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What do older people know about safety on stairs?

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ABSTRACT
This paper reports findings from three focus groups, involving 24 people, aged 65 to 79 years (20 women, four men), concerning their knowledge of safety on stairs. Findings indicate that older people use their stairs as and when necessary, but tend to avoid stair use when it becomes more difficult. The location of essential facilities in some homes (e.g. the lavatory), however, may lead to increased use of stairs for some. Despite recognition of hazardous behaviour, participants reported that they continued to engage in activities which may increase risk of falling, e.g. leaving objects on stairs and using stairs in the dark. Cleaning stairs presents problems in some cases due to difficulties with access or the need to use heavy and awkward equipment. Focus group participants recognised that medications and use of alcohol may increase the risk of falling, but it seems that individuals may not always appreciate when they personally are at increased risk. Most participants indicated they had given only limited thought to stair safety prior to the focus groups. Possibilities for prevention are reviewed, including modifications to the stair environment and equipment design, coupled with safety education, to raise awareness of risks and strategies for dealing with these.

KEY WORDS – falls, stairs, safety, older people, qualitative research.

Introduction

In the United Kingdom, older people falling on stairs in the home leads to 57,000 attendances in hospital accident and emergency departments each year (DTI 2000). Worldwide, it has been argued that falls on stairs rival road accidents as a leading cause of accidental injury and death (Pauls 1991; Templer 1992). Although there is general agreement that older users are at increased risk of falling on stairs, the extent of this is difficult to quantify due to the absence of data on stair

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usage by different age groups (Templer 1992). When older individuals do have the misfortune to fall on stairs their injuries tend to be more serious, with higher numbers of fractures (Pauls 1985; Nagata 1993). The consequences can be traumatic and seriously disabling, with numbers set to increase in line with the general ageing of the population.

Personal factors contributing to fall accidents among older people are well known and include decreased balance ability, disturbed gait, cognitive impairment, reduced strength and vision, illness, and side-effects from the use of medication (Askham *et al.* 1990; Bath and Morgan 1999; Startzell *et al.* 2000). Environmental aspects have been estimated as a primary cause in around one third of all fall accidents in the older population (Smith 1990). Dowswell *et al.* (1999) suggested that falls among the 'young elderly' (aged 65–74) are more likely to involve environmental factors, while personal factors are more important in the 'oldest' age group (those aged 85 and over). Environmental features identified by stair accident investigations for falls involving adults (of all ages) include: the poor condition of stair surfaces, objects on stairs, risers too high or too low, narrow goings, absent or poorly designed hand rails, and poor lighting (Templer 1992)[1].

It is surprising, however, that there has been only limited research concerning the role of behaviour in falls among the older age group (Askham *et al.* 1990; Connell and Wolf 1997). It has been suggested that behaviour, especially when coupled with inadequacies of the surroundings or personal frailty, plays a large part in many falls on stairs (Templer 1992). This may involve either the manner of stair use, or actions which affect the stair environment. For example, it has been suggested that older people may be less able to maintain their stairs in good repair (Healy and Yarrow 1998).

Accident prevention efforts would benefit from increased knowledge about the awareness of older people regarding safety on stairs, and about the factors which encourage them to modify their behaviour or environment in this respect. Also of interest are the coping strategies individuals develop to compensate for changing abilities, and how these might be supported through design and other interventions (Smith 1990). As a key group affected by falls, it seems essential that older people should be actively involved in developing strategies directed at fall prevention. Unfortunately, this does not always appear to have been the case (Wright and Whyley 1994).

The research reported in this paper used focus groups with the aims of improving understanding of how older people use their stairs and

why they use them in the ways that they do, and of identifying circumstances that they perceive as affecting the risk of falling.

Method

The study used discussion-based focus groups (Morgan and Krueger 1998), an approach increasingly adopted to inform health promotion and injury prevention interventions. Focus groups were the preferred methodology, serving as an effective and efficient technique for gaining insight into issues surrounding stair safety for older people[2].

Focus groups provide a means of identifying experiences, attitudes and beliefs within a population, having the advantage that the group discussion serves as a prompt to individual participants, encouraging further thought and contribution. The focus group methodology also allows the opportunity for peer commentary on opinions expressed by others. Limitations of the method are (i) the views expressed may not accurately represent those of the population from which participants have been recruited, (ii) careful moderation is required to ensure the views of more vocal participants do not dominate those of less forthcoming individuals, and (iii) data obtained may indicate the way a situation is perceived rather than how it actually is. It is important that these points are borne in mind when interpreting data based on this method.

Participants

Sampling was on a convenience basis, with participation criteria being aged 65 years or over, and living independently in their own homes. Initially participants were recruited from existing subject lists held at Loughborough University and compiled for previous research on risk of osteoporotic fracture in women (Brooke-Wavell *et al.* 1995). These lists were originally drawn up through letters sent by GPs to patients on their practice lists, who were aged 60–70 at that time and in good health. The lists were subsequently extended through the inclusion of acquaintances of the existing cohort and members recruited through community groups (over 50s recreation classes, Women's Institute, University of the Third Age, and local voluntary groups). For the present research, other participants were obtained by displaying posters in post offices, community centres and other appropriate places. Recruitment materials indicated that the study was investigating the knowledge of people aged 65 and over concerning safety on stairs.

A consequence of the recruitment process was that the sample

comprised more women than men. The final sample was 20 females and four males, with ages ranging from 65 to 79 years (mean 70.6, standard deviation 2.7 years). This imbalance was considered acceptable (see discussion).

Participants formed three groups, each group meeting on a separate occasion. Numbers in each group were six (four females, two males), seven (six females, one male) and ten (nine females, one male). There were two married couples within the sample of 24, resulting in contributions from 22 households. The composition of the groups covered a broad range of housing, dwellings varying in age from 10 to over 100 years. Subjects were drawn from both town and rural areas (two focus groups were held in Loughborough, the third in Grantham). The participants' homes typically had two or more storeys, although two lived in single floor bungalows. Size varied from small terraced houses (typically arranged with two living rooms downstairs and two bedrooms upstairs), to larger detached houses, having a greater number of rooms for all purposes.

Procedures

Participants were briefed both verbally and in writing about the study prior to arrival. They were informed that the discussions would consider stairs in the home and they were asked to think about how and why they used their stairs, and risk factors and safety issues that might be involved.

Upon arrival, participants were invited to read a leaflet from the UK government campaign *Avoiding Slips, Trips and Broken Hips*[3]. This aims to reduce falls in all areas of the home. As well as practical suggestions, the campaign advice covers physical fitness, diet, clothing, lighting and home maintenance. The broad content of the leaflet was thought unlikely to constrain or direct the group discourse unduly. In addition, photographs were circulated showing examples of different types of stairs. The purpose of the briefing was to encourage thought and to promote discussion.

Each meeting lasted approximately one and a half hours and was lead by a principal and assistant moderator, both members of the research team. Topics covered by the sessions were:

- circumstances in which stairs are used
- factors affecting safety on stairs
- personal factors leading to increased risk of falling
- self-perceived safety on stairs
- immediate and longer term consequences of having a fall

- value and acceptability of preventative measures.

The focus group discussions were recorded on audio-tape, with the consent of participants, and recordings were subsequently transcribed. Data analysis involved one of the researchers identifying concepts within the data and classifying these into appropriate categories. The other researcher working on the project then independently checked the first researcher's interpretations. A senior member of the research team then undertook a further review of the analysis, referring back to the transcripts on a sample basis.

Findings from the focus groups are structured under the headings: (1) stair environment, (2) behaviour on and around stairs, and (3) personal factors related to changed abilities. The presentation of results reflects the categorisation derived from the data analysis.

Environmental factors

General stair design

With respect to the design of stairs, several participants commented that the size of steps ought to be large enough to accommodate a full foot. It was suggested that small steps with a steep drop lead individuals to come down stairs sideways. This point received the general agreement of other participants. It was also emphasised that stairs should not be too steep, and there should be equal step heights throughout a staircase. In one focus group, stairs with open steps were identified as a negative feature: being able to see through to the floor below reduced confidence. In response to a photograph of such stairs, one participant commented: 'There's just a funny feeling, there's a space there in front of me'. The dislike of this type of stair design was shared by others in the same group.

Landings were identified as beneficial, allowing rests and, in the event of a mishap, the distance to fall is less than with a straight flight of stairs. Stair width was also thought important, to enable people to pass safely and to allow for installation of a stair-lift, should this become necessary.

Stairs in other people's homes may pose a particular problem. One participant commented:

> We've just come back from our older daughter's house in London, and her stairs are an absolute nightmare. They're steeper, it's a much older house, there isn't a handrail.

This prompted a response from another participant:

> They're narrow as well. They're used to it, aren't they, so much younger.

This indicates that deficiencies in the environment will be compounded by a lack of familiarity.

Stair covering

Stair covering was viewed as an important safety issue. Having well-fitting, carpeted stairs, in a good state of repair, was contrasted with problems that can occur with, for example, polished wooden stairs. An instance was presented where an ill-fitting carpet had caused a fall:

> My husband had warned me. We'd been decorating, and we'd just put the stair carpet back, but he said, 'be careful, as I haven't got it right yet'. Well, I got up in the night to go to the toilet, which was downstairs, and of course I'd forgotten what he'd said, as you're not really awake are you? The stair carpet moved, and I just slid down on my bottom, so I had a bit of a stiff back, but I hadn't really hurt myself. I just felt very annoyed when I got to the bottom to think how stupid I was.

Handrails

One aspect of all three focus groups was the importance attached to handrails: 'I always use the handrail. It's fear, and I don't know why'. They reported different ways of using the handrail. Some use it for reassurance on the way down: 'It's there, just in case', while others rely on it to pull themselves up: 'My second handrail is slightly smaller than the original, and is easier to pull on'. The need to use the handrail may be greatest when carrying something: 'If I've got the ironing, I've got it on one arm, but I always hold the rail with the other'.

Of the 22 households, only two had a second handrail, both had been fitted specially. In one instance it had been fitted at a time when the participant's husband was ill (it was not clear what had prompted installation in the second case). Other people had thought about fitting a second rail, but had 'just never got round to it'. Some had never thought about the option of a second rail. One said that she had thought about a handrail for the steps in her garden but had dismissed the idea as unnecessary: 'Well, you just think I can still do it'. Having spoken to others in the group, she said that she may now reconsider this.

Environmental aspects of lighting

Lighting was discussed as both an environmental and behavioural factor. Participants highlighted the desirability of having adequate levels of natural light during the day: 'These stairs that are in the middle of the house, they have no light anywhere, they're pretty lethal

during the day'. Conflicting with this however may be problems connected with the position of windows:

> The morning sun tends to hit me as I open the curtain … you think you're OK, but are really blinded, and don't find out until you walk down the stairs.

It was also agreed that artificial light should be of a good level, for use on dull days and at night. Long-life light bulbs (compact fluorescent) were discussed, provoking mixed reactions. A number of respondents thought they might be safer than ordinary bulbs, as they needed to be changed less often. Against this, others mentioned problems caused by the bulbs taking longer to 'warm up' to produce their maximum illumination: 'when you first put them on, they're very dim, aren't they? It takes quite a while to build up.'

Behavioural factors

Patterns of use

In general, focus group participants reported using their stairs throughout a typical day, whenever the need arose. There may be more frequent use on days when housework is undertaken. Another common reason given for using the stairs was to visit the lavatory (many dwellings in the UK have only a single lavatory, located upstairs), or getting ready to go out: 'Well, if you go out, you often have to put your coat on upstairs, change out of your slippers, that sort of thing'. In addition, some responses indicated that forgetfulness might lead to increased stair use, causing repeated journeys to fetch something or complete a task.

There were indications in each of the three groups that some older people consider using the stairs is a useful form of exercise:

> I think they're a good way of getting exercise.

> The stairs are good for you, it's good to go up and come down for exercise each morning.

It was not clear however, whether this actually encouraged individuals to use their stairs more often.

Carrying items

It was widely agreed that carrying bulky or heavy items increases the risk of falling on the stairs. Reasons presented for this included: (i) the handrail becoming inaccessible, (ii) vision being obscured, (iii) balance

being altered, and (iv) muscles being under additional strain. Strategies used to enable people to manage alone included counting steps where the field of vision is obscured, and throwing laundry and other unbreakable things down the stairs to avoid the need to carry them. Some participants had two vacuum cleaners, one stored upstairs, the other down, eliminating the need to carry it up and down (except when actually cleaning the stairs).

Leaving objects on stairs

There was unanimous recognition that leaving objects on stairs increases the chances of having a fall, with objects both reducing the usable width of the stairway and forming a hazard to slip or trip on. However, this did not prevent participants from continuing to store or temporarily place objects on their stairs. Most admitted to leaving things on the stairs 'ready for the next journey up', or to alleviate having to carry too much at one time. The discussions suggested that items left on the stairs are usually small items, such as shopping or laundry and are put 'to one side on the bottom two or three steps', 'where people aren't going to walk', 'and then the next time you go up, you take them with you'.

A further source of objects on stairs are grandchildren leaving their toys. This was mentioned as requiring special attention:

> I'm always careful with the grandchildren, to make sure that they don't leave things on the stairs. … I always make sure that sticklebricks and things like that aren't left, as that's a major hazard I think.

Hurrying

Although there was general agreement that hurrying on the stairs increases the likelihood of having a fall, people appear to continue to do it. The most common reasons given for hurrying were to answer the telephone or doorbell, prompted by a concern that callers will not wait.

To make answering the telephone easier, many had installed a telephone extension upstairs. Also, for some the problem was alleviated to some extent by the introduction by British Telecom of a number recall system, whereby telephone users can dial '1471' to be told the telephone number of the last caller. Nevertheless, one participant suggested that people still rush:

> We're all from an age where we used to rush for the phone, surely, I mean the phone was dominant at one time … you always think that it's going to be something important. There is still that tendency to rush.

A further cause given for hurrying on stairs was the setting or cancelling of intruder alarms:

> We can isolate the upstairs fortunately, but if you forget to do that, you've not got a lot of time to race downstairs and switch it off. That can be hazardous.

In the group where this risk was discussed, two other participants mentioned that their intruder alarm leads them to hurry on the stairs or to make additional stair journeys through forgetting to set it.

Use of lighting

While the benefit of having adequate lighting on stairs and the need to use artificial lighting at night and when daylight is poor were understood, some reported behaviour that contradicted this. Although some participants stressed that they always switch on the light, a number disclosed that they often use their stairs in the dark, with the justification that they know their way around their own home. Other explanations for not using the light at night included not wanting to disturb others who are sleeping: 'but I don't, so I don't disturb my husband I think', or to make it easier for themselves to get back to sleep:

> … and I don't switch the light on either, but I know why I do it. It's because I think I'll be able to go back to sleep again quicker and easier if I don't actually put the light on.

A variety of methods were said to be used by participants to help them manage stairs in the dark. These included counting steps, holding the banister, and feeling the environment for cues:

> I have an awful habit of going upstairs in the dark, and coming down, but I count the stairs. My daughter plays up with me for doing it.

Footwear and clothing

Problems with footwear and clothing were discussed by many participants as hazards on the stairs. One commented that people use stairs without 'planning their journey' and, as a consequence, they do not think about what they are wearing. Footwear that fits well and which allows proper grip and feeling was discussed as desirable by the sample. Long nightdresses and dressing gowns were mentioned as being a problem, due to the risk of tripping on the hem.

Cleaning

A number of participants reported that cleaning around the stairs, particularly using a vacuum cleaner, becomes increasingly difficult

with age. Some had overcome this by using a battery operated hand-held cleaner: 'and I have got a smaller one which I use on the stairs, which is very useful, because you can actually hold it, it's lighter'. Other aspects of cleaning, such as accessing certain designs of window, were also thought to be dangerous.

Pets

The focus group discussions revealed two aspects of keeping pets that have implications for stair safety. First, there are occasions when a pet can be a tripping hazard. Second, pets cause additional stair journeys, through needing to be let in or out of the house, sometimes at night: 'the dog sometimes wakes me if she wants to go out'.

Stair avoidance

The consensus from each of the groups was that using the stairs less often and, at the extreme, moving into a bungalow, would inevitably reduce the risk of falling on stairs. The two participants who lived in bungalows explained that in both cases their moves were initiated by a family member falling on stairs:

> When I wanted to move, my husband wasn't very keen (on a bungalow). Then his dad fell down the stairs at his home and broke his leg. That's why I'm in a bungalow, because my father-in-law fell down the stairs.

It was said, however, that when living in a bungalow, stairs and steps in shops or in the homes of friends and families may become more difficult to negotiate. The term 'bungalow legs' was used by one lady to describe the difficulty and aches and pains that her husband experiences on the stairs after a period of living in a holiday bungalow. Some referred to a psychological effect accompanying reduced stair use, leading to increased apprehension on the occasions when they are used:

> You sometimes get a bit frightened. I don't like stairs, from not having stairs for ten years. I go and stay with my two daughters, and they've got some very steep stairs, and I hate those stairs, I really hate them. I take so long coming downstairs, I really don't like them.

Personal factors

There were numerous reports from the focus groups of how personal factors, such as poor vision, balance, muscle strength, reaction time,

and forgetfulness, combine to make some older people more at risk from falls on the stairs. Some mentioned having to allow for conditions such as arthritis that can become progressively worse through the day. The possibly hazardous effects of medications were recognised and it was appreciated that certain medicines, particularly when mixed with alcohol, can increase the chances of a fall.

Participants were asked if they worried about the likelihood of having a fall. There were some who were very concerned for their safety, but the majority indicated that it was not something that they had thought about. It was recognised in the discussions, however, that a fall could result not only in serious physical injuries, but also in psychological consequences, affecting personal confidence and quality of life.

Spectacles

The use of inappropriate spectacles was suggested by some to be an important risk factor in falls among older people. Bifocals were described as affecting the ability to judge distances: 'I'm forever hitting the floor with my feet. I think it's there and there's a big drop'. Bifocal and varifocal lenses may create the need to angle the head to be able to see properly when coming down stairs, depending on the prescription. Several group members suggested this may have implications for balance:

> I think elderly people who have either bifocals or varifocals are at a disadvantage going downstairs, because of this necessity to get the head out of alignment with the body, in order to see properly.

Some participants also remarked that it is difficult to take a quick glance at anything: 'You can't make a casual glance and then know where you are, you've got to think about it'. Some participants reported that their optician or optometrist had warned them of problems and had given advice such as: 'Don't be afraid to show your double chin'.

As with other types of accidents, falls on stairs usually involve a combination of factors which, in isolation, would be less serious. As one participant recounted:

> I got into bed, I'd had a drink and realised that I hadn't got any meat out for Sunday, rushed downstairs and slipped. The shopping trolley was at the bottom, I wouldn't have hurt myself if it wasn't for the trolley … I cracked my ribs. But that was my own fault, I had had a drink, and I had nothing on my feet.

Discussion

Focus group conversations are a product of the particular participants, the topic of discussion and the nature of the moderation. In the three groups conducted for this research, the participants engaged with the issue of stair safety and spoke on the theme at length. The style of interaction had the tone of gentle discussion rather than heated debate, with considerable agreement between participants concerning the many points raised. Where differences did arise, these were more often centred on individuals' behaviour and experiences rather than opinion. No major differences were discernable between the three groups that were material to the interpretation of the conversations.

Stair usage

Not surprisingly, the findings suggest that older people use their stairs as and when necessary, but that use is reduced by declining abilities. In some homes, essential facilities such as the lavatory may require the use of stairs, resulting in more journeys than would otherwise be the case. Other activities also lead to increased use: cleaning or dressing to go out, for example. Cleaning around the stairs appears to present particular problems, due to a combination of difficult access (e.g. landing windows) and the need to use awkward and heavy equipment (vacuum cleaners in particular). Whether a person lives with someone else affects patterns of stair use. For example, a more mobile partner will use the stairs more frequently to assist a less able spouse (Smith *et al.* 1994).

For some participants, stairs were seen as providing a useful form of exercise, although it was not clear whether this actually resulted in increased stair use. While stairs might provide an exercise opportunity for some individuals, any advantage in promoting fitness needs to be weighed against the possible increased risk of falling. Vulnerable individuals might be best advised to obtain their exercise in other ways.

Individual capabilities and confidence affect how older people use their stairs, with some exhibiting increased caution. Various methods of getting up and down stairs were mentioned for those with restricted mobility, such as moving up or down a step at a time in a seated position. This example, however, was given in terms of acquaintances who use this method: no one in the groups actually said they used it themselves. Further investigation is needed to assess the merits of different methods in terms of safety and efficiency, how they might suit different people, and whether it might be possible or desirable to develop equipment or home features to assist.

Environmental issues

The consensus view that step going (tread) dimensions in homes are often too small has been supported elsewhere (Roys 2001). In the UK, government Building Regulations recommend that, for private housing, the minimum going should be 220 mm. Roys identified this as smaller than the foot size of 95 per cent of the adult population and this increases to 100 per cent if 30 mm is allowed for feet in shoes. It would seem that this may account for why some felt the need to descend stairs sideways, to be able to place a full foot on each step.

Handrails were valued by participants as improving stability and increasing confidence. Handrails installed by housebuilders however, are often poorly designed in terms of the grasp they afford (Templer 1992). Only two participants reported having had an additional rail fitted. This reflects research conducted in Wales which found that less than 20 per cent of individuals in a representative sample of persons aged 65 and over, had an extra stair handrail installed as an assistive device (Edwards and Jones 1998). A high proportion (91 per cent) of the 205 respondents in this sample who had an additional handrail reported using it. This suggests that people do find them beneficial.

With regard to stair covering, there was recognition that loose or worn carpets have implications for safety. However, the participants were not aware of the possible consequences of surface colour or pattern for locating step edges or judging distances (Cohn and Lasley 1985, 1990). This suggests that these issues are unlikely to be considered by older people when selecting stair carpets or other coverings.

Behavioural factors

In their recent review, Startzell *et al*. (2000) suggested that older people seem to use stairs with increased caution in some respects, but still engage in other potentially dangerous stair behaviours, such as not using the handrail and leaving objects on stairs. Reports from our focus groups support this: various instances of unsafe behaviour on stairs were identified. When this was discussed, the individual's view often seemed to be that, while an activity might be hazardous, the manner in which they undertook it reduced their risk to an acceptable level. For example, feeling the environment for cues and counting steps in the dark, or leaving objects to one side and at the bottom of stairs, were all thought to be reasonable precautions. There also appeared to be little appreciation that one individual's actions might have implications for the safety of other users of their stairs. For example, items placed on

stairs might form a trip hazard for someone unaware that the objects were there.

Older people may continue with some activities, despite finding them difficult and having a concern about safety. Carrying laundry up and down stairs and vacuuming are examples of tasks with which some people continue to struggle, motivated by a natural desire to maintain standards of cleanliness and hygiene.

With regard to lighting, there was a conflict between a recognition of the importance of good lighting and the actual reported behaviour of some in using stairs at night without switching the light on. Older people using stairs under conditions of poor illumination, perhaps when drowsy, seems undesirable, although further research is needed to confirm how much of a risk this really is.

Personal factors

The decline of some functional abilities, such as changes in vision is well-documented (Haegerstrom-Portnoy *et al*. 1999). The participants recognised the process of changing functional ability and examples were presented of how people had personally experienced and adapted to changes. It is however possible to speculate that, due to the often gradual decline in abilities, some do not always fully appreciate their limitations. If this is the case then there may be a benefit in highlighting current abilities and drawing attention to the implications for stair use (Smith *et al*. 1994).

The groups understood that some medications may cause dizziness or affect balance. They also knew that alcohol, taken alone or in combination with medicines, can be a factor in falls. However, there may be some scope in improving individual knowledge of when people are personally at increased risk. This might be achieved through improved communication of medicine instructions to older people and their carers, regarding use and possible side-effects, and by raising awareness of the extent to which alcohol consumption contributes to falls among this age group(Wright and Whyley 1994).

An interesting issue is the extent to which bifocal and varifocal spectacles might be a contributory factor in falls on stairs. It has been suggested elsewhere that users of such eyewear should exert caution in unfamiliar or otherwise difficult environments (Startzell *et al*. 2000). Some of the participants had been warned by opticians or optometrists of the need for care and, for stronger prescriptions, the distorting effects on vision are readily apparent. However, whether compensatory behaviour occurs and, if so, whether this is sufficient to avoid falls, is unknown.

Limitations of the sample

Participants in the study were predominantly women. To some extent this accords with the greater number of women in the older population, and older women have an increased risk of falling than their male counterparts (Dowswell *et al.* 1999). Had there been a higher proportion of males in the focus groups this might have produced more information about hazards, connected with home maintenance activities for example. Also, the focus groups did not include anyone over 80 years of age. Although they did include individuals with reduced physical abilities, a majority of participants reported that they had little or no difficulty using the stairs. It is likely that older or less mobile people, for whom stair use would present more of a challenge, would have recounted different experiences and more problems. It is also possible there may have been a bias towards those with a reason to be interested in stair safety (*e.g.* through personal experience of difficulties with stairs): the recruitment materials highlighted the focus on stair safety. There was no obvious pattern of any bias, however, with the focus group participants having a wide range of mobility, fitness and views regarding stairs.

Prevention

There are a number of approaches that could be of benefit in improving the safety of older stair users. The design of new dwellings can be influenced through building standards but, as the greatest impact of these is on new dwellings, it takes time for improvements to have wide effect. Recent developments in the UK Building Regulations have included a requirement for a lavatory downstairs in all new houses, and the guidance on location of smoke detectors has been improved to facilitate safe testing and maintenance. Research has also been commissioned on the design of safe stairs, particularly on the size of the going. Study participants reported problems in each of these areas with existing houses.

Other measures to assist with tasks involving stairs are also likely to be useful. For example, installation of a second handrail appears to increase confidence. Also, more appropriate equipment for cleaning the stair environment is a realistic possibility, although the problem of this being viewed as merely duplicating items already owned for cleaning elsewhere in the home would have to be overcome.

Improved design or location of equipment not directly involved with stairs could also make a contribution. For example, intruder alarms can

be installed with control panels both upstairs and down. There is also scope to reduce the perceived urgency when operating this equipment, through attention to the delay between activation and alarm sounding, and the nature of the auditory warning indicating the system has been set or needs to be cancelled. A second telephone placed upstairs avoids pressure to hurry down stairs to answer a call.

Locating washing machines and tumble dryers on the same level as bedrooms or bathrooms could reduce the need to carry clothing up and down stairs. Similarly, there may be scope to avoid additional journeys through storing outdoor shoes and clothing on the same level as the exit from the home. This might be beneficial for some individuals. However, in both these cases, social convention and habits are likely to be obstacles to change.

It seems there is a significant role for safety education. While focus group participants were often able to appreciate and understand hazards, generally these needed to be brought to their attention first. Responses from the groups suggest that older people are willing to receive and accept advice, and eager to learn how to minimise the likelihood of injuring themselves. This is supported by a strong desire to maintain independence and autonomy. A prerequisite, however, is an awareness that there is a problem in the first place.

Routes for education are many and approaches need to be tailored to different circumstances. It may be appropriate to begin this process at the time people retire, when most are still active enough to be able to make changes to the physical environment for themselves (Smith *et al*. 1994). As might be expected, personal experience, involving either the individual or a close associate, appears to have the strongest effect on perception of safety. For example, for one participant the determining factor in her decision to move to a bungalow was that her mother had fallen on the stairs. Another was encouraged to consider having a handrail fitted for the steps in her back garden, as a consequence of participating in the focus groups, and this suggests that discussion-based fora might prove a useful component of educational activities.

Although falls among older people are complex events, involving many factors, there is evidence that concerted intervention can reduce their number and severity. Encouragement comes from recent studies, which have shown programmes combining medical assessment, home safety advice and exercise to be beneficial (Close *et al*. 1999; Steinberg *et al*. 2000). However, it is essential that the different agencies working with older people recognise and share the issue as a priority, and then collaborate effectively.

Conclusion

A series of three focus groups has provided valuable qualitative information on how older people use their stairs and why they use them the way they do. The study participants were able to appreciate many risk factors when these were discussed, but most had not given stair safety much thought prior to this. Behaviours which seem likely to increase risk of falling on stairs have been identified, along with opportunities for prevention through design and educational interventions.

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NOTES

1 The term riser refers to step height, while going, also known as tread in the US, is the step depth.
2 The study was undertaken in accordance with procedures specified by Loughborough University Ethical Advisory Committee.
3 The leaflet, and other information on the campaign, are available at the website: www.preventinghomefalls.gov.uk.

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