fail to leave hospital, primarily because of housing problems. Good quality housing is the foundation of community care programmes (Means 1992). A number of housing policies are used overseas to support older peoples' usual preferences not to move. Some of these policy options are the provision of a diverse stock of housing in the same locality, shared equity or reverse equity schemes, and "staying put" programmes, where older people are helped to maintain their homes. These policy options have the major advantage of not forcing older people to move and break their social networks in order to live in safe housing or obtain needed care. They provide ways to facilitate access to appropriate, affordable and secure, healthy housing. These policy options could be explored further in New Zealand, and should be explored both from an individual and community perspective.

Older people are more likely than the general population to own their own homes, and to be mortgage-free, but as most are on fixed incomes, many are "asset-rich and income-poor." Given that housing tenure is linked directly to cardiovascular and all-cause mortality, older people in rented accommodation are likely to have higher death rates than owner-occupiers. New Zealand housing patterns mean that Maori and Pacific superannuitants are at greater health risk than Pakeha superannuitants. Housing rental costs have increased significantly over the last decade, well ahead of the overall increase in the Consumers' Price Index, so older Maori and Pacific people are likely to have been more economically affected than older Pakeha.

There is no one perfect housing solution for all older people. However, given what we know about the potential impact of housing on the health of older people, improving the structure of housing for older people is an important social policy measure. Some of the concerns relating to the affordability of housing can only be

addressed by the level of government superannuation and/or the costs of rent. As housing is the biggest item of household expenditure for low-income older people, older people who are mainly on fixed incomes are particularly affected by the level at which rents are set. Housing costs are the main determinant of how much food is on the table and, when it is cold, whether the heater will be turned on. Some choices can be fatal.

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