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# Designing Dementia-Friendly Neighbourhoods: Helping People with Dementia to Get Out and About

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## ABSTRACT

This paper summarises research funded by the EPSRC EQUAL programme from 2000 to 2003 to examine how neighbourhoods could be made dementia-friendly. Design for dementia generally focuses on the internal environment of dementia care homes and facilities, but most people with dementia live at home. Unless they are able to use their local neighbourhoods safely, they are likely to become effectively housebound. There is also increasing awareness of the role the outdoor environment plays in the health, independence, well-being and cognitive function of people with dementia. The research defined dementia-friendly neighbourhoods as welcoming, safe, easy and enjoyable for people with dementia and others to access, visit, use and find their around. It identified six design principles: familiarity, legibility, distinctiveness, accessibility, comfort and safety. A number of recommendations for designing and adapting neighbourhoods to be dementia-friendly arose from the research.

## KEY WORDS

design for dementia principles and recommendations; neighbourhoods; well-being; independence

## Background

Two-thirds of older people with dementia in the UK live at home, around a quarter alone (Knapp

& Prince, 2007). Design guidelines for dementia care facilities and smart home technology are intended to provide supportive and safe dwellings

for people with dementia, but if the individual is not able to go beyond the confines of their home they will effectively become housebound. Despite fears that people with dementia will come to harm or lose the way, getting outdoors is important for their health and well-being. The ability to go out for a walk or to meet basic needs such as buying food plays an essential role in maintaining independence and self-respect; as one participant said, 'I feel in charge of myself when out'. Vallyelly and colleagues (2006 p12) agree.

*Independence is important to all older people including those with dementia. Like other older people, people with dementia are citizens and consumers, these rights do not dissipate when they have dementia.*

Many people enjoy walking, but the seemingly aimless constant walking frequent in people with dementia tends to be viewed as a symptom, to be controlled or managed. This attitude and the term 'wandering' are now being questioned (Marshall, 2006), as walking can be an important means of coping with dementia.

*Walking off the anxiety, attempting to decrease the confusion and going down familiar streets means memories of happier times flood back, anxiety starts to decrease and they begin to feel more secure and more composed, spirits are uplifted. (Wilson et al, 2007 p49)*

As a participant explained:

*I love walking and I always feel better for getting out and getting a bit of fresh air'.*

Physical activity can also significantly reduce the likelihood of becoming disabled or experiencing chronic illnesses such as heart disease. Even a leisurely daily walk can improve and maintain health and cognitive function

(Kennedy, 2007; Abbot et al, 2004; Larson et al, 2006; Weuve et al, 2004; Yaffe et al, 2001).

Apart from the benefits of physical exercise, mental stimulation and social contact from walking around the neighbourhood, just being outside is valuable. Sunlight is important for the production of serotonin (a mood-enhancing hormone) and absorption of vitamin D, which is extremely important for older people at risk of arthritis and brittle bones. Exposure to natural light and being able to see clearly the cycle of change between day and night and the seasons can enhance health and well-being and reduce the prevalence of 'sundowning' (increased agitation at dusk) and sleep disorders (Keane & Shoemith, 2005; Torrington & Tregenza, 2007; Cooper Marcus, 2009). For one participant, the simple pleasure of a sunny day was sufficient.

*'It's really quite a warm sun this, isn't it, do you feel it? It's delicious!'*

## The research

This research investigated how local neighbourhoods could be designed or adapted so that people with dementia could continue to use them, which would enhance their quality of life. Participants' understanding, experiences and use of their local neighbourhoods were examined, design factors that help or hinder them were identified, and preliminary guidance on designing dementia-friendly outdoor environments (at all scales, from urban design to the design of street furniture) was produced. At the time of the research the authors were employed by Oxford Brookes University, and ethical approval was granted by the University Research Ethics Committee.

## Methods

### The study sample

Twenty older people with Mini-Mental State Examination (MMSE) scores from 9 to 28 were

interviewed, and 25 older people without dementia were interviewed as a control group. Participants were aged 60 or over, were ambulant, used their local neighbourhoods and lived at home or in sheltered housing in Oxfordshire and Berkshire. The sample size was relatively small due to problems in finding people who met all the criteria and had an MMSE score, despite help from the Oxford Dementia Centre, OPTIMA (Oxford Project to Investigate Memory and Ageing), local health service trusts and dementia support groups. Recruitment was also constrained by carers who acted as protective 'gatekeepers'; many explained that the challenges of living with dementia meant that they could not cope with anything else at that time.

To ensure ongoing informed consent, participant information leaflets were sent to potential participants. People who returned a signed consent form were telephoned to enquire whether they were still happy to take part, to reiterate that they were free to withdraw at any time, and to make arrangements for the interview. Participants were telephoned again on the day of the interview, and consent was again sought on arrival at their home.

### **The fieldwork**

The research involved semi-structured, conversational interviews, accompanied walks, and a measurement of the design features of participants' local neighbourhoods guided by research instruments developed and informed by a literature review and focus groups of day centre clients, and tested and validated in pilot interviews. The research instruments were designed to be flexible enough to meet the individual capabilities and anxiety levels of each participant.

### **Interviews**

Participants were asked about how they used their neighbourhood and their experiences and feelings

while out. With the use of photographs, they were also asked to identify features, such as street lay-outs, architectural designs and street furniture, that help or hinder their understanding, enjoyment and use of their local neighbourhood. Where they existed, carers ( $N = 16$ ) were interviewed separately so that background information, such as participants' ages, could be clarified, as well as to ensure that they did not guide participants' responses.

### **Accompanied walks**

Some participants were accompanied on walks from their home to a nearby destination, such as the shops or park. An observation schedule was used to record their reactions to the outside environment, wayfinding techniques and the environmental features that appeared to help or hinder them. One researcher walked with the participant, inserting questions into general conversation about the neighbourhood to make the experience feel more natural, rather than carrying out a data-gathering exercise that might affect the participant's behaviour. A second researcher followed behind to map the route taken and record the environmental features used by the participant. Most participants soon forgot they were being recorded and observed.

### **Measurement of local neighbourhoods**

Participants' streets and routes taken on the walks were measured and evaluated using a checklist of environmental characteristics to record features including:

- location, land use, density and built form
- street pattern, use and hierarchy
- pedestrian/traffic segregation, number and type of road junctions
- permeability, legibility and accessibility (level of ease with which pedestrians can move around, find their way around and enter the streets, spaces and places).

## Analysis

Following expert advice on analysing data from a small sample size, we analysed the quantitative data using SPSS Pearson chi-square tests to investigate associations between the environmental features of participants' local neighbourhoods, their perceived and actual ability to use those neighbourhoods, and intervening variables such as health, age, gender and length of residence in that neighbourhood. A number of significant correlations ( $p \leq .05$ ) emerged, which were triangulated with the qualitative data on participants' feelings, opinions and experiences to determine their causality and to produce evidence of how different environmental features affected and influenced participants' use and experience of their neighbourhoods.

## Key findings

Participants with dementia regularly went out alone and generally enjoyed the experience, although they sometimes became anxious or disorientated in complex or busy places, or when startled by loud noises. Their inability to drive or to use public transport unaccompanied restricted their choice of destinations to those within walking distance of home. They were also significantly less likely than those without dementia to visit more than one place in a single trip. However, although this could adversely affect their quality of life if they lived in poorly serviced areas, the familiarity of places visited regularly aided their wayfinding abilities. Participants with dementia also understood places, streets, buildings and features that were in designs recognisable to older people. This does not mean that they recognised only traditional design features; clarity of use and function appeared to be the over-riding positive factors rather than style, whether traditional or modern.

Favourite destinations included the shops, post office and park, or just going for a walk. Participants tended to avoid socially demanding

situations such as visiting friends or attending church. They also seemed to feel intimidated in formal places, such as historic squares and gardens, preferring to visit vibrant spaces full of activity, such as squares containing shops and cafés, parks and recreation grounds. People with dementia often struggle to interpret the cues that signal the use of buildings, the location of entrances, the behaviour that is expected of them or the intentions of people around them, so informal places with obvious cues about their uses provide a welcoming and understandable environment.

Participants used a variety of wayfinding cues, including distinctive landmarks such as church spires, and street furniture such as post-boxes. However, they struggled to remember routes and purposes of trips and struggled to use maps, written directions or complicated signage. People who lost the way on accompanied walks all lived in neighbourhoods with complex street lay-outs and few connecting streets, such as cul-de-sacs. People lost their way at complicated road junctions, such as crossroads, when trying to follow a less familiar route or when they lost concentration. Long, straight streets and streets similar to adjacent streets or with uniform architecture also caused disorientation.

## Design-for-dementia principles and recommendations

The concept of Neighbourhoods for Life, which are welcoming, safe, easy and enjoyable for people with dementia and others to visit, access, use and find their around, was developed from the research (Burton *et al*, 2004; Mitchell *et al*, 2004). **Box 1**, below, explains the six design principles of Neighbourhoods for Life, which refer to all scales from urban design to street furniture.

Sixty-eight design recommendations for new developments and/or refurbishment of existing neighbourhoods were identified; the 17 key design recommendations are listed below.

**Box 1: THE DESIGN PRINCIPLES OF DEMENTIA-FRIENDLY NEIGHBOURHOODS FOR LIFE**

**Familiarity**

Familiar surroundings enable people to recognise and understand their surroundings, which helps to prevent and alleviate spatial disorientation and confusion and to aid short-term memory

**Legibility**

People can understand where they are and identify which way they need to go, helping to prevent and alleviate spatial disorientation, confusion and anxiety

**Distinctiveness**

People’s attention and concentration are captured by the distinctiveness of the various parts of the neighbourhood, which aids orientation and wayfinding

**Accessibility**

People are able to reach, enter, use and move around the places and spaces they need or wish to visit, regardless of any physical, sensory or cognitive impairment

**Comfort**

People feel at ease and are able to visit, use and enjoy places and spaces of their choice without physical or psychological discomfort

**Safety**

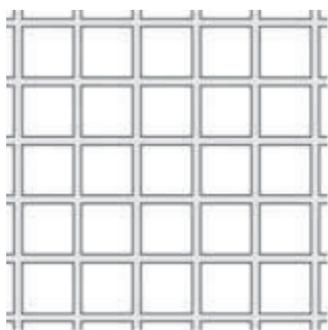
People are able to use, enjoy and move around the neighbourhood without fear of coming to harm

The principle met by each recommendation is included in brackets.

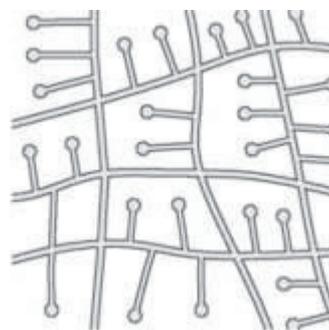
1. Small blocks laid out on an irregular grid with minimal crossroads (legibility) (*Figure 1*)  
- varying lengths (60–100m)

- uncomplicated junctions, preferably staggered, forked and t-junctions rather than crossroads
2. A hierarchy of familiar types of street, including high streets and residential side streets (familiarity)

**Figure 1: IRREGULAR STREET LAYOUTS ARE THE MOST LEGIBLE FOR PEOPLE WITH DEMENTIA**



Uniform grid pattern



'Lollipop' pattern



Irregular grid pattern

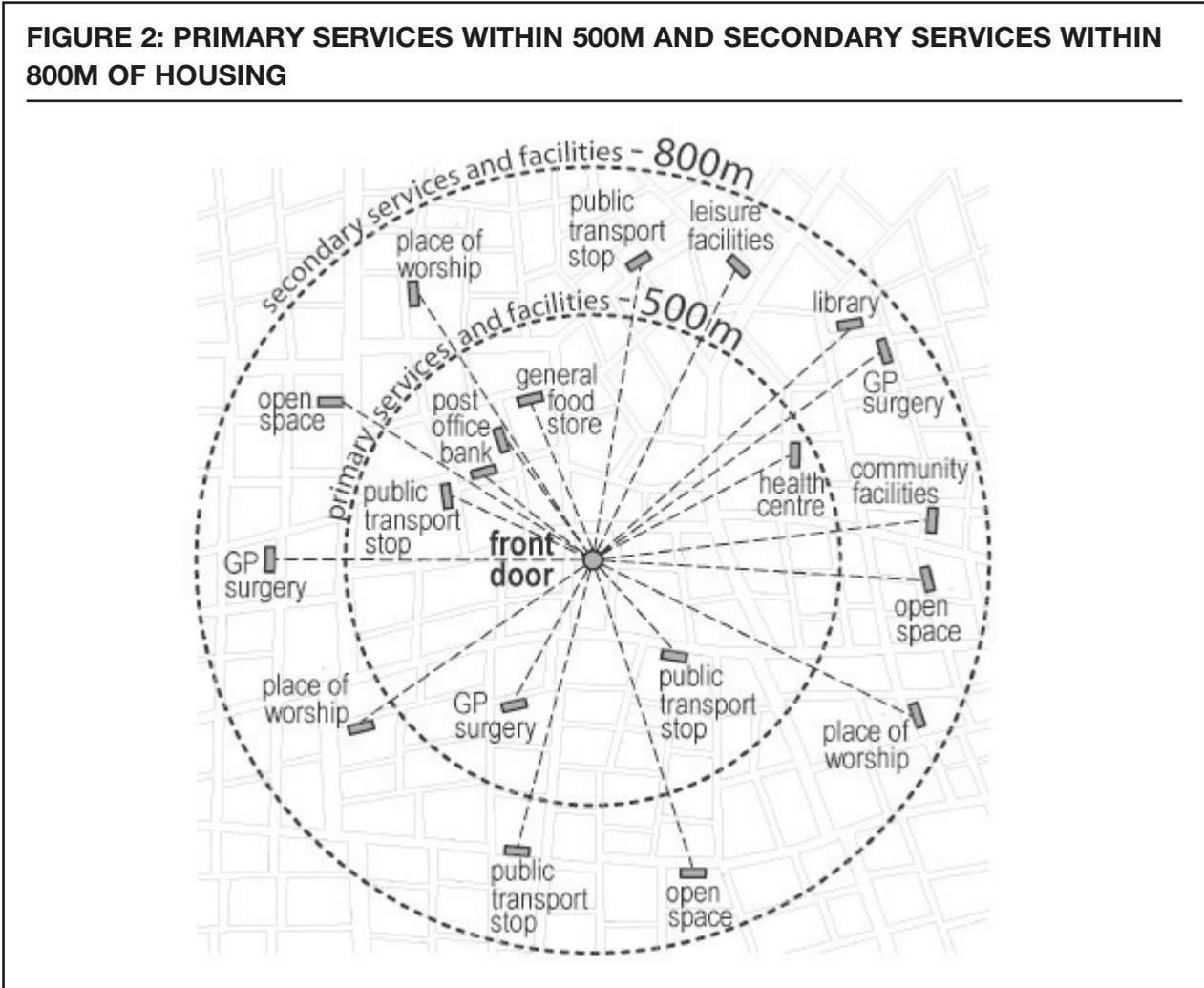
3. Gently winding streets (legibility)
4. Varied urban form and architecture (distinctiveness)
5. A mix of uses, including plenty of services and facilities and open space (accessibility) (**Figure 2**, below)
6. Permeable buffer zones between busy roads and footways, such as trees or a grass verge (comfort and safety)
7. Buildings/facilities designed to reflect uses (familiarity and legibility)
8. Obvious entrances to buildings (legibility and accessibility)
9. Landmarks and visual cues (legibility and distinctiveness)
  - historic, civic and distinctive buildings and structures
  - places of interest and activity, such as nature reserves and tennis courts
  - aesthetic and practical features in designs familiar and understandable to older people
10. Special/distinctive features, for example street furniture and trees at junctions (legibility)
11. Wide, flat, smooth, non-slip footways (accessibility and safety)
  - separate from cycle lanes
  - clean and well-maintained
  - plain and non-reflective
  - in clear colour and textural contrast to walls and traffic-calming measures
12. Frequent pedestrian crossings with audible and visual signals suitable for OP (safety)
13. Level changes only when unavoidable (accessibility)
  - gentle slopes rather than steps for slight level changes
  - choice of steps and ramp with maximum gradient 1:20, for greater level changes
  - steps/ramps clearly marked and well-lit with handrails and non-slip, non-glare surfaces
14. Clear signs throughout (legibility)
  - minimal signs giving simple, essential and unambiguous information at decision points
  - directional signs on single pointers
  - locational signs for primary services perpendicular to the wall
  - large, realistic graphics in clear colour contrast to background, preferably dark lettering on a light background
  - non-glare lighting and non-reflective coverings
15. Sturdy public seating with back rests and preferably arm rests (comfort)
  - every 100–125m
  - in warm, soft materials such as wood
16. Enclosed bus shelters, with seating and transparent walls or large clear windows (comfort)
17. Ground-level toilets (accessibility, comfort and safety)

## Conclusion

This is the only research that has investigated the design needs of older people with dementia at neighbourhood level, although research has since been conducted on the needs of older people in general. This includes research by the EPSRC EQUAL funded consortium, I'DGO (Inclusive Design for Getting Outdoors), of which the authors are members, on how the design of neighbourhoods and streets can enhance older people's quality of life ([www.idgo.ac.uk](http://www.idgo.ac.uk)).

The findings enabled us to provide some preliminary recommendations for designing dementia-friendly neighbourhoods. Our publications have been quoted and referenced in the National Strategy for Housing in an Ageing Society (CLG *et al*, 2008), which seeks to enable older people to live happy, fulfilling lives in well-designed, inclusive 'lifetime neighbourhoods', an objective endorsed by the Ageing Strategy (DWP, 2009). They have also been referred to in documents by the Welsh Assembly Government (2007), the Commission for Architecture and the Built Environment (2009), the Town and Country Planning Association (2009a, 2009b) and the

**FIGURE 2: PRIMARY SERVICES WITHIN 500M AND SECONDARY SERVICES WITHIN 800M OF HOUSING**



Housing Corporation (2006). Our book based on the research (Burton & Mitchell, 2006) has been translated into Chinese.

As the findings were based on a small sample of older people with dementia, it would be beneficial to test the recommendations with a larger sample and to conduct a post-occupancy evaluation of early implementations to examine how they are working in practice and to identify any necessary revisions. It is also important to ensure that the recommendations do not conflict with the needs of other users. While the concept of inclusive design – designing places, buildings and products that everyone, regardless

of physical, sensory or cognitive needs and capabilities, can equally understand, use and enjoy – is becoming an accepted ideal, a great deal of research is still required to determine exactly how to design inclusively. But the following words of a participant during her accompanied walk encapsulate the importance of developing dementia-friendly neighbourhoods.

*‘It is lovely being like we are now, you know, able to come out of our home and come out into this nice place and have either a long walk or just a little... little... tootle around and then home again. It’s very comforting.’*

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