Sustainable, age-friendly housing

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E. Karol. Sustainable, age-friendly housing. Gerontechnology 2004; 3(2):61-63. Few people would dispute the idea that environmentally sustainable, age-friendly housing is desirable for all. But as resources for housing construction are always limited, this goal may not be readily achievable. The argument put in this editorial is that independent housing for older people, particularly for those who are financially vulnerable, should incorporate technology that makes such housing both age-friendly and sustainable. Public housing should be leading the way in sustainable, independent housing for the aged.

Key words: environmentally sustainable, age-friendly housing, universal design

One of the important aspects of gerontechnology is the study of technology and ageing to ensure independent living remains possible in spite of the inevitable decline that comes with ageing[1]. Typically gerontechnology in housing design is used to address the notion of 'universal design'[2]. Housing designers refer to universal design as the ultimate encapsulation of those features of design that address the competencies of all people regardless of age, condition or ability. Conventionally the standard design elements of universal design are such features as the total elimination of thresholds at door openings, the widening of hallways and doorways to allow for wheelchair access, the provision of adjustable bench tops with leg access below to accommodate seated users, positioning of appliances and fixtures to allow access even from a seated position, doors with lever handles, light fittings that operate with a rocker switch that requires no finger strength or dexterity, large open bathrooms with non-permeable surfaces, non-slip floors and grab rails where required[3].

Universal design in housing makes no mention of environmental sustainability although, in Australia at least, sustainability in terms of energy use and water consumption may become a significant ingredient in enabling financially vulnerable older people to continue to live independently. The cost to consumers of both energy and water in Australia is steadily rising as the true cost of supply for these diminishing natural resources is recognized. Although Australia's electricity prices are amongst the lowest in the world, there are predictions that electricity prices will rise by up to 20% in the near future[4]. Water prices are also set to rise in order to reduce water demand[5].

More people than ever before are now living independently in their eighth and ninth decades. Davison, Kendig et al.[6] established that the amount of discretionary time spent inside the home increases with age, with those over 65 years of age spending eighty to ninety percent of their time at home. One consequence of so much time at home is a high per person use of energy and water by the older cohort. There is evidence to show that the use of energy for domestic

mechanical heating and cooling increases with ageing. For affluent older people living in aged persons housing in Australia, energy consumption per person is higher than in typical suburban housing[7]. A similar finding was reported in Japan. In a study of ageing householders in Japan, fuel and light expenses per person were higher and were growing at a higher rate in ageing households than in other households[8]. Although no data has been located, it may also be that the consumption of water for washing and toilet flushing (with increasing incontinence) may increase for people in their more senior years.

TECHNOLOGICAL POSSIBILITIES

The energy consumption aspect of sustainability of housing for the aged can be addressed by installing solar water heaters, by the incorporation of energy generators and by well-considered energy efficient design. One way of reducing the negative environmental impact of traditional energy sources is through the construction of building-integrated photovoltaics on the roof and/or walls of a dwelling. Since a photovoltaic array only produces electricity during daylight hours this system can be connected to the local public electricity grid. Thus the consumer can draw power whenever it is needed. The amount of electricity generated by a photovoltaic array depends primarily on the solar exposure of the array. In most parts of Australia, high levels of insolation result in approximately double the electricity generated in Europe from a particular size of photovoltaic array[9]. Another way of reducing energy consumption in housing for the aged is to develop features in energy efficient buildings that make no demands on the occupants and have no adverse side effects such as excessive indoor glare[10]. This means designing the appropriate balance between solar collection, thermal storage, insulation and natural ventilation in order to minimize the need for mechanical space heating and cooling[11].

The water consumption aspect of sustainability of housing can be addressed with the installation of a rain water tank. The outlet from the tank can be plumbed directly to particular taps in a dwelling (water closet cistern), and through a treatment tank before being connected to other outlets such as washing machine and shower. The tank can be topped-up with water from the public mains during periods of low rain-fall. Alternatively a grey water treatment system (grey water refers to waste water from the bath, shower, basins and washing machine) can be associated with dwellings for the aged and the treated water (treated to potable standard) can be plumbed directly to the water closet cistern, washing machine and shower thus creating a recycling water loop.

CONCLUSION

Gerontechnology should embrace technology that contributes to environmental sustainability in order to ensure independent living for older people remains possible in spite of the inevitable bodily decline and greater financial vulnerability. Energy saving systems and water saving systems are available which can be installed to be age-friendly and make no additional demands on the occupant. Housing for the most financially vulnerable older people (publicly owned housing) should be the first to have sustainable elements such as photovoltaics, solar water heaters, water storage tanks and grey water treatment systems incorporated.

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