Home Accidents amongst Elderly People: A Locality Study in Scotland

Mary Gilhooly,[1] Pauline Banks,[2] Whitney Barrett[3], Alison Wales[4], Susan Caldwell,[5] Carol MacDonald[6], Karen Dunleavy[5]

[1] School of Health Sciences and Social Care, Brunel University, England, UK

[2] School of Health Sciences, Bell College, Hamilton, Scotland, UK

[3]Stirling Council Psychology Services, Stirling, UK

[4]Childline, Glasgow, Scotland, UK

[5] School of Social Sciences, University of Paisley, Scotland

[6] School of Computing, University of Paisley, Scotland

Corresponding Author:

Mary L M Gilhooly, PhD
Professor of Gerontology
School of Health Sciences and Social Care
Brunel University
Mary Seacole Building
Uxbridge, Middlesex, UB8 3PH
United Kingdom
Tel 44 (0) 1885 268 756
mary.gilhooly@brunel.ac.uk

Key Words: Accidents, elderly people, ageing, falls

ABSTRACT

Aim

The aim of this locality study was to collect information on reported and unreported accidents amongst elderly people living in one locality in Scotland.

Method

Postal Survey- A postal questionnaire was sent to 3,757 men and women aged 65+ years living in one locality. The questionnaire asked respondents to indicate how many accidents they had experienced in the past twelve months, plus to indicate type and location. Information was gathered on living arrangements, ethnicity, gender, age and deprivation. Respondents were asked if they would be willing to take part in an interview study.

Interview Study - One hundred elders who had had at least one accident in the previous twelve months were interviewed.

Results

Postal Survey - Over a third of the respondents in the postal survey reported having had an accident in the previous twelve months. Bumps and drops and falls were the most common type of accident. Most accidents happened in the kitchen. Women reported more falls than men and those living alone reported more accidents than those living with others. Age was associated with the prevalence of accidents, but the association was somewhat curvilinear, with accidents decreasing with age and then increasing again.

Interview Study – Interviewees found it hard to differentiate one accident from another. Considerable reluctance to visit the GP after an accident was noted, with many not attending even for serious accidents. Almost forty percent were 'very' distressed after their accident, and a quarter reported a loss of confidence. However, most did not worry about accidents. Few thought that their age, health or medications were a cause of their accidents.

INTRODUCTION

Background

Every year around 14 million people are treated in Accident and Emergency Units in the UK. Home accidents account for one fifth of these casualty attendances. Annually almost 3 million people in the UK seek medical attention following a non-fatal home accident, and over 4,000 deaths occur as a result of a home accident (Consumer Safety Unit, 1995). The 65+ age group is one of the most vulnerable, with the risk of accidents increasing as age advances (Koski et al, 1996). Those over the age of 75 years suffer both the highest mortality rate and the most severe injuries (Rocket and Smith, 1989; RoSPA 2007)

The majority of accidents involving older people, both fatal and non-fatal, are falls (Blake et al, 1988; Donmez and Gokkoca, 2003; Scott and Gallagher, 1999). Poyner (1986) has even argued that non-falling accidents are not a major problem in the elderly. This may account for why most research amongst elderly people is on falls. Nevertheless, every year around 167 people over the age of 65 in the UK die in fires. The main sources of the fires include cookers, candles, coal fires, heaters and electric blankets (DTI 2002). Poor sense of smell, poor mobility, reduced tolerance of smoke and burns all contribute to mortality (RoSPA 2007)

Although bedrooms and living rooms are the most common locations for accidents in general, the most serious accidents involving older people usually happen in the kitchen or on stairs (Department of Trade and Industry 2002)

As the proportion and number of older people in the community increases, the management of home accidents will make increasing demands on primary and secondary care services. Older people who experience falls and other home accidents often receive injuries which lead to serious ill health and disability. Moreover, fear of accidents limits activity and social interaction, and can increase anxiety and stress. Fear of falling may also lead to a restriction of activities which is in itself a risk factor for falls (Tinetti, 1995) and such fear may also have a detrimental effect on an individual's quality of life (Howland *et al.*, 1993; Arfken *et al.*, 1994). Confidence may be undermined and dependence on carers greatly increased. The prevalence of fear of falling is thought to range from 40% to 73% in those who have experienced a fall and from 20% to 46% amongst those who do not report recent falls (Tinetti *et al.*, 1988; Nevitt *et al.*, 1989; Walker and Howland, 1991; Maki *et al.*, 1991). Some degree of fear of falling may be adaptive in that it might make individuals more careful when carrying out their daily activities (Lachman *et al.*, 1998).

Research has shown that many home accidents are preventable (Buchner et al, 1997; Davison et al 2005; Province et al, 1995; Wolf et al, 1993). However, accidents are often not reported, making the official statistics incomplete.

A locality study

The move to enable older people to live independently wherever possible encompasses both advantages and disadvantages. Despite the fact that the majority of older people wish to remain in their own homes, the community is not necessarily an easy place in which to live when very old and very frail. Thus it is vital that the dynamics of any community are clearly understood if older people are to live safely, as full participating members of society.

It was against this background that the study was commissioned, the aim being to gather information relating to accidents, in or near the home, amongst older people in a specific locality. There were two main advantages to this locality approach. In the first instance there were likely to be considerable regional variations in the prevalence of home accidents amongst older people. Socio-economic status, age, health profile, type and standard of housing, ease of access to local services, cultural norms and ethnicity may all impact on the level of home accidents. If a model of good practice in accident prevention amongst older people is to be developed it is vital that such a model be tailor-made for each locality.

The second advantage to be derived from a local study of this nature is in the personal insights that can be gained from face-to-face interviews carried out with people who have recently experienced an accident. Interviewing people in their own homes allows a unique understanding of their lives and the impact of any accidents which may have occurred. Such information cannot be gleaned from national statistics or quantitative survey data.

Origins of this study

This study had its origins in the Greater Glasgow Health Board's co-ordinated approach to identifying health issues by locality. General medical practitioners were given a list of health issues and asked to identify those which they felt were of most importance. Home accidents amongst elderly people were identified as most important in the study locality.

Research Questions:

1) What is the prevalence of home accidents amongst elderly people?
2) What is the most common type of home accident?
3) Where do most accidents take place?
4) Do elderly people experience more accidents as they age?

5) Are socio-demographic factors associated with accidents? For example, gender, deprivation, living arrangements?
6) What do elderly people do when they have an accident? I.e. how are accidents 'managed'?
7) What is the impact of an accident on elderly people? I.e. are they very distressed? Do they feel foolish? Is there a loss of confidence after an accident?
8) Are poor health and medications associated with accidents?
9) Do elderly people worry about having accidents? To what extent do elderly people feel at risk of having an accident?

METHOD

Procedure

Data for this project were collected using two methods:

Postal Survey

A postal questionnaire was sent to 3, 757 people living in the study locality. The sample was drawn from the Community Health Index of the Greater Glasgow Health Board. The first page of the postal survey asked for basic socio-demographic information; included were gender, age, living arrangements, post code and ethnicity. Scotland is somewhat unique in having deprivation indices for all of the post codes (Carstairs and Morris 1991), providing an opportunity to use the locality deprivation scores as a proxy measure of individual social class. The respondent was also asked to indicate how many accidents he or she had experienced in the previous twelve months. The second page of the postal questionnaire asked respondents to tick categories of accidents experienced, and to write in where the accident had occurred. Page three asked respondents if they would be willing to take part in the Interview Study.

Interview Study

One hundred people who reported having experienced at least one accident in the previous twelve months were interviewed. The interviews lasted approximately one hour and were conducted in the interviewee's home. The interviews were semi-structured. The interview schedule was in two parts. Part 1 covered details of specific accidents, with a separate form for each accident. Part 2 covered health, family/social networks, and risk perception. The collection of quantitative data was kept to a minimum in the interview study, with the aim being to gather qualitative data to complement the findings and give meaning to the findings of the postal survey.

INSERT TABLE 1 HERE

Sample Characteristics

Postal Survey

Of the 3,757 postal questionnaires sent, 407 were returned by the Post Office to the Health Board and 12 were returned to the Centre of Gerontology and Health Studies, marked 'not known at this address'. Nine were returned with a note saying that the person had died. Another 7 were returned incomplete, but with some information; 1059 were returned, some with data missing, but including comments. This gives a response rate of 31.9% for the postal survey.

Six hundred and eighty-seven respondents were female (65%) and 353 (33%) were male. The youngest respondent was 65 and the oldest 95 years. Slightly over half (N=566, 53.4%) reported that they lived alone, with the rest living with others. A higher proportion of females (64.9%) reported living alone compared to males (43.8%). The majority of the respondents were 'White" (92.4%). The response rate was higher in the more affluent areas; 26% in Deprivation Category 2 returned their questionnaires, compared to 12.5% in Deprivation Category 7.

The main socio-demographic variables examined in relation to home accidents were confounded. Minority respondents were more likely to live in deprived areas and to be living with others. White respondents were older than minority respondents. As noted above, women were more likely to live alone than men. Gender and ethnicity were confounded with there being almost equal numbers of males and females in the ethnic minority group, and with twice as many females compared to males in the majority/white group.

Interview Study

Overall 385 (35.8%) of those returning their questionnaires (N=1075) indicated willingness to take part in the Interview Study, of which 227 reported having had an accident in the past 12 months. Of the 227 who had had an accident and who were willing to be interviewed, 174 stated a preference for a face-to-face, rather than a telephone interview. It was decided to do face-to-face interviews, so the 100 selected for the interviews were drawn from this final group.

Two thirds of the Interview Study sample were females (N=67) and 33 were male. The mean age was 76 years and 3 months; the youngest was 65 and the oldest 92. Fifty seven lived alone and forty-three with others.

RESULTS

What is the prevalence of home accidents amongst elderly people?

The two methods of inquiring about the prevalence of home accidents revealed different figures. When asked how many accidents had occurred in the past 12 months, 29.7% reported having had at least once accident. Counting up the numbers of ticked boxes on the second page of the questionnaire gave a figure of 41.7% having had at least one accident in the past 12 months. This latter figure is quite high, but it must be emphasised that in this study we asked for reports of accidents 'no matter how minor'.

However, the number of accidents reported on the questionnaire (both the global number and the individual accidents) bore little relationship to the number of accidents that respondents reported during the interviews. It appeared to be very difficult for people to differentiate one fall or accident from another.

The majority of interviewees reporting multiple accidents were either disabled or suffered from a variety of chronic conditions. There were also a number of amputees who experienced regular problems.

Of the 19 interviewees who were categorised as having experienced multiple accidents, only four rated their physical health as 'poor', and two rated their daily function as 'very poor'; 14 rated their daily function as 'good', 'very good', or 'excellent'. Fifteen were female, 4 male. Surprisingly only 10, just over half, were amongst the old-old aged 75+.

What are the most common types of accidents amongst elderly people?

Bumps and drops (e.g. dropping an object on one's foot, dropping a cooking pan) were the most common type of accident. However, combining falls with the category 'trips and slips' gives the largest category of accident at 24.3% (percentages rounded up). (Figure 1)

Insert Figure 1 about here

Where do most accidents take place?

A large proportion of respondents to the postal survey did not report where the accident took place As can be seen in Figure 2, most accidents took place in the kitchen (35%), followed by living room and dining room (both at 9%) Most cuts occurred in the garden or kitchen. Burns occurred primarily in the kitchen.

Insert Figure 2 about here

Do elderly people experience more accidents as they age?

Age was not linearly associated with number of accidents as can be seen in Figure 3. The lowest number of accidents occurred in the 75-79 age group (36.5%). There was little difference amongst the age groups in the numbers of reported accidents, apart from the fairly marked increase in the over 90s (60%). However, examining the type of accident by age indicated that falls and trips and slips increased with age. There was little change with age in the other categories, but this was probably due to the relatively small numbers of accidents in the other categories.

Insert Figure 3 about here

Are socio-demographic factors associated with accidents?

Falls were more prevalent amongst women than men, as were trips and slips, bumps and drops, and burns. A higher proportion of women compared with men also experienced multiple accidents (Figure 4).

Insert Figure 4 about here

People living alone had more accidents than those living with others, as can be seen in Figure 5. However, it must be kept in mind that women, compared to men, were more likely to live alone, and women reported more accidents than men. Nevertheless, both living arrangements and gender were independent predictors of whether or not respondents had had at least one accident in the previous twelve months.

Insert Figure 5 about here

Interestingly, deprivation (as measured by Carstairs deprivation scores) was not associated with multiple accidents. Elders in ethnic minorities were also no more likely to have experienced an accident than those in the majority Anglo-Saxon group. However, the number of elderly minority group respondents was small, making it difficult to detect ethnic differences.

What do elderly people do when they have an accident?

Nineteen of the 100 interviewees went to an accident and emergency department and/or were admitted to hospital. In the majority of cases where people have been taken to hospital there has been someone else to take them or to phone an ambulance.

Twenty-two interviewees had gone to their GP following an accident. In over half of these instances there was a considerable delay. There seemed to be some resistance to 'bothering the doctor', with 18 responses related to GPs being too busy to see people, or not being interested. As noted by one participant, "You are always scared to go to the doctor

nowadays unless you feel as though you are dying or have got a very, terribly serious complaint – you try to avoid going to the doctors…".

Forty-five interviewees resorted to self-medication, which ranged from taking an aspirin to dressing quite severe cuts. In a number of instances interviewees who at first resorted to self-medication found that this was not enough, and subsequently went to their GP or accident and emergency. Twelve interviewees indicated that the incident in question was minor requiring no further action.

What is the impact of an accident on elderly people?

There was considerable variation in the way in which interviewees described their own reaction to these incidents. Thirty-eight of the 100 interviewees were very distressed following an accident. Twenty interviewees reported incidents that resulted in minor upset, usually of short duration. Three interviewees reported that they felt 'foolish' following an accident. Seven interviewees reported frequent incidents, which usually did not result in injury.

Eleven respondents reported reduced mobility for a period of time following an accident. Seventeen people reported that their mobility was very poor anyway, and that their accident had not significantly altered this. Eleven interviewees reported that they had been more housebound following an accident

Thirty-two of the 100 interviewees reported a loss of confidence following an accident with four indicating that they were now frightened to leave their homes: In some cases the fears were specific to the accident they had described. Thirteen interviewees explained that they were *not* nervous, but had been more cautious since having an accident: Fifteen interviewees reported that their accidents had been their own fault and that they would need to be more careful.

Are health and medications associated with accidents?

Despite the fact that 36% of interviewees reported that their health was either very good, or excellent, 50% indicated that their health was good, or satisfactory, leaving only 14% who reported poor or very poor health, over half the interviewees (58%) suffered from a combination of chronic illnesses. Interviewees were very matter of fact about their health; they clearly expected to suffer from a variety of age-related complaints. Nine interviewees reported that their health could have been implicated in their accident. All the conditions cited were on-going rather than isolated incidents, for example infections.

Three quarters of the interviewees were taking some combination of medications associated with various long-term conditions. The number of medicines varied from one 75-mg aspirin daily to 'cocktails'. Interviewees were not passive recipients of their medication. Drugs,

which had been prescribed, but caused adverse side effects such as dizziness, were discontinued. Many interviewees had been taking the same medicines for years and explained that they regarded their medicines as 'normal'. All of the interviewees said 'no', when asked if their medication could have 'caused' their accidents. The one exception to this pattern was the use of diuretics. In this case the way that the diuretics 'caused' a night fall was because of having to get up at night to go to the toilet.

To what extent do elderly people feel at risk of having an accident?

Eighty-five interviewees out of 100 reported that accidents are not something they worry about. As noted by a participant, "Not really [worried about accidents]. If it happens, it happens… until it does I don't feel so bad." On the other hand, 13 respondents reported that the likelihood of experiencing an accident was something that they worried about. As noted by one participant who reported two accidents, including falling out of bed and a fall in the shower, "I am nervous of falling…..I stay in the house a lot." Ten interviewees reported that while they were not worried about accidents in general, they were nervous of specific types of accidents. Mrs R, aged 81, who had fallen while going down stair, landing awkwardly, said she now had a "….fear of falling because if you fall at my age you've had it!". In a number of cases there was a discrepancy between the responses to the question which asked whether accidents were something an interviewee worried about, and their response to the question concerning fear of accidents when discussing whether they had had any problems following a specific accident.

DISCUSSION

The study revealed prevalence figures which closely match those in other studies. For example, community studies estimate that 28-35% of those over age 65 years fall each year, with the figure increasing to over 40% for those over the age of75 years (Davies and Kenny 1996; Bath and Morgan 1999)). The Postal Survey revealed an accident prevalence ranging from just under 30% (when asked how many accidents had happened in the previous twelve months) to just under 42% when the numbers ticked on a form were added up. However, it must be kept in mind that the Interview Study revealed that many of the accidents were minor, reflecting the request to report accidents and mishaps "no matter how minor". The fact that there was a discrepancy between the numbers of accidents experienced when two different methods were used in the postal survey to elicit information was interesting and raises important methodological issues for research. Moreover, when the interviews were conducted it was found that there was very little relationship between the numbers of accidents reported in

the Postal Survey and the numbers reported in the Interview Study. This raises issues about the reliability of data from surveys of the prevalence and incidence of home accidents.

Age, gender and living arrangements were the only socio-demographic factors significantly associated with the prevalence of accidents. Age was only found to be associated with the prevalence of accidents when accidents were grouped. This was because the data were skewed, with most reporting no accidents, and because the age distribution of accidents was to some extent curvilinear, with the rate going down in the 75-79 year group and then up again. The young-old are likely to be more active, and hence, more apt to have accidents; the old-old, on the other hand, may be more likely to have accidents because they have mobility, sight, hearing and other physical or mental problems which put them at risk of an accident. It was interesting to find that few of the interviewees attributed the accidents experienced to their age.

The findings on gender differences match other research showing that older women report more accidents than older men. The findings on living arrangements were, however, interesting, with those living alone reporting more accidents. Accidents might be more salient to those who live alone and, hence, more likely to be remembered and reported. Thus, it could be that this interesting finding is linked to differences in reporting, rather than real differences.

Bumps and drops were the most common type of accident reported. If slips and trips were classified as 'falls', falls would be the most common type of accident. It must be kept in mind that the Postal Survey involved retrospective accounts of accidents. A fall is more likely to result in an injury, making it easier to remember. Research drawing samples from medical records have consistently reported falls as the most common type of accident. However, falls may not be the most common accident, but merely the type most likely to result in injury. Of course, it might not be worthwhile finding out about accidents which do not result in injury since nothing needs to be done about such accidents.

Like other studies, the kitchen was found to be the area where most accidents occurred, followed by the living room and the dining room. Unsurprisingly, most cuts and burns occurred in the kitchen. It was interesting to find that the bathroom was viewed as the most dangerous place in the house. Many of the interviewees had, however, taken steps to reduce the likelihood of an accident in the bathroom by installing handrails, non-slip mats, etc. What the interviewees were trying to avoid in the bathroom was a fall, an accident, as noted above, most likely to result in major injury.

Although it is well-known that elderly people are reluctant to visit their doctors, the interviewers were disturbed to find that there was often considerable delay in seeking help, even for quite severe injuries. It also emerged in the interviews that those who were chronically ill and disabled seemed particularly reluctant to seek help after an accident.

Perhaps these people feel they already over-burden their doctor and, hence, must somehow 'ration' their outings to the surgery.

The Pilot Studies and the Interview Study provided fascinating insights into how elderly people perceive accidents. Accidents which did not result in serious injury and which occurred in the home were less likely to be viewed as 'accidents'. It may be that the home is a place where people view themselves as having control over events, and hence mishaps are less likely to be viewed as 'accidents', i.e. outwith one's control. Many older people also blamed themselves for accidents. Although professionals often view it as maladaptive to blame oneself for accidents or tragedies that are beyond control, self-blame serves a useful purpose (Bulman and Wortman, 1977). By blaming oneself for an unfortunate event, one can take steps to prevent another accident or tragedy. It was interesting to find that few of the interviewees worried about accidents.

It was disturbing to find that a sizeable proportion of interviewees reported having no one they could telephone if they had an accident. For many of these people it was their very success in living so long that resulting in having outlived their friends and relatives, often even their children.

Recommendations

The research team was not instructed by the Health Board to only make recommendations which were financially feasible. Nevertheless, we have not made recommendations which we feel are impossible to implement. The recommendations for policy and practice are based on the findings of the two studies reported here, plus the literature reviewed for the project.

Alarm Systems - The research team was concerned about the relatively large number of quite disabled people living in the community, often alone, who had experienced accidents, or who were perceived by the team as being at risk of accidents, who did not have an accident alarm system. We recommend that funding be provided for an accident alarm system for all people over the age 80 who are in relatively good health, and for all those over 65 years who are disabled or in poor health.

Reporting Reticence - The elderly people in the Interview Study indicated considerable reticence about visiting a general practitioner after an accident, even when, in the opinion of the researcher, the accident was fairly serious. Apart from a reluctance to "bother the doctor", general practitioners need to keep in mind the very real difficulties that elderly people experience in getting to the doctor. Older people might be less inhibited in calling a doctor to the house when they are, in their view, seriously ill, but they are often very inhibited about seeking help for injuries that are not perceived as life threatening. Practice literature aimed at elderly patients should encourage people to consult with their doctors if an injury from an

accident is still noticeable after a short period. General medical practitioners should be reminded that an accident injury which received immediate attention may save them considerable work at a later period.

Rehabilitation - Lack of rehabilitation following injuries and surgery has recently been identified in the literature as leading to long-term morbidity. We wish to emphasise the need for rehabilitation following an injury from an accident.

Carers - Family carers need to be made more aware of the risk of accidents, and to be given information on accident prevention and what to do when an accident occurs. Home helps should be trained in methods of accident prevention which could then be utilised with elderly people.

Accident Prevention Consultations - The local authority should provide a consultation service for elderly people to provide personalised information on how to the make the home safer.

Housing **-** Although it is government policy to provide services to enable elderly people to live as long as possible in their own homes, elderly people should be encouraged, and be given the opportunity, to move to 'safer' housing at an earlier age. Our interview study revealed a significant number of elderly and disabled people living in quite inappropriate housing.

ACKNOWLEDGEMENTS

This study was funded by the Greater Glasgow Health Board. The study was conducted by the Centre of Gerontology and Health Studies (Director, Prof Mary Gilhooly), University of Paisley. All of the co-authors were staff in CGHS when this study was conducted. The support of Professor John Foster, Head, School of Applied Social Sciences was invaluable. Most importantly, the support of Mrs Jennifer McMaster, Greater Glasgow Health Board, was hugely appreciated. Unfortunately, Mrs McMaster, died soon after the project finished and was unable, therefore, to participate in writing up this study for publication. The views expressed in this paper are those of the authors and do not necessarily represent the views of the funding body.

REFERENCES

Arfken, C.L., Lach, H.W., Birge, S.J. and Miller, J.P. (1994) The prevalence and correlates of fear of falling in elderly people living in the community. *American Journal of Public Health,* 84, 565-570.

Bath, PA and Morgan, K (1999) Differential risk factor profiles for indoor and outdoor falls in older people living at home in Nottingham, UK . *European Journal of Epidemiology*, 15, 65-73.

Blake, AJ, Morgan, K, Bendall, MJ et al (1988) Falls by elderly people at home: prevalence and associated factors. *Age and Ageing,* 17, 365-372.

Buchner, D.M., Cress, M.E., de Lateur, B.J., Esselamn, P.C., Margherita, A.J., Price, R. and Wagner, R. (1997) The effect of strength and endurance training on gait, fall risk and health services use in community-living older adults. *Journal of Gerontology,* **52A**, M218-224.

Bulman, RJ and Wortman, CB (1977) Attributions of blame and coping in the "real world": severe accident victims react to their lot. *Journal of Personality and Social Psychology*, 35(5), 351-363.

Carstairs, V. and Morris, R. *Deprivation and health in Scotland.* Aberdeen: Aberdeen University Press; 1991.

Consumer Safety Unit, Department of Trade and Industry. (1995) 19th Annual Report. Home Accident Surveillance System.

Davies, AJ and Kenny RA (1996) Falls presenting to the Accident and Emergency Department: Types of presentation and risk factor profile. *Age and Ageing*, 25, 362-366.

Davison, J, Bond, J, Dawson, P, Steen IN, Kenny, RA (2005) Patients with recurrent falls attending Accident and Emergency benefit from multifactorial intervention – a randomised controlled tria. *Age and Ageing* 34, 162-168.

Department of Trade and Industry (2002) Home accident surveillance system: 24th annual report. London: DTI.

Donmez, L and Gokkoca, Z (2003) Accident profile of older people in Antalya City Centre, Turkey. *Archives of Gerontology and Geriatrics,* 37(2) 99-108.

Howland, J., Peterson, L., Levin, W. Fried, L., Podon, D. and Bak, S. (1993) Fear of falling among the community-dwelling elderly. *Journal of Aging and Health,* 5, 229-243.

Koski, K, Luukinen, H, Laippala, P, Kivela, SL (1996) Physiological factors and medications as predictors of injurious falls by elderly people. *Age and Ageing,* 25, 29-38.

Lachman, M.E., Howland, J., Tennstedt, S., Jette, A., Assmann, S. and Peterson, E.W. (1998) Fear of falling and activity restriction: The Survey of Activities and Fear of Falling in the Elderly (SAFE). *Journal of Gerontology,* 53B, 43-50.

Maki, B.E., Holliday, P.J. and Topper, A.K. (1991) Fear of falling and postural performance in the elderly. *Journal of Gerontology,* 46, M123-M131.

Nevitt, M.C., Cummings, S.R. and Hudes, E.S. (1991) Risk factors for injurious falls: A prospective study. *Journal of Gerontolo**gy,*** 46, M146-170.

Poyner, B. (1986) *Accidents to the elderly.* Consumer Safety Unit, Department of Trade and Industry, London.

Province, M.A., Hadley, E.C., Hornbrook, M.C., Lipsitz, L.A., Miller, J.P., Mulrow, C.D., Ory, M.G., Sattin, R.W., Tinetti, M.E. and Wolf, S.L. (1995) The effects of exercise on falls in elderly patients. A preplanned meta-analysis of the FICSIT trials. Frailty and injuries: Cooperative studies of intervention techniques. *Journal of the American Medical Association,* 273, 1341-1347.

Rocket, IRH and Smith, GS (1989) Homicide, suicide, motor vehicle crash, and fall mortality: United States' experience in comparative perspective. *The American Journal of Public Health,* 79 (10), 1396-1400.

RoSPA (Royal Society for the Prevention of Accidents) 2007

http://www.rospa.com/homesafety/info/older_people.pdf

Scott, VJ and Gallagher, EM (1999) Mortality and morbidity related to injuries from falls in British Columbia. *Canadian Journal of Public Health.* 90(5) 343-347.

Tinetti, M.E. (1995) Falls. In W.R. Hazard, E.L. Bierman, J.P. Blass, W.H. Ettinger and J.B. Halter (eds.) *Principles of Geriatric Medicine and Gerontology* (3rd edition). McGraw-Hill, New York.

Tinetti, M.E., Speechly, M. and Ginter, F. Risk factors for falls among elderly persons living in the community. *New England Journal of Medicine,* 319, 1701-1707. (1988)

Walker, J.E. and Howland, J. (1991) Falls and fear of falling among elderly people living in the community: Occupational therapy interventions. *American Journal of Occupational Therapy,* 45, 119-122.

Wolf , S.L., Barnhart, H.X., Kutner, N.G., McNeely, E., Coogler, C. and Xu, T. (1996) Reducing frailty and falls in older persons: An investigation of Tai Chi and computerized balance training. Atlanta FICSIT Group. Frailty and Injuries: Cooperative studies of intervention techniques. *Journal of the American Geriatrics Society,* 44, 489-497.

TABLE 1

Source of data for each of the nine research questions

Research Questions	Postal Survey	Interviews
1. Prevalence of home accidents	x	x
2. Types of accidents	x	x
3. Location of most accidents	x	x
4. Age and accidents	x	
5. Socio-demographic factors	x	x
6. Accident management		x
7. Impact of an accident		x
8. Poor health and medications		x
9. Worry about having accidents		x

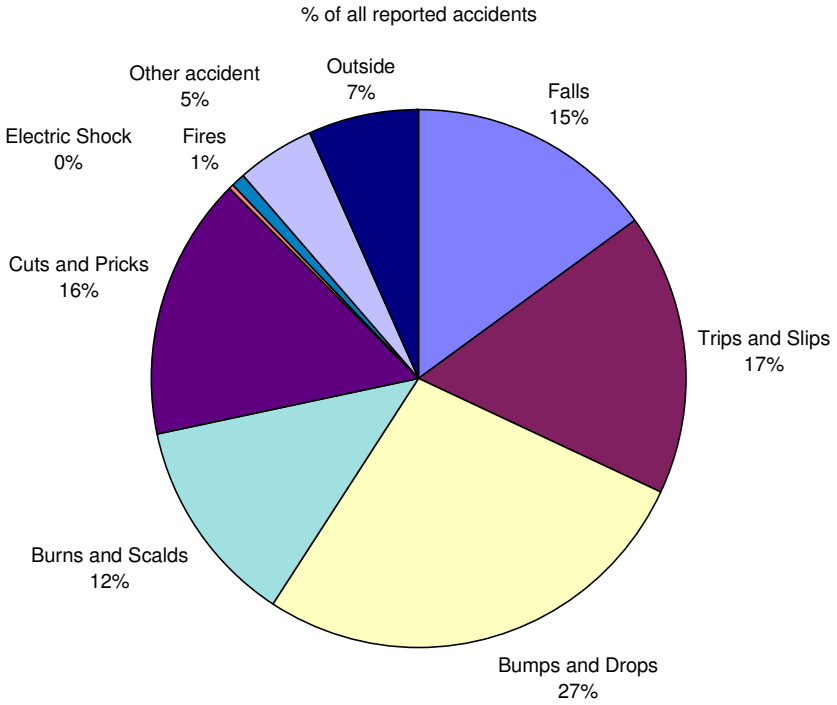

Figure 1. Types of accidents reported by postal survey respondents.

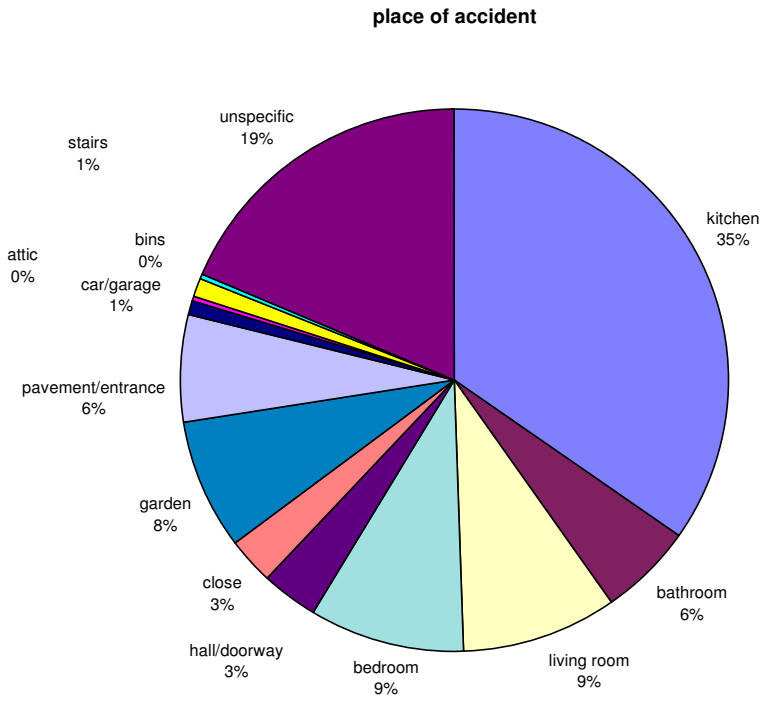

Figure 2. Location of accidents reported by postal survey respondents.

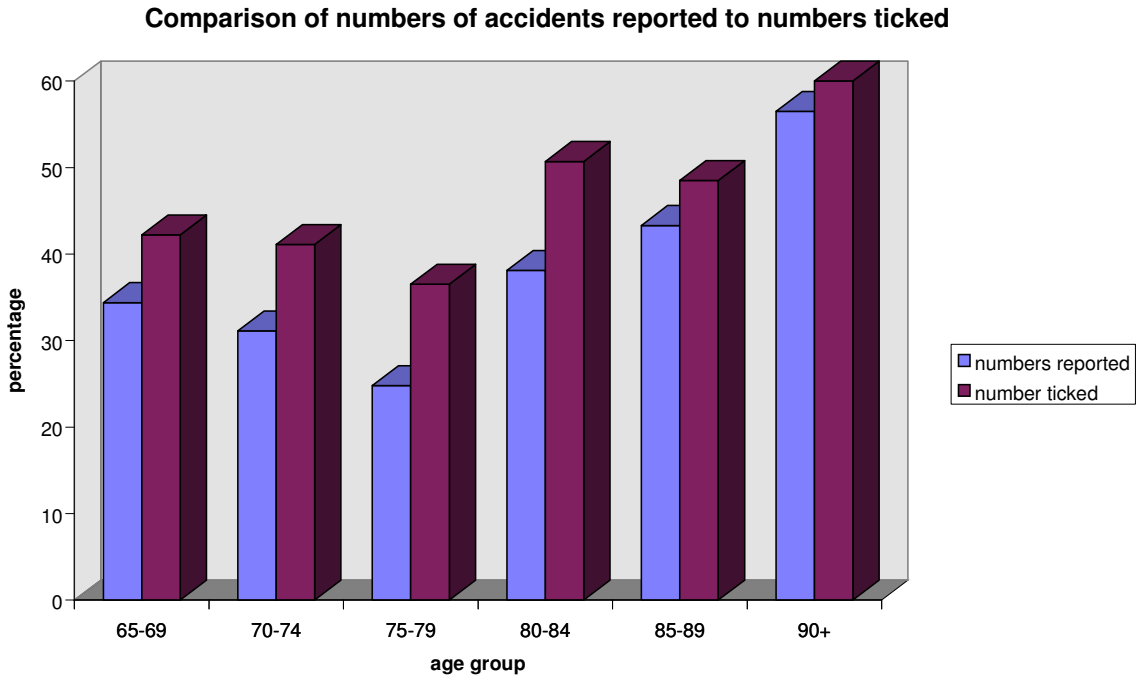

Figure 3. Prevalence of accidents by age.

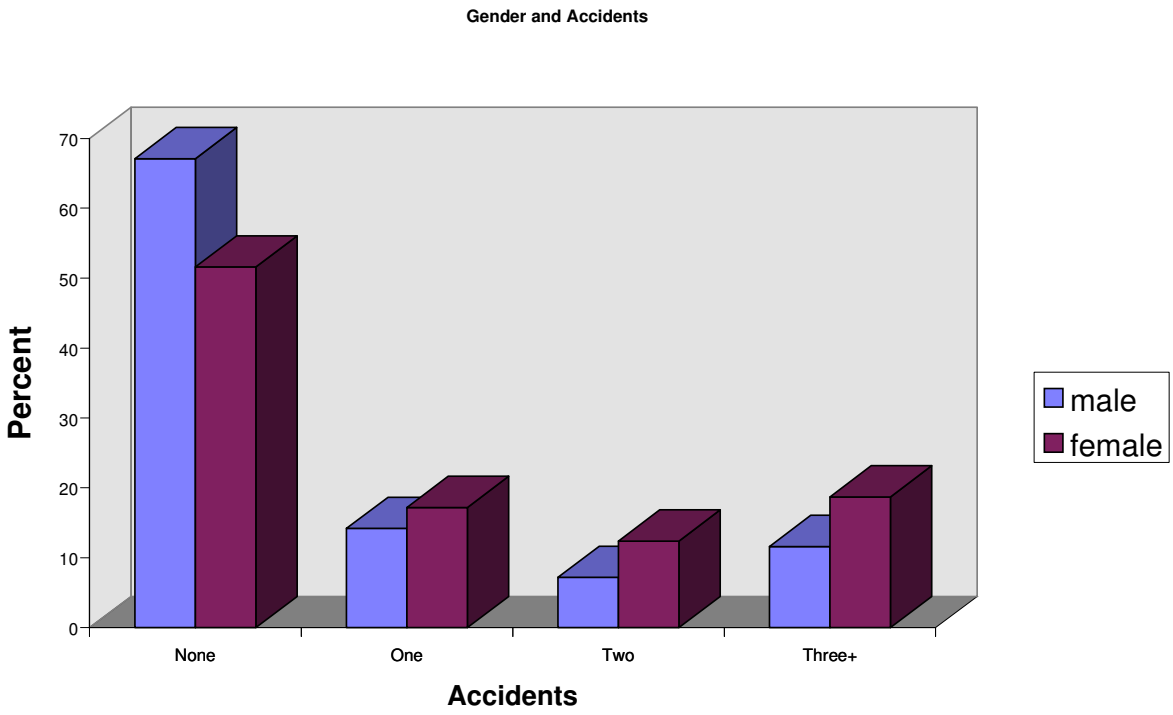

Figure 4. Prevalence of accidents by gender.

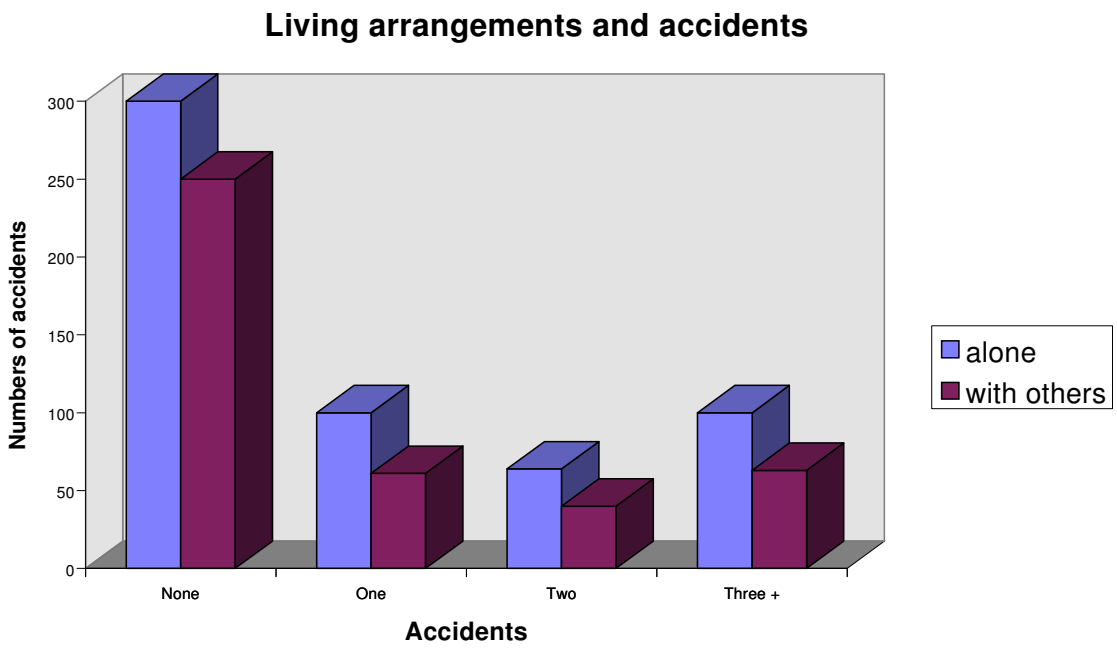

Figure 5. Prevalence of accidents by living arrangements.