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**SUICIDE IN ADULTS AGED 75 AND OVER IN
CORNWALL: AN EPIDEMIOLOGICAL AND
CASE STUDY ANALYSIS**

By

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A thesis submitted to Plymouth University
in partial fulfilment for the degree of

RESEARCH MASTERS

School of Nursing and Midwifery
Faculty of Health, Education and Society

May 2013

Suicide in Adults Aged 75 and Over in Cornwall: An Epidemiological and Case Study Analysis

By Sarah Ann Buckingham

Abstract

Introduction/Background: Suicide in older people is a historically neglected research area. Local audits had suggested that Cornwall had a higher than average suicide rate, and people aged 75 years and over appeared to be at particularly high risk. Heterogeneity between studies and variations in presenting suicide statistics can make comparison of rates difficult.

Aims: The study aimed to explore in depth the epidemiology of suicide in elderly people in Cornwall, to develop an understanding of the risk factors (including sources of stress), suicide methods, locations, and warnings, and consequently to identify potential preventive strategies.

Methods: A mixed methods approach was taken, combining quantitative epidemiological study of suicide using Office for National Statistics (ONS) Public Health Mortality Files with qualitative retrospective case study analysis using coroner's records and local audit database. All completed suicides (and some systematically selected open verdicts) in people aged 75 years and over occurring in Cornwall between 2006 and 2010 were included. A questionnaire survey of rural community dwelling people aged 75 years and over ($n = 49$) in a part of Cornwall was also carried out to identify the main sources of stress associated with ageing in the local area.

Results: Some discrepancies in the number of open verdicts reported by the coroner and ONS were noted. Although suicide in the over 75 age group was responsible for only 0.3 % of all-cause mortality in males and 0.1 % in females, the overall suicide rate in this age group in Cornwall was significantly higher than the average for the UK, with a Standardised Mortality Ratio of 172 (95 % CI 123 to 236). Males aged between 75 and 84 years had the highest suicide rate in Cornwall (mean of 25.8 deaths per 100,000 population, 95 % CI 1.1 to 50.5). Jumping from a height and suffocation were the most frequently used methods, accounting for 8 and 7 of the 34 deaths respectively. 28 of the 34 suicides took place at home. Depressive illness, physical illness and bereavement were the most commonly identified risk factors. Concerns revealed in survey responses were closely related to suicide risk factors, including fear of losing independence, bereavement, physical illness, isolation, and fear of becoming a burden. Warnings included previous self-harm or attempted suicide, suicide ideation or plans, behavioural changes and researching euthanasia.

Discussion: As persons aged 75 and over are at significantly higher risk of suicide in Cornwall than other regions, there is a need to reduce the number of suicides in this group. Possible

preventive measures include reducing access to means (in particular for jumping incidents), earlier detection of depression in the physically ill, bereavement counselling, more social groups and support groups in rural areas, helping people to retain their independence, and a change in societal attitudes towards elderly people. There may also be a need to improve the accuracy of suicide statistics.

Conclusion: Health services, councils, voluntary groups and the community as a whole should work together to prevent suicide in older people. Future controlled studies should assess the effectiveness of interventions and focus more on differences between subgroups of elderly people.

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Acknowledgements

I would like to acknowledge the following:

My supervisors Professor Catherine Hennessy, Dr. Sara Roberts and Dr. Jenny Morris for providing me with the opportunity to conduct this study, and for their invaluable support throughout.

Lee Pickett and the rest of the Public Health team for their help with data collection and analysis, and also for the training in epidemiology and public health.

Dr. Emma Carlyon, Coroner for Cornwall and the other office staff for allowing me to make use of the records and for their time and support.

The South West Public Health Observatory staff for allowing me to visit their office and giving me a valuable insight into public health research.

All of those who kindly gave their time to complete questionnaires for the survey of rural community dwelling persons aged 75+ years in Cornwall.

Finally, I would like to thank my family and friends for their unending support and patience during the completion of this thesis.

Author's Declaration

At no time during the registration for the degree of Research Masters has the author been registered for any other University award without prior agreement of the Graduate Committee. Work submitted for this research degree at Plymouth University has not formed part of any other degree either at Plymouth University or at another establishment.

The project was funded by the Combined Universities in Cornwall European Social Fund and carried out in collaboration with Cornwall and Isles of Scilly Primary Care Trust Public Health Team.

A programme of advanced study was undertaken, which included taught modules in Continued Professional Development, quantitative analysis and multivariate statistics, in addition to short courses in epidemiology and research methodologies.

External institutions were visited for consultation and relevant scientific seminars and conferences were attended at which work was often presented.

Presentations and Conferences Attended: "So You Think You Know About Ageing?" conference, Cornwall Research Forum 2012, European Centre for Environment and Human Health journal group, Cornwall mental health expert reference group meeting.

External Contacts: Cornwall Coroner, South West Public Health Observatory

Word count of main body of thesis: 28870

Signed

Date

Chapter 1: Background and Aims

“There is but one truly serious philosophical problem, and that is suicide.”

The Myth of Sisyphus, Albert Camus (1965)

1.1 Introduction

Most suicides are tragic and potentially preventable deaths. It has been estimated that each self-inflicted death has a profound impact on at least six other people (Shneidman 1969), including those involved both personally and professionally (Manthorpe & Iliffe 2010).

Suicide risk increases with age in most countries (Belanger *et al.* 2008; Shah 2011a) and as a result people over 65 years of age are the highest risk group in Europe, with an average prevalence rate of 21.9 deaths per 100 000 population per year compared with an overall rate of 13.9 deaths per 100,000 per year for all age groups (World Health Organisation Europe 2011). The increasing risk of suicide with age is shown in **Figure 1.1**; the risk of death by suicide is approximately three times higher in the elderly than in 15 to 24 year olds (Belanger *et al.* 2008).

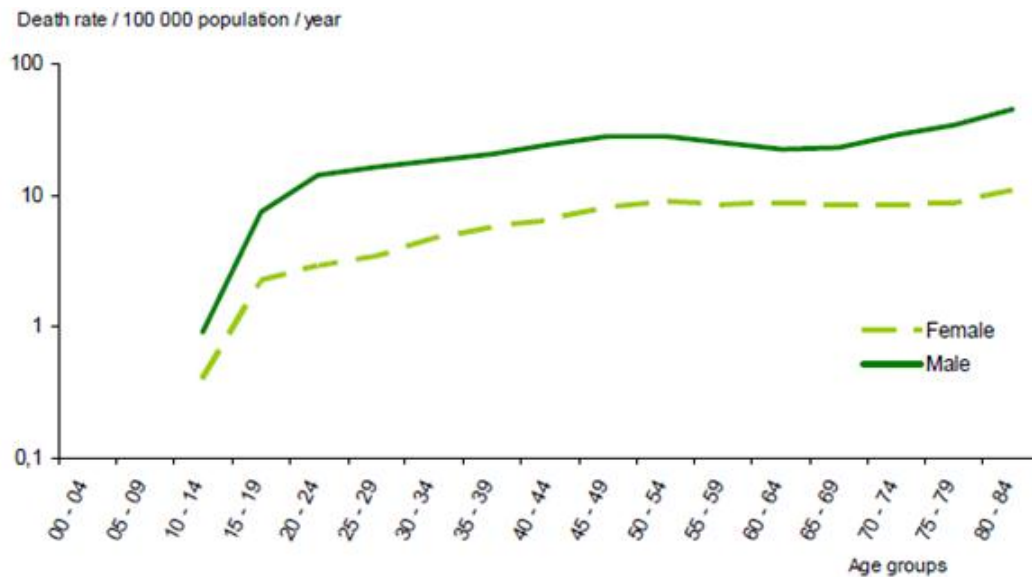


Figure 1.1: Crude rates of mortality by suicide by gender and age group in the European Union (25 countries) in 2005 – logarithmic scale

Reproduced from: Belanger et al. (2008) *European Project ANAMORT Monographs: ‘Suicide-Related Deaths in an Enlarged European Union’*

Despite these facts, suicide in older people has received less attention than younger suicides from the media and public health services, and is a historically neglected research area. Possible reasons for this include the lower absolute numbers of suicides in older people than younger age groups (e.g. 2756 suicides and undetermined deaths in the 15-44 age group compared with 414 in those aged 75+ in the UK in 2010 – Office for National Statistics 2012b) and a resulting lower economic cost (O’Connell et al. 2004), as well as the reliance on traditional measures of burden of disease such as Years of Life Lost (YLL), which are primarily used for the under 75 age group and put older people at a disadvantage. Ageist beliefs about the role of older people in society are also unhelpful; examples of such beliefs may be that they are retired and therefore no longer have any useful purpose in life, or are a burden on society. These beliefs are unfounded as people are still able to make valuable contributions to society and the economy in later life. Able older people commit more

hours to voluntary work than their younger counterparts (Morrow-Howell 2010) in addition to assisting with personal care of dependent adults, child care, and offering advice and support (Kincade *et al.* 1996). The total financial contribution of people over 65 in the UK was estimated at £39.6 billion for 2010 (Women's Royal Voluntary Service 2011).

Elderly suicide will undoubtedly become a greater issue in future as rising life expectancy leads to increases in the numbers and proportions of older people. In the UK in 2004, people aged 65 and over represented 15.6 % of the population, and this figure will increase further as the 'baby-boom' generation reaches old age (Soule *et al.* 2005). The 'oldest old' (those aged 85 years and older) are forming a larger part of society, with the population of this group in the UK having doubled between 1983 and 2008 (Wise 2010).

An improved understanding of elderly suicide is vital so that more effective preventive measures can be implemented. Moreover, it is important to study suicide at a regional level in addition to international and national studies as this will allow such measures to be more carefully targeted to local populations. The pattern of suicide can vary greatly at a national and local level, with large differences in suicide rates and highest risk groups. This will be discussed in the following sections.

1.2 The National Picture

The overall suicide rate (age-standardised) in the UK in 2010 was 17.0 per 100,000 population for men, and 5.3 per 100,000 population for women (Office for National Statistics 2012a). This compares quite favourably with Europe in general; the European

average age-standardised suicide rates are 23.8 and 5.2 per 100,000 population for men and women respectively (World Health Organisation Europe 2011).

A national suicide prevention strategy was published in 2002 by the Department of Health (Great Britain. Department of Health 2002) to support the government target outlined in the Public Health White Paper “Saving Lives: Our Healthier Nation” of reducing deaths by suicide across all age groups by 20 % between 1997 and 2010 (Great Britain. Department of Health 1999). Unfortunately this target has not been met, with only an 11 % decrease in the overall age-standardised rate for males (from 19.0 deaths/100,000 population in 1997 to 17.0 in 2010) and a 13 % reduction in the female rate (from 6.1 deaths/100,000 population in 1997 to 5.3 in 2010) during this period (Office for National Statistics 2012a and 2012b). Even taking into account the 95 % confidence interval of 5 to 16 % for the change in male suicide rate, the target was not met (the 95 % CI for the change in female rate was 3 to 22 %). More recently, the government produced a “Consultation on Preventing Suicide in England”, which aims to build on the earlier strategy and use current research findings to identify high risk groups and inform effective intervention measures (Great Britain. Department of Health 2011a).

Figure 1.2 shows the trend in suicide rates in the 75+ age group in the UK over 20 years. A decline in suicide rate among older people in the UK occurred between 1991 and 2002, from 25.1 to 14.6 per 100,000 population for males aged 75 years and over (a change of 42 %) and from 9.0 to 6.6 per 100,000 population for females of this age group (a 27 % decrease) (Office for National Statistics 2012b). Since then, the rate in older females has shown a clear downward trend, although in males over 75 the rate of 14.6 suicides per 100,000 population in 2010 was the same as that reported in 2002 (Office for National Statistics 2012b).

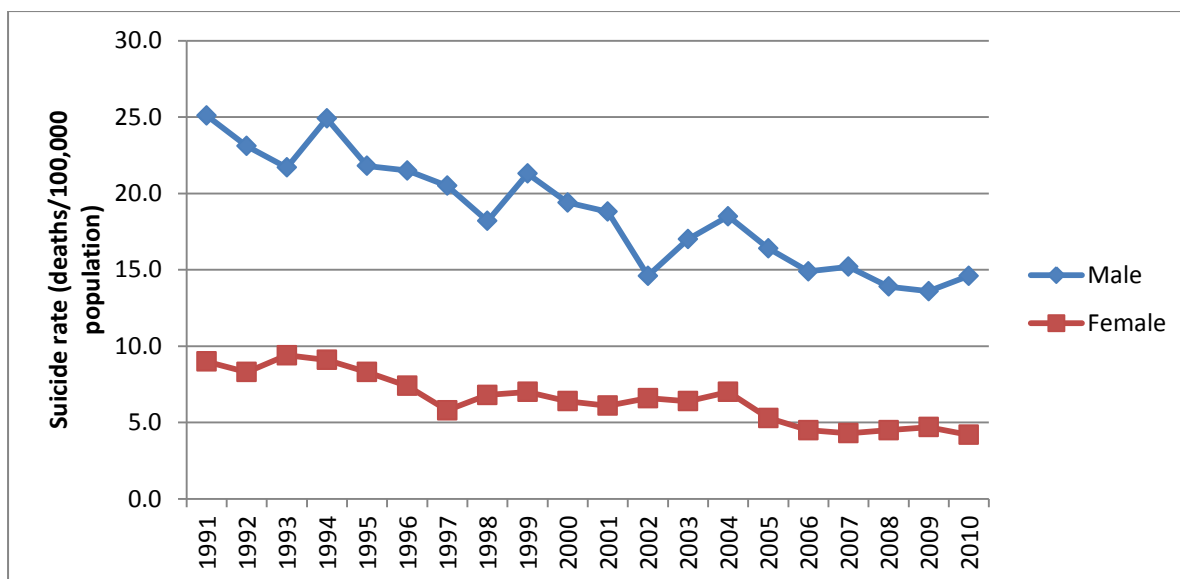


Figure 1.2: Trend in suicide rate (including undetermined deaths) in the 75+ age group in the United Kingdom

Source: Office for National Statistics (ONS) Public Health Mortality Files

Between 2006 and 2010, both men and women aged 75 years and over had a lower suicide rate than the 15 to 44 and 45 to 74 age groups (Office for National Statistics 2012a). In 2010, the suicide rate (age-standardised) for males over 75 in the UK was 14.6 per 100,000 population compared with 16.7 for the 15 to 44 age group and 17.7 for those aged 45 to 74 years; similarly suicide rates for females in 2010 were 4.2 per 100,000 population for those aged 75+, 4.8 for the 15 to 44 group and 6.0 for those aged between 45 and 74 (Office for National Statistics 2012a). This contrasts with the European pattern where older age groups are generally at highest risk (Belanger *et al.* 2008; World Health Organisation Europe 2011).

1.3 The Local Picture

1.3.1 The South West

As **Figure 1.3** shows, there have been large fluctuations in the overall suicide rate in the South West of England since 2001. Between 2001 and 2007 the male rate decreased by 22 % from 18.6 to 14.5 deaths per 100,000 population and then showed a 30 % increase to 18.9 in 2009. Over the decade, however, a slight decrease in the male rate was seen, with a reduction of 5 % (a change from 18.6 deaths per 100,000 in 2001 to 17.6 in 2010) (Office for National Statistics 2012b). Female suicide rates have remained more stable over time, varying between 4 and 6 deaths per 100,000, but an overall increase of 24 % from 4.6 in 2001 to 5.7 in 2010 was observed (Office for National Statistics 2012b).

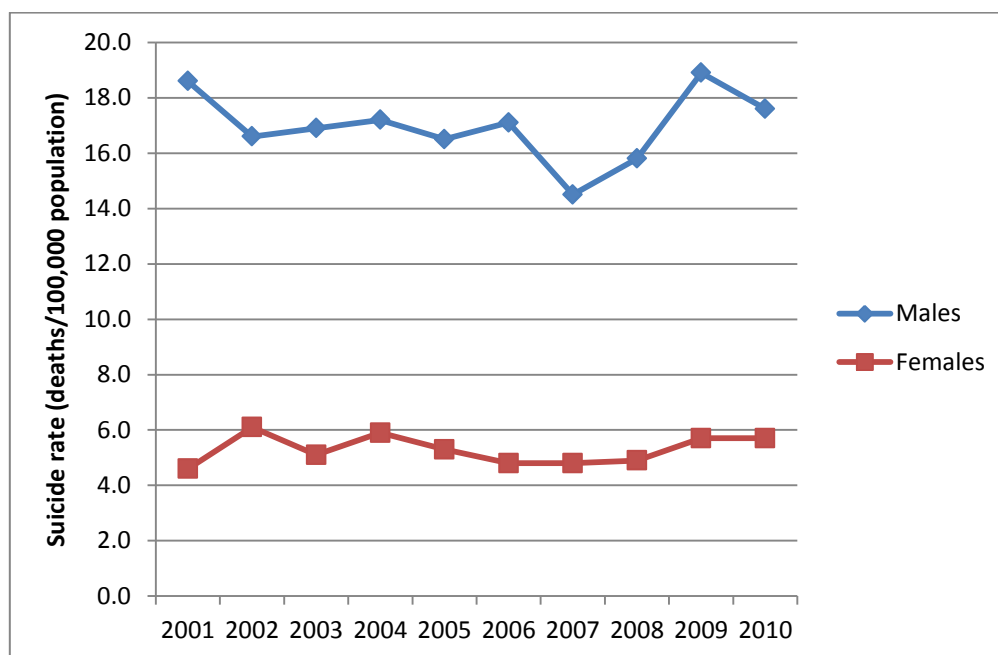


Figure 1.3: Trend in suicide rate (including undetermined deaths) in South West England, all ages (age-standardised), 2001 to 2010

Source: ONS Public Health Mortality Files

The 2010 rate for suicide and deaths from injury of undetermined intent in the South West of England was higher than all other regions of the UK for both males and females (Office for National Statistics 2012a). Suicides and undetermined deaths comprise 0.9 % of all deaths in the South West, and represent 2.8 % Years of Life Lost for those aged under 75 years (South West Public Health Observatory 2011).

A large number of older people have moved from congested urban regions and settled in coastal and rural areas, and as a consequence South West England has one of the oldest populations in Europe, with 18.7 % of its population aged 65 years and over (Soule *et al.* 2005). With regard to suicide rates in the 75+ age group in the South West (see **Figure 1.4**), a 23 % reduction was seen in females, with a three-year average rate of 6.7 deaths per 100,000 population between 2001 and 2003, compared with 5.1 for 2007 to 2009 (Data source: South West Public Health Observatory 2011). A smaller reduction in the three-year average male rate was observed during this time, changing from 17.3 to 15.3 (a decrease of 11 %) (Data source: South West Public Health Observatory 2011). While the trend is clearly in the right direction, the suicide rate for this age group does not appear to be decreasing as rapidly in the South West as in the UK overall, particularly for males. The suicide rate in males aged 75 years and over remains higher than the national rate for this group; the three-year average rate between 2007 and 2009 was 14.2 deaths per 100,000 population in the UK, 7 % lower than the South West rate (Office for National Statistics 2012b). Furthermore, absolute numbers of suicides are likely to rise as life expectancy increases, and more noticeably in the South West which has an 'older' population.

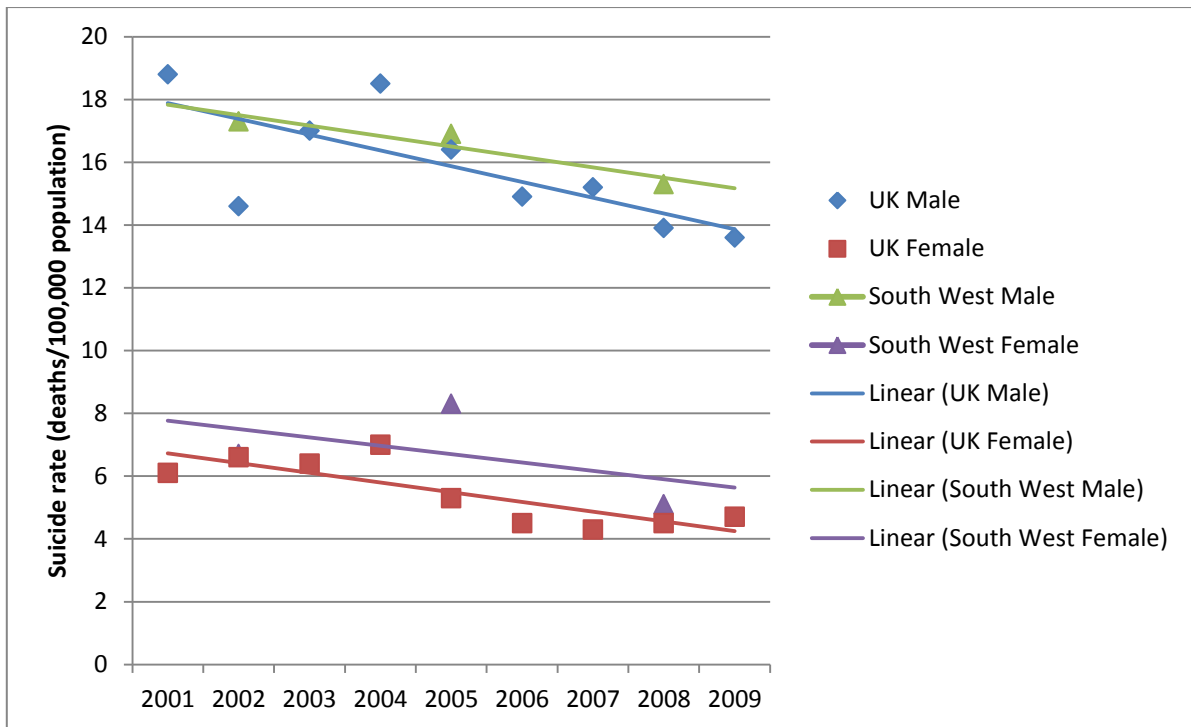


Figure 1.4: Comparison of trends in suicide rate (including undetermined deaths) in the UK and South West England, 75+ age group only, 2001 to 2009

Source: South West Public Health Observatory and ONS Public Health Mortality Files

Note: Actual rates are shown in addition to trend lines. Three-year averages are shown for the South West to minimise yearly fluctuations

As **Figure 1.5** shows, in relation to age-specific suicide rates, a steep rise in rate with age has been observed for men from the age of 75 onwards; this increase could have been concealed by the Office for National Statistics procedure of grouping together deaths in the over 75 age group (South West Public Health Observatory 2011). Men aged 85 and over are the group with the highest suicide rate in the South West, with a mean of approximately 25 deaths per 100,000 population per year between 2001 and 2009, while for women those aged between 80 and 84 years have the highest suicide rate (mean of 7 deaths per 100,000 population for this period) (South West Public Health Observatory 2011).

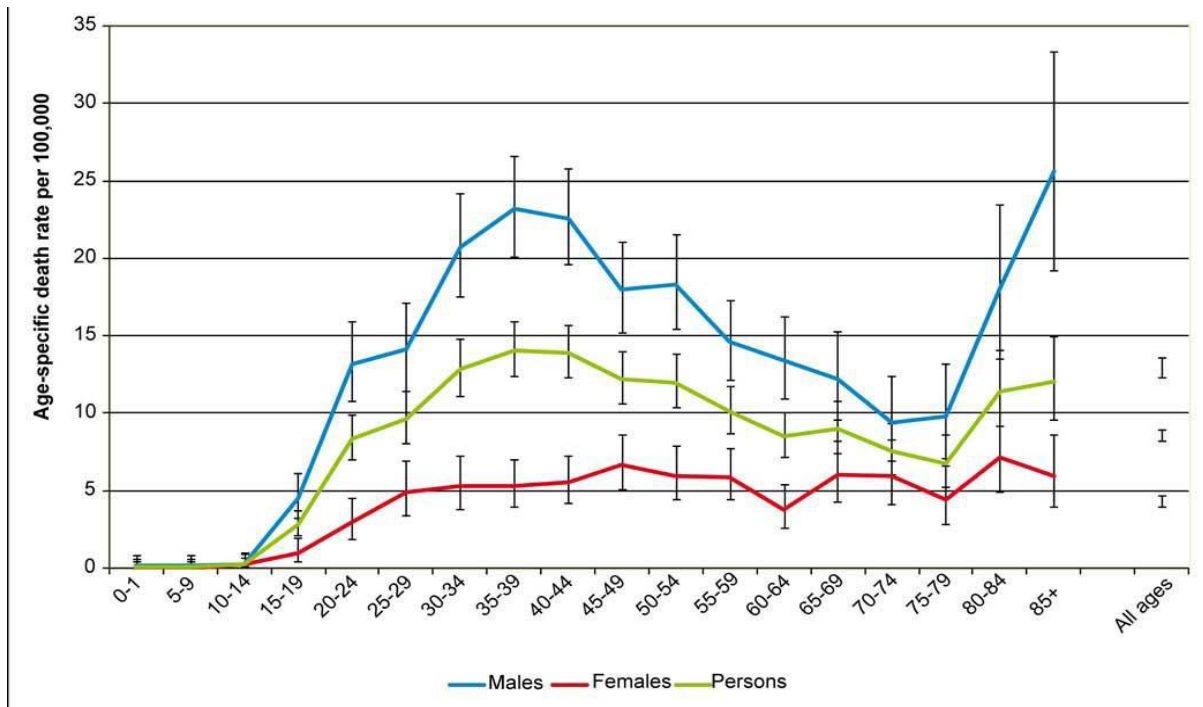


Figure 1.5: Age-specific rates (with 95 % confidence intervals) of suicide and undetermined death (per 100,000 population), by age group and sex, in the South West 2001–2009

Reproduced with kind permission from: South West Public Health Observatory (2011) 'Suicide and Self-harm in the South West', page 21 (Data source ONS Public Health Mortality Files)

1.3.2 Cornwall

Cornwall is one of the most rural counties in England (Middleton *et al.* 2003) and also one of the poorest (Williams 2003). Despite this, the health status of people living in Cornwall is considered better in general than the average for England (Great Britain. Department of Health 2011b) and the life expectancy in Cornwall is higher than the England average (Health Protection Agency 2012).

With regard to suicide however, Cornwall is apparently not one of the better areas. As

Figure 1.6 shows, suicide rates in Cornwall have been consistently higher than the average for England and Wales since the 1960s (Hill *et al.* 2005), and while the general trend has

been downwards, the rate remains higher than the national average with suicide and deaths from injury of undetermined intent (i.e. open verdicts) accounting for 50 to 80 deaths per year since 1993 (Roberts *et al.* 2010). The suicide rate in Cornwall is also higher than the South West average. The Directly Standardised Rate (DSR) for suicide and undetermined death between 2007 and 2009 was 14 deaths per 100,000 persons per year in Cornwall compared with 11.9 for the South West and 7.9 for England overall (South West Public Health Observatory 2011).

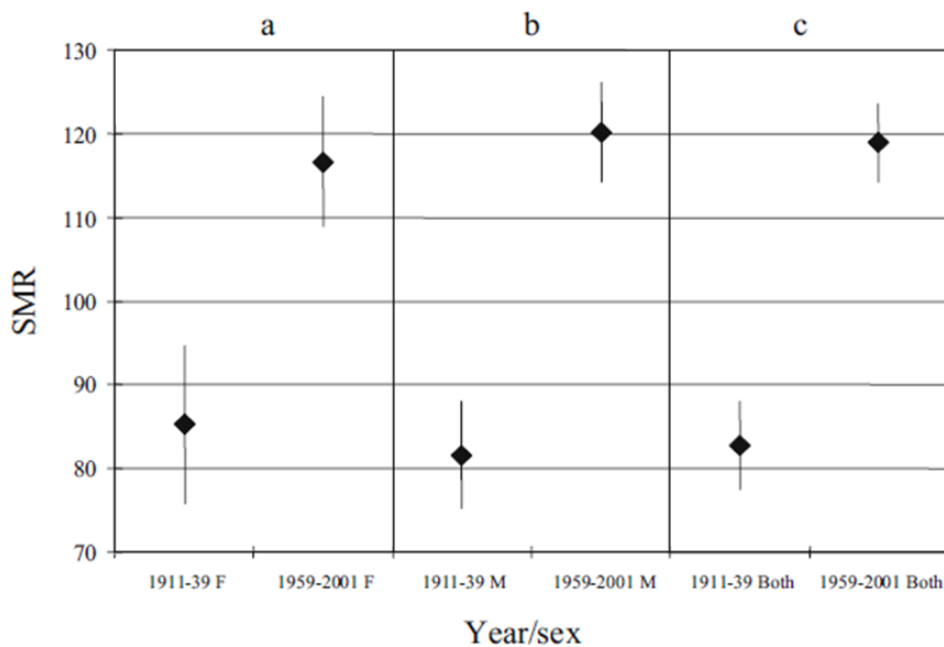


Figure 1.6: Suicide specific Standardised Mortality Ratio (SMR) for Cornwall (reference population England and Wales) 1911–1939 and 1959–2001 a) women b) men c) both sexes

Reproduced from: Hill *et al.* (2005) 'Changing patterns of suicide in a poor, rural county over the 20th century: A comparison with national trends', *Social Psychiatry and Psychiatric Epidemiology*, vol. 40, pp. 601-604, with kind permission of Springer Science & Business Media.

Local suicide audit has shown the suicide rate in elderly people to be disproportionately high in Cornwall. Data has suggested that males aged 75 and over are at highest risk in the

county, as shown in **Figure 1.7**. For this group the pooled suicide rate between 2007 and 2009 was 26 deaths per 100,000 population compared with approximately 20.5 deaths/100,000 population in the second highest risk group in Cornwall (males aged between 35 and 64 years) (Roberts *et al.* 2010).

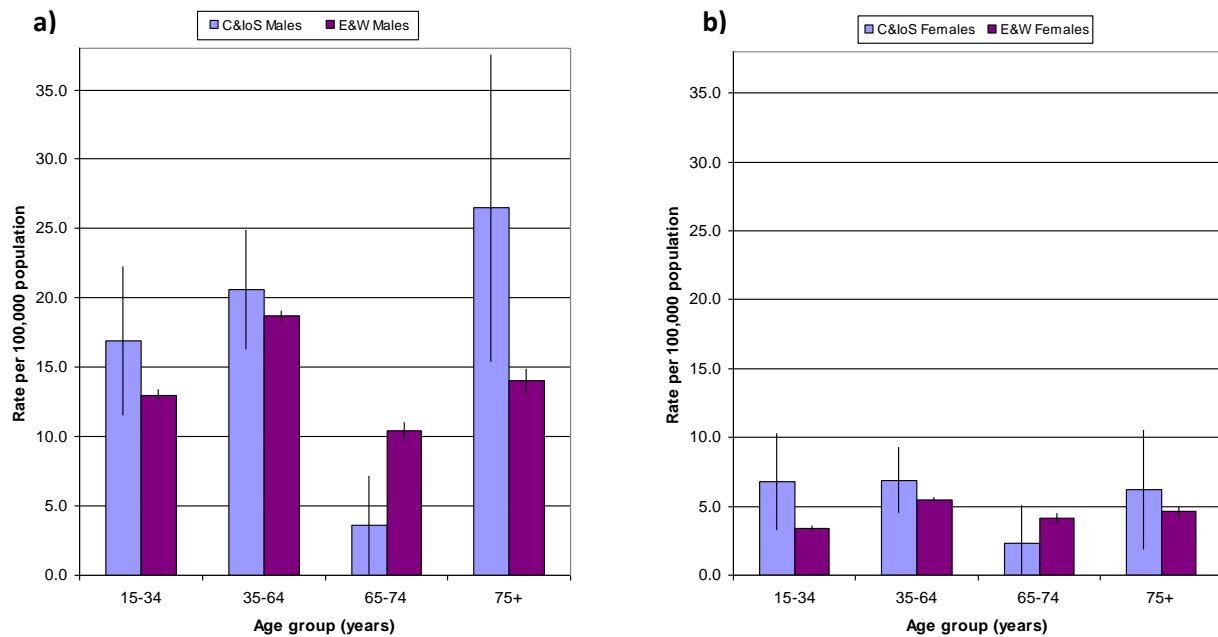


Figure 1.7: Age specific death rates (suicide and deaths of undetermined intent): **a)** males and **b)** females by age group for Cornwall & Isles of Scilly and England & Wales: pooled 2007-2009

Reproduced with kind permission from: Roberts et al. (2010) 'Suicide Prevention and Audit in Cornwall and Isles of Scilly', page 8

The suicide rate in males of the 75+ age group in Cornwall also seems to be substantially higher than the national rate for this group of approximately 14 deaths per 100,000 population (Roberts *et al.* 2010). Nationally the 75+ age group has a lower suicide rate than both the 15 to 44 and 45 to 74 age groups (see section 1.2 for rates) (Office for National Statistics 2012a), which shows how local and national pictures can differ.

In addition to national suicide prevention strategies, a local prevention strategy for Cornwall and the Isles of Scilly exists (Great Britain. NHS Cornwall and Isles of Scilly 2009). The strategy follows the main principles of the national strategy but focuses on local issues in addition. Progress towards the recommendations outlined in this document is being continuously monitored, and a local Suicide Audit Group meets regularly to discuss lessons that can be learned from individual cases. The high risk groups identified in this strategy are the same as nationally, with the exception of the inclusion of farmers and people aged 75 years and over in the local strategy.

1.4 Reasons for the Present Study

Cornwall appears to have an elevated suicide rate in comparison to both the UK as a whole and the South West region, and older people (in particular those aged 75 years and over) seem to be at high risk. However, data on suicide rates comes from a variety of sources, with various definitions of suicide (i.e. suicide vs. undetermined deaths), and there is heterogeneity in terms of aggregation of age groups (e.g. the Office for National Statistics' use of wide age bands 15-44, 45-74 and 75+ for regional suicide rates), methods of standardisation and years included for analysis. With such heterogeneity in suicide rates, combined with small numbers at a local area level, statistically meaningful comparisons can prove difficult. Further exploration of the statistics and the actual events behind them was therefore needed to discover the true extent of the problem.

The research aimed to build on the South West Public Health Observatory's 2011 report, 'Suicide and Self-harm in the South West', and provide more qualitative information in addition to the study of suicide rates, including a more in-depth study of risk factors, suicide

methods and location, and warnings. Whereas the Public Health Observatory's report included all age groups in the South West, the present study focused on Cornwall and elderly people, a group which has received relatively little attention in suicide research but seems to be at particularly high risk of suicide.

This project involved working with the NHS Cornwall and Isles of Scilly Public Health team to study the epidemiology of suicide in people aged 75 and over in Cornwall, to find out whether this group are statistically at higher risk than people in other regions and younger age groups, and to establish some of the risk factors and possible reasons for the apparently elevated rate, thereby allowing potential prevention strategies to be identified. The research aimed to partially fill the knowledge gap surrounding elderly suicide and use local data to explore this phenomenon in depth.

1.5 Summary of Aims and Objectives

The main research questions were:

1. **What** is the extent of the problem:
 - a. Does the suicide rate in the 75+ age group in Cornwall differ statistically from the national rate for this age group, and
 - b. does the local suicide rate differ significantly between the 75+ age group and younger age groups?
2. **Why** is the rate so high in older people in Cornwall:
 - a. What are the risk factors for suicide in the 75+ age group? (Including physical, psychological, social, and seasonal)

- b. What are the methods and locations used for suicide by elderly people in Cornwall?
- 3. **How** can elderly suicide be prevented in Cornwall:
 - a. What are the implications of knowledge about risk factors, methods and location for suicide prevention?
 - b. Is there any evidence of suicide notes or other warnings (i.e. previous suicide attempts/self-harm, contact with health services, documentation of risk) in completed suicides in the 75+ age group?
- 4. **What** are the main worries, concerns and problems (i.e. sources of stress) faced by older people in general living in Cornwall, and in their own opinion what can be done to alleviate these?

Additional research questions included:

- 5. How do the various sources of suicide data compare in terms of quality and reliability of information?
- 6. Can any trends be identified in number of suicides or methods used?
- 7. Are there any gender differences or age-related differences, i.e. comparing the 'old old' (75-84) and 'oldest old' (85+), in suicide rate, risk factors, method or location?

1.6 Author's Stance on Euthanasia

Euthanasia is defined as “the intentional killing by act or omission of a dependent human being for his or her alleged benefit” (www.euthanasia.com/definitions). While it is recognised that there are obvious links with euthanasia when studying elderly suicide, this is a subject that was not specifically researched in this project as the intended outcome was the prevention of suicides. Euthanasia is a subject that will generate intense debate; there are a number of different viewpoints, including the argument that many suicides are ‘understandable’ where there is a wish to end physical suffering or to relieve a perceived burden on carers (Snowdon & Baume 2002). It is the author’s belief that the desire to take one’s own life is not ‘understandable’, but usually a pathological reaction to stressful and often modifiable circumstances or treatable illness (whether physical or psychiatric) and suicide is therefore preventable in many cases. This argument is supported by the fact that almost two thirds of these ‘understandable’ suicides in Snowdon and Baume’s study were committed by depressed individuals. Furthermore, legalisation of euthanasia could conceivably make suicide more acceptable.

Before the study of local suicides, it is necessary to review the existing knowledge base of suicide in older people (including national and international research) in order to develop a greater understanding of the issue in general. This will be done in the next chapter.

Chapter 2: Suicide in Older People: A Literature Review

2.1 Introduction

In most cases suicide is a tragedy for the victim, their family and friends and society at large, and remains a major public health concern. Despite the fact that people over 65 years of age have a greater risk of suicide than any other age group in Europe, with an average prevalence rate of 21.9 deaths per 100 000 population per year (compared with an overall rate of 13.9 deaths/100,000/year for all age groups in Europe) (World Health Organisation Europe 2011), comparatively little research into suicidal behaviour in this age group has been reported. This may be due to lower absolute numbers of suicides in older people (as older people make up a smaller section of the population) and consequently a lower economic cost (O'Connell *et al.* 2004), or possibly due to ageist beliefs about the role of older people in society. However, elderly suicide is likely to become a greater issue in the future as the over 60s are the world's fastest growing age group (World Health Organisation 2011), and the number of people aged 85 and over in the United Kingdom doubled from approximately 650,000 to 1.3 million between 1983 and 2008 (Wise 2010).

This literature review will explore national and international findings from existing research into suicide in older people. The aims of the review are to outline the epidemiology of suicide in older adults, assess some of the methodological issues associated with research into suicide and examine in depth the current empirical evidence for a wide range of risk factors for elderly suicides. This will be followed by a brief overview of some proposed

theories to explain suicide in this age group, and a discussion of possible preventive measures.

While the present study focuses on completed suicide only, this review will consider multiple aspects of suicidal behaviour, including some studies which have used suicidal ideation and attempted suicide as outcome measures. The purpose of this is to give a fuller picture of suicide in older people and to provide a comprehensive assessment of the existing evidence base for a range of risk factors and preventive measures. It is particularly important to consider attempted suicide as this in itself is a risk factor and predictor for future completed suicide (Conwell *et al.* 2000; Beautrais 2002; Bradvik & Berglund 2009).

2.2 Epidemiology and Characteristics of Suicide and Suicidal Behaviour in Older People

Suicidal behaviour can broadly be divided into suicidal ideation, attempted suicide and completed suicide. The prevalence of suicidal ideation is estimated to range from 1 % to 36 % of the elderly population; this is believed to be lower than in the younger population (Conwell & Duberstein 2005). Attempted suicide is also rarer in later life (Gallo *et al.* 1994), although this can be more difficult to measure precisely due to lack of a clear surveillance method (not all suicide attempters are admitted to hospital, for example). However, completed suicide is a more widespread problem in older persons, with suicide rates increasing with age in most countries (Shah 2011a). Moreover, older people are more likely to die as the result of a suicide attempt; the ratio of attempted to completed suicides is around 4:1 (Parkin & Stengel 1965), compared with somewhere between 8:1 and 36:1 in the general population (Crosby *et al.* 1999). Several reasons have been suggested for this greater success of suicide attempts among older people, including the use of more lethal

means such as hanging and firearms, a greater likelihood of living alone which renders them less likely to be discovered, physical frailty and increased planning and determination to end their lives (Conwell *et al.* 1998). This contrasts with the characteristics of suicide attempts and self-harm in younger people, where these behaviours are more likely to involve the less lethal methods of self-cutting or self-poisoning and are often a temporary coping response rather than a determination to die (Mental Health Foundation 2006).

There are large international variations in elderly suicide rates; in an analysis of the suicide rates of 54 countries using World Health Organisation data, Wu and Bond (2006) reported that in those aged between 65 and 74 years, the five-year average rate of completed suicide varies between just 2 deaths per 100,000 per year in Portugal and 54 deaths per 100,000 per year in Israel. The UK lies somewhere in the middle of this range with approximately 27 deaths per 100,000 per year in this particular age group. It is not clear to what extent this variation is due to differences in recording and reporting of suicides between countries, although cultural factors have been implicated in cross-national differences in suicide rate (e.g. Traphagan 2004; Shah 2009a). However, most countries show the same pattern of the oldest members of society being most at risk (Leenaars 2003; Shah 2011a), the only reported exceptions being Poland (De Leo 1997) and more recently the UK (Office for National Statistics 2012a). Wu and Bond (2006) calculated the average suicide rates for 54 countries for young people aged between 15 and 24 years and for those aged 65 to 74 years, and found that the rate for the older age group was almost twice as high, with 10.94 and 20.87 deaths per 100,000 population respectively.

There are some notable gender differences in suicide and suicidal behaviour. It is generally recognised that males are at greater risk of completed suicide than females, and this is also

true for older people (Fung & Chan 2011). The ratio of male to female suicides in this group is 3 or 4:1 (O'Connell *et al.* 2004). There are also gender differences in suicide method in older people; Fung & Chan (2011) reviewed several studies and concluded that males tended to prefer more lethal means than females. Similar results were also found in a study of Office for National Statistics data by Shah and Buckley (2011), who showed that hanging, strangulation and suffocation were the most frequent methods used by men aged over 65, while for women of the same age group, poisoning and related methods were the most commonly chosen means of ending their lives.

Recent studies have examined differences in suicide rate and risk factors within different subgroups of the older population, namely the 'young old' (i.e. those aged 65 to 74 years) and the 'old old' (those aged 75 and over). For example, Paraschakis *et al.* (2012) reported in their psychological autopsy study that the 'old old' suicide victims were distinguished from the 'young old' by greater physical illness and an increased likelihood of psychiatric problems that they had not been hospitalised for. Waern *et al.* (2003) found similar differences in risk factors between the two age categories, but also reported that economic factors such as debt played a greater role in the 'young old' whereas loneliness and family conflict were more important in the 'old old' suicide victims. There is still a lack of research however into differences between the 'old old' and 'oldest old' (i.e. the 85+ age group). As an increasing number of people are living to 100 (United Kingdom. International Longevity Centre 2011) this will need to be addressed by future studies.

There are several possible indicators or warnings that an elderly person is likely to commit suicide, including changes in behaviour, previous attempts, and later, suicide notes.

Changing behaviour relating to medical treatment has been implicated in suicide in older

individuals. Moving between GPs and increased contact with a range of medical professionals between six and three months prior to committing suicide, followed by a decline in contact, has been shown to be a consistent behaviour pattern (Deisenhammer *et al.* 2007). Studies have also shown previous attempts to be a serious risk factor for completed suicide in elderly people (Conwell *et al.* 2000; Beautrais 2002). Making more than one suicide attempt has been identified as a predictor of successful suicide in older women, while a previous serious attempt is strongly associated with suicide in older men (Bradvik & Berglund 2009). Suicide notes can give a good insight into the reasons why a person desires to end their life and may provide an opportunity to intervene if discovered in time. However, generally only a proportion of people leave a note, with estimates ranging between 18 to 37 % of suicide victims in the general population (Leenaars 2003). In a retrospective study of coroner's records in Cheshire, Salib *et al.* (2002) found that suicide notes were left by 43 % of elderly suicide victims. The researchers also reported that note-writers were statistically more likely to have been unfamiliar to mental health services and to have used a less violent suicide method.

A decline in suicide rates among older people in the UK was reported between 1979 and 2002 (Shah & Coupe 2009). However, the government target of reducing deaths by suicide by 20 % between 1997 and 2010 (Great Britain. Department of Health 1999) has not been met. The over 65s remain the highest risk group in Europe overall (World Health Organisation Europe 2011) and the absolute number of suicides in this age group will undoubtedly increase due to rising life expectancy.

2.3 Methodology of Suicide Research

Research into suicide is no easy task, as once a suicide has been committed it is no longer possible to delve into the person's thoughts and motivations. This may be one reason why many studies have focused on suicidal ideation and attempted suicide. However, research into completed suicides is also essential as this is the behaviour for which prevention is vital.

There are various possible methods for studying completed suicides in older people (or any other age group), and each has its advantages and drawbacks. It is difficult to conduct prospective cohort studies due to the low overall prevalence of suicide, although there have been several long term studies using large population cohorts (such as Danziger *et al.* 2011). However, with any type of observational study it is difficult to control for all factors and to prove causality. Intervention studies have obvious ethical implications. The nested case-control approach can overcome some of these problems and has been used with considerable success to study suicide in the older population; for example Ross *et al.* (1990) used baseline information from a postal health survey of a retirement community in Southern California. As the data had already been collected, this was a less time-consuming and more cost effective way for the relative risk for several predictors of suicide to be calculated.

The psychological autopsy approach has been used over recent years and can provide valuable qualitative data about each individual suicide case. This method involves interviews with friends, family members and other associates of the deceased, as well as the use of other documents (such as medical records) to collect retrospective information about a suicide, which is then typically used in case-control studies. The information may suffer from reporting bias; for example respondents may overestimate the contribution that

stressful life events have made to a suicide (Conwell *et al.* 2002). Despite this, psychological autopsies have proved to be a valid method for establishing risk factors for suicide in older people, including psychopathology (Conwell *et al.* 1991) and living circumstances, occupation and education (Pompili *et al.* 2008).

Some research has also used suicide notes to gain a better understanding of individuals' thought processes before they end their lives. For example, Leenaars (2003) applied a theoretical-conceptual analysis to a number of suicide notes left by older people and suggested that the documents provide another important qualitative resource, although they are subject to several limitations such as the unrepresentativeness of note writers, self-deception and attempts to provoke a reaction in those they are aimed at.

Quantitative data on completed suicides is normally collected retrospectively from coroners' records, but other sources have been used including GP and mental health records, the Office for National Statistics Public Health Mortality Files and the World Health Organisation's European Mortality Database.

Coroners' records have been frequently used to obtain both quantitative and qualitative information on local suicides and may provide a detailed description of events leading up to the death, enabling the identification of risk factors. Weaknesses of this source are that there is often a long delay in the time taken to reach a verdict, and data from the local coroner does not include residents who go outside the locality to commit suicide (Church & Ryan 2006). Furthermore, coroners are increasingly using narrative verdicts to record inquest findings for suicide cases (Gunnell *et al.* 2011). This involves producing a longer account of the circumstances of a death rather than stating a short form verdict of 'suicide'. This changing practice may have an adverse impact on suicide research using such data, and

may lead to suicide cases being missed, causing the total number of cases to be underestimated. Another issue with coroners' data is deciding whether or not to include open verdicts (deaths undetermined whether accidental or intentional) with suicide cases. There is variation between studies in this respect; some include open verdicts while others do not. It has been recognised that the majority of open verdicts are indeed suicides (Linsley *et al.* 2001) so these are usually included in suicide research, although it has been demonstrated that the use of pure suicide rates only can provide accurate data (Shah 2009b) and that the inclusion of open verdicts has no significant effect on findings (Hill *et al.* 2005).

International comparisons of suicide rates may be performed using World Health Organisation data. However, there are several problems with this including variations between countries in recording deaths, due, for example, to differences in the legal criteria for evidence of suicide, and cultural or religious stigma surrounding suicide that results in the underreporting of cases (Shah 2009b). Furthermore, international variation in the diagnosis and coding of medical and psychiatric conditions is another possible source of inaccuracy when attempting to compare risk factors and antecedents of suicide in different countries.

Even data on suicides within a small region may be unreliable due to differences in the recording or reporting of cases between agencies; in a study of suicides and undetermined deaths in Cornwall, Shankar *et al.* (2010) found evidence of large discrepancies between coroner and Office for National Statistics (ONS) data in the number of suicides and open verdicts reported. Higher numbers of open verdicts in particular were reported by the coroner. The researchers concluded that there was inaccurate data transfer between

different organisations and that better defined protocols are needed. A limitation of this study however, is that data from just three years in a small part of the UK was collected, so it is not possible to establish whether such inconsistencies are part a wider phenomenon. Nevertheless, the research highlights the importance of standard practices and clear communication between relevant stakeholders.

The majority of studies have used only one method for the collection of data and many have relied upon a single source of data. A possible direction for future suicide research could therefore be to combine different research methods or different data sources. For example, a nested case-control study may be combined with psychological autopsies for suicide cases to provide a source of both quantitative and qualitative data.

Studies should be carefully designed, with the use of standardised procedures and methods of analysis wherever possible, in order to minimise the methodological problems that are inherent in suicide research. Despite such problems, there is a growing body of empirical evidence surrounding risk factors for suicide in later life.

2.4 Risk Factors for Suicide in Older People

2.4.1 Introduction

The fact that a similar pattern of an increased risk of suicide with increasing age is seen across cultures (Leenaars 2003; Wu & Bond 2006; Shah 2011a) suggests that a psychological or biological mechanism associated with ageing may be involved. However, there are also large differences in prevalence rates for suicide in old age between (Wu & Bond 2006) and

even within cultures (Zeppegno *et al.* 2005). For example, Zeppegno *et al.* (2005) showed that the incidence of suicide in people aged 65 years and older differed statistically between two regions of Northern Italy, with an average rate of 14.07 per 100 000 population in Novara compared with 25.56 in Verbania. This means that sociocultural factors must also be involved in influencing suicide risk.

As can be seen in **Table 2.1**, there is great heterogeneity between studies of risk factors for suicide in older adults. Various sub-populations of older people have been used, ranging from clinical samples to residents of care homes to the general population. Different outcome measures have also been used; some researchers have chosen to measure suicidal ideation (sometimes combined with death ideation), some have looked at attempted suicide while others have selected completed suicide as the dependent variable.

Furthermore, researchers' criteria for 'old age' vary to a great extent, which has resulted in a range of age groups being included in studies of elderly suicide.

Study	Research design	Age group/ population studied and geographical location	Outcome measure (CS = completed suicide, AS = attempted suicide, SI = suicidal ideation)	Risk factor(s)/correlates identified
<i>Psychological/ psychiatric</i>				
Conwell <i>et al.</i> (2000)	Case-control with psychological autopsies	> or = 60 years primary care patients in New York (42 cases, 196 controls)	CS	Depressive illness; severity of affective symptoms and emotional dysfunction among depressed
Waern (2003)	Retrospective case-control	> or = 65 years in Sweden (85 cases, 153 controls)	CS	Alcohol dependence/misuse
Segal <i>et al.</i> (2011)	Experimental design (self-completed questionnaires)	Community dwelling elderly in Colorado (mean age 71.4 years, n = 109)	SI	Borderline and histrionic personality disorder features; neurotic personality trait
<i>Biological/ physical</i>				
Voracek & Marusic (2008)	Cross-national geographic study	> or = 65 years in 34 European countries	CS	Genetics
Hwang <i>et al.</i> (2010)	Case-control experiment with MRI and VBM scanning	Depressed geriatric hospital patients in Taiwan (n = 70, 26 controls)	AS	Reduced cortical and sub-cortical volume
Shah (2010a)	Cross-national ecological study	Females aged 65-74 and 75+ years	CS	Obesity
Artero <i>et al.</i> (2006)	Retrospective cohort	> 65 years community dwelling in France (n = 1,843)	AS	Coronary artery disease (CAD)
Juurink <i>et al.</i> (2004)	Retrospective case-control	> 65 years Ontario residents (1354 cases, 5416 controls)	CS	Congestive heart failure; COPD; seizure disorder; urinary incontinence; severe pain
<i>Social/cultural</i>				
Pompili <i>et al.</i> (2008)	Psychological autopsy	North Italian residents > or = 65 years (99 cases, 134 controls < 65 years)	CS	Living alone; retirement; shorter time spent in education
Beautrais (2002)	Retrospective case-control	> or = 55 (53 cases, 269 controls) in New Zealand	CS & AS	Low social interaction; relationship problems; financial problems
Purcell <i>et al.</i> (1999)	Retrospective study of coroner reports	> or = 65 years in Honolulu County	CS	Ethnicity

Table 2.1: Some principal risk factors for suicide in older people (from primary empirical studies)

As a result of this research, risk factors for suicide in older people can be fundamentally divided into three main categories; these are psychological, physical/biological, and sociocultural, although some additional factors have been identified, such as weather conditions (Salib 1999). Each of these classifications will now be considered in depth.

2.4.2 Psychological Factors

Psychiatric disorders have been strongly associated with suicide in older people; psychological autopsy findings have shown that among suicide victims aged 65 years and over, 71 to 95 % had a major psychiatric disorder when they died (Conwell & Duberstein 2005). Perhaps unsurprisingly, the most common disorder is major depression, which has been consistently implicated in elderly suicides. Estimates for the prevalence of major depressive illness in suicide in older people range from 44 % to 87 % (Conwell & Duberstein 2005), compared with a prevalence of around only 2 % in the general elderly population (Age Concern 2007). In a large scale case-control study of Ontario residents, Juurlink *et al.* (2004) calculated the odds ratio for depression in suicide in those aged over 65 as 6.44 (95% CI 5.45 – 7.61). Since depression is more common in later life (Age UK 2011), this is a cause for concern but also a reason for optimism as depression is a treatable condition. The population attributable risk (PAR) for mood disorders (i.e. the proportion of suicides that would be prevented if such disorders were completely eliminated from the elderly population) has been estimated at around 74 % (Beautrais 2002). Conwell *et al.* (2000) extended the boundaries of research by assessing the sub-categories of depressed patients who were most at risk of suicide; they found that among depressed primary care patients, those at greatest risk were those with more severe affective symptoms and higher

emotional dysfunction. Evidently this research could have important implications for suicide prevention, allowing the identification of patients most at risk.

A range of other psychiatric conditions have been significantly linked with increased suicide risk in older people, including bipolar disorder (Juurlink *et al.* 2004), affective psychoses and adjustment reaction (Lawrence *et al.* 2000), and comorbid anxiety and depression (Artero *et al.* 2006). However, there is some debate about whether anxiety disorder alone is associated with increased suicide risk in this age group, with studies yielding conflicting results (Juurlink *et al.* 2004; Artero *et al.* 2006).

Alcohol dependence and misuse has been mainly researched in younger people, although it has also been significantly associated with increased risk of suicide in both men and women aged 65 and older (Waern 2003). While this was a controlled study, several controls declined to take part, which could have introduced bias, and sample sizes were very small so it is unclear whether these findings can be generalised. Following significant findings in younger smokers, an attempt was made to associate smoking with suicide risk in older people (Shah 2008), however no statistically significant relationship was observed using multivariate analysis.

Dementia is a condition most commonly associated with ageing, and several studies have investigated the association between this illness and suicide (for example, Miller *et al.* 2008; Chiu *et al.* 2004). None of these have reported a difference in the proportion of suicide cases and controls diagnosed with dementia however. It is possible that those with dementia are at higher risk of suicide at early stages of the disease, before their cognitive ability deteriorates to the extent that they are no longer able to consider or carry out the act of suicide (Draper *et al.* 2010).

The role of personality factors in elderly suicide has also been examined, although this area of research has been neglected in comparison with other psychological factors (Leenaars 2003). This is possibly because personality is viewed as a non-modifiable factor and is therefore difficult to target for prevention. Significant findings include an increased risk of suicidal behaviour in those with the narcissistic personality type (Heisel *et al.* 2007) and a greater likelihood of suicidal ideation in those with a higher degree of neuroticism, and in those with borderline and histrionic features of personality disorder (Segal *et al.* 2011). Further research into personality factors is needed as these studies used very small samples in quite specific settings. Interestingly however, no effect of personality disorders on suicide has been found (Conwell *et al.* 2000).

Another identified psychological risk factor for suicidal ideation and behaviour in older people is perceived burdensomeness, which is believed to mediate the association between depression and suicidal ideation (Jahn *et al.* 2011). This will clearly not be helped by ageist attitudes towards the older population, who may feel that they no longer have a useful role in society and have become a burden to others.

2.4.3 Physical and Biological Factors

The observed pattern of increased risk of suicide with advancing age in most countries (Leenaars 2003; Wu & Bond 2006; Shah 2011a) provides support for the influence of a biological ageing-related mechanism. This section will consider evidence for genetic, biochemical, neurological and physical health factors in determining suicide risk.

Some support for the role of genetics in suicidal behaviour comes from studies of family history. For example, Rubenowitz *et al.* (2001), in a case-control study of suicides in elderly people in Sweden, reported that suicide was significantly more likely in those with a family history of suicide. However, it is difficult to interpret these results with confidence as this may simply be the effect of a shared environment, or imitation. Twin and adoption studies may offer more reliable evidence for a genetic predisposition to suicidal behaviour, as they allow the separation of genetic and environmental factors. Such studies have indeed demonstrated a greater concordance of suicide in monozygotic (identical) compared with dizygotic (non-identical) twins (Roy *et al.* 1991) and a fifteen-fold increased risk of suicide in biological relatives compared with adopted relatives in depressed adult adoptees (Wender *et al.* 1986). A well-controlled geographical study by Voracek and Marusic (2008) adds further evidence for the role of genetic factors in suicide; the researchers used various statistical modelling techniques to show a clear pattern (a J-shaped curve) in elderly suicide rates across central and north-eastern Europe, which they interpreted as fixation of a predisposition to suicidal behaviour in the gene pool during early evolution (the Finno-Ugrian suicide hypothesis). It has been hypothesised that aggressive and impulsive behaviour evolved as an adaptive trait, but in contemporary society (where such behaviour is not accepted) this aggression is instead directed towards the self in suicidal acts (Marusic & McGuffin 2005).

As our understanding of the human genome improves, several researchers have sought to answer the question, "Is there a suicide gene?". Several loci have been implicated, and the genes identified can be classed into three main groups: genes involved in serotonin synthesis, genes involved in serotonergic neurotransmission, and genes involved in

serotonin catabolism (Marusic & McGuffin 2005). There appears to be a stronger genetic association for those who attempt suicide by more violent means (Abbar *et al.* 2001). As elderly people (elderly males in particular) tend to prefer more violent and lethal suicide methods than younger people (Fung & Chan 2011), this research may have especially important implications for this group.

While it is unlikely that there is a 'suicide gene' *per se*, it is difficult to doubt the role of genetics in suicidal behaviour. It is probable that, like many other complex behaviours, there is a genetic predisposition for suicide that may be triggered as a result of adverse environmental circumstances or life events.

There is additional evidence for a biological or neurological basis of suicide in older people. Juurlink *et al.* (2006), in a large scale controlled study of Ontario residents aged over 65 years, found an increased risk of suicide (odds ratio 4.8) in those prescribed selective serotonin reuptake inhibitors (SSRIs), in the first month of therapy only, relative to those prescribed alternative antidepressants. This risk was independent of possible confounding variables including other psychiatric treatment and time of diagnosis. In an experiment to investigate the neuroanatomical correlates of suicide attempts in depressed geriatric hospital patients, Hwang *et al.* (2010) used magnetic resonance imaging (MRI) and voxel-based morphometry (VBM) scanning, which showed that having a history of attempted suicide was associated with smaller cortical and sub-cortical volume in a number of brain regions. Findings such as these could enable a targeted approach to suicide prevention, allowing the most vulnerable patients to be identified and carefully monitored at times when they are at highest risk.

Deteriorating physical health also coincides with an elevated suicide risk in older people. In a descriptive study of coroners' records in Manchester, 65% of suicide victims aged over 65 years were classed as physically ill, and 23% of these had been admitted to hospital in the year prior to committing suicide (Cattell & Jolley 1995). As the prevalence of physical illness is high in the general elderly population, controlled studies are necessary to enable risk to be quantified. Numerous controlled studies using record linkage have shown significant associations between suicide or suicidal behaviour in older people and various medical disorders, including coronary artery disease (Artero *et al.* 2006), congestive heart failure (odds ratio 1.73, 95 % confidence interval 1.33 – 2.24), chronic obstructive pulmonary disease (COPD, OR 1.62, 95 % CI 1.37 – 1.92), seizure disorder (OR 2.95, 95 % CI 1.89 – 4.61) and urinary incontinence (OR 2.02, 95 % CI 1.29 – 3.17) (Juurink *et al.* 2004). Physical illness appears to have an additive effect in older people; having more than one illness seems to disproportionately increase the risk of suicide. There is a significant positive correlation between the number of illnesses and relative risk of suicide, with those with seven or more disorders having a nine-fold higher risk than individuals with no illnesses (Juurink *et al.* 2004). Having more than one illness also appears to reduce the risk of survival following a suicide attempt (Lebret *et al.* 2006).

There are conflicting findings in relation to cancer and suicide risk in older people; one study reported cancer as the only physical disorder independently associated with an elevated suicide risk (OR 2.3, 95 % CI 1.1 – 4.8) (Miller *et al.* 2008), while another showed a reduced risk of suicide in cancer patients relative to the general elderly population (relative risk 3.6) (Lawrence *et al.* 2000). Further research is clearly needed into the relationship between suicide and this important and common condition. There are also large gaps in research on

suicide in terminally ill older people and how the risk differs from the non-terminally ill (Leenaars 2003).

Some gender differences have been reported in relation to physical risk factors for suicide in later life. Chronic pain was identified as a recurrent theme in elderly suicides in a recent selective review, but appeared to be a stronger risk factor for males than females (Manthorpe & Iliffe 2010). In contrast, an increased suicide risk for obese females aged 65 years and over (but not for obese males) was reported by a cross-national ecological study (Shah 2010a). However, evidence of such a correlation is by no means proof of causation, and the researchers themselves noted that the design may have been subject to ecological fallacy.

There is some suggestion that individuals' perceptions of physical health and illness are as important, if not more so, as physical health *per se*. Both prospective studies (such as Turvey *et al.* 2002) and retrospective studies (for example Duberstein *et al.* 2004) have demonstrated a significant independent association between late-life suicide and perceived physical illness. Similarly, in a study at the time of the SARS outbreak in Hong Kong, Yip *et al.* (2010) found using qualitative analysis that the increased suicide rate in the over 65s that coincided with the epidemic was to a large extent due to suicides committed by those who feared contracting the disease. As perceptions of health and actual health status may not always concur, these findings could potentially have an important impact on the management of depressed and anxious patients and possible prevention strategies.

2.4.4 Social and Cultural Factors

While biological and psychological factors are very important in determining suicide risk, there is often some external trigger that may act on a pre-existing vulnerability to precipitate suicidal behaviour. This section will examine the effects of social factors including isolation and stressful life events, cultural factors including ethnicity, and the role of the media in suicide in older people.

The sociologist Emile Durkheim (1951) attempted to explain why some countries had higher suicide rates than others using his social integration theory. He proposed that the total number of suicides was defined by the extent to which individuals were connected to others in their society, and the greater the degree of social integration the lower the suicide rate. Durkheim advocated the importance of understanding suicide at a societal level, rather than purely as an individual act as was previously thought. Durkheim's work has generated a large amount of empirical research into suicide, and there is indeed some support for social integration theory. For example, Middleton *et al.* (2004) found the highest suicide rates in regions of England and Wales characterised by social fragmentation, as measured by variables including the proportion of citizens living alone and population mobility. The association remained after controlling for other area variables; however the relationship was strongest in those aged under 65 years. Different results were reported by Wu and Bond (2006), who showed in their study of 54 nations that suicide rates in those aged over 65 could in fact be more easily predicted by measures of social integration than in young adults. However, this relationship was mediated by psychological variables including home and life satisfaction, indicating the importance of interactions between factors, which Durkheim failed to recognise.

There is additional evidence for the role of cultural factors in suicide risk in older people. Differences in the elderly suicide rate among different ethnic groups have been reported in studies in various countries, including Australia (Burvill 1995), Singapore (Ko & Kua 1995) and Hawaii (Purcell *et al.* 1999). Studies of suicide rates in elderly migrants also lend support to the hypothesis that cultural factors are implicated; those born in countries with a high suicide rate generally remain at highest risk of suicide, and conversely migrants from countries with a low rate remain at low risk (Burvill 1995).

Research indicates a link between the changing status of older people in certain cultures and increased suicide rates. Traphagan (2004) analysed the conversations of a group of elderly people in Japan, a country characterised by a particularly high suicide rate, to explore the perceptions surrounding suicide. The results showed that living in multigenerational households (a common living situation in Japan) was perceived by older people as a sign of dependency, a significant source of stress, and even a risk factor for suicide. After studying the suicide rates in Taiwan, Hu (1995) also suggested that the dependence on children that has become the norm in Asian cultures has led to increased vulnerability among older people.

Isolation appears to be an important factor in increasing suicide risk, and may be even more significant for older people. Various types of isolation are possible, including social and geographical. The population attributable risk (PAR) for low social contact in suicide in later life has been estimated at 27 % (Conwell *et al.* 1991), so while not as great a risk factor as mood disorder (for which the PAR is 74 %), social isolation is a considerable problem nonetheless. Several studies have found that more isolated older people have a significantly higher risk of suicide; loneliness (Waern *et al.* 2003) and having a limited social network

(Beautrais 2002) are reported independent risk factors. Pompili *et al.* (2008) used the psychological autopsy approach to compare elderly with younger suicide victims, and found that the elderly victims were nine times more likely to have lived alone, as well as more likely to be retired and to have spent less time in education than their younger counterparts. However, the study had methodological weaknesses and did not appear to control for the cohort effect of less time typically spent in education for the older age group. It could be therefore argued that this is not strong enough evidence of a causal link and that an elderly control group would be needed to confirm the association. Turvey *et al.* (2002) reported that absence of a relative or friend a person was able to confide in was in fact a predictor of suicide in community dwelling older people; as this was a prospective study with a large number of elderly controls, this adds more weight to the apparent association between social isolation and suicide risk.

Marital status is another factor that has been investigated in relation to suicide risk. Danziger *et al.* (2011) found a significantly higher suicide risk among unmarried men. Similarly, Ross *et al.* (1990) reported a relative risk of 6.4 in widowed or divorced retirement community residents. These findings should be interpreted with caution however as the direction of the effect is not clear; it may be that those who marry also tend to have a reduced vulnerability to stressors or psychiatric illness, or those who divorce have an increased vulnerability, rather than marriage itself having a protective effect against suicide. This demonstrates the importance of controlling for potential confounding variables such as health status and personality, for example.

It is also important to study the effects of geographical or physical isolation from social or health facilities, particularly in older people who may be less able to mobilise and travel by

themselves or may be more difficult to reach by others. Numerous studies have compared suicide risk in urban and rural areas and there is now a general consensus that rural areas have higher suicide rates (Singh & Siahpush 2002; Levin & Leyland 2005; Hirsch 2006). Men living in remote rural areas appear to have the greatest risk of suicide (Levin & Leyland 2005; Singh & Siahpush 2002). It has been suggested that this is due to greater psychological and sociocultural barriers to treatment in rural areas in addition to geographical isolation (Hirsch 2006).

Stressful life events are common in the weeks or months prior to suicide; this is true for all age groups, and it appears that older people are equally affected by such stressors.

However, as would be expected, the type of events differs between age groups, with work-related problems and legal difficulties being more often implicated in younger suicides, and losses including bereavement more frequently involved in elderly suicides (Conwell *et al.* 1991). Bereavement is another risk factor for which there appears to be gender differences in response; Guohua (1995), in a large prospective study that controlled for important social and behavioural variables (including socioeconomic status, education, church attendance and smoking) found that bereavement was a risk factor for suicide in elderly men only. It may appear that women are more able to cope with loss of their spouse, although the typical elderly suicide attempter has been identified as a widowed, socially isolated, lonely and depressed woman (Lebret *et al.* 2006). Suicide risk appears to be highest in the first year after bereavement (Guohua 1995).

Family discord or conflict has been identified as another significant risk factor for suicide in older people (Waern *et al.* 2003; Duberstein *et al.* 2004; Rubenowitz *et al.* 2001). Family discord has even been shown to be the most significant independent risk factor for suicide

along with mental disorder in both men (odds ratio 10.0) and women (odds ratio 9.2) aged over 65 years (Rubenowitz *et al.* 2001). Financial problems including debt also convey an increased suicide risk in older people (Rubenowitz *et al.* 2001), but appear to be more important in the 'young old' than the 'old old' (Waern *et al.* 2003). Again this highlights the need to study subgroups of the older population as there may be significant differences between them.

Few studies to specifically address the effect of the media on elderly suicides have been reported. However, research has shown that stories of suicides in television and newspapers (Stack 1990) and more recently the internet (Shah 2010b) are associated with an increased prevalence of suicide in elderly persons. Males and females appear to be equally affected by publicised suicides, but identification with the reported suicide victim seems to be necessary, with celebrity suicides and other elderly suicides being associated with a higher elderly suicide rate (Stack 1990). It should be noted that both of these studies were correlational, using cross-sectional data and therefore the relationship may be spurious. This is clearly an area where further research is needed to investigate whether the association is causal and to confirm the direction of the effect, so that appropriate preventive strategies can be designed.

2.4.5 Summary

Suicide in older people is clearly a complex phenomenon of multi-factorial aetiology. In a historically neglected research area, there is an increasing amount of evidence for an independent role of psychological, biological and physical, and social and cultural factors in contributing to suicide and suicidal behaviour. There are some differences between risk

factors for suicide at different stages of life, for example the greater importance of physical illness, bereavement, and isolation, and the lesser significance of financial and legal problems in later life.

Studies have been diverse in terms of both the methodologies used and their findings, but more recent research has provided evidence of interactions between various factors in determining suicide risk. It appears that, as with many psychological conditions, suicide can be considered using a diathesis-stress model (Mann *et al.* 1999); there seems to be a genetic or biological predisposition to suicidal behaviour that may triggered by a number of environmental factors including stressful life events. Interactions are also apparent between psychological and social factors (e.g. Wu & Bond 2006) and between physical and psychological factors (i.e. perceptions of health status – Turvey *et al.* 2002; Duberstein *et al.* 2004; Yip *et al.* 2010). Exploring such interactions further is a direction that future research into suicide risk in older people should take, as well as examining in more depth the differences between subcategories of this segment of the population. Gender differences, such as the apparent vulnerability of elderly men to bereavement and pain, warrant further investigation, as well as possible contrasts between the ‘young old’, ‘old old’ and ‘oldest old’.

Some of the identified risk factors (such as isolation) are modifiable while others, such as genetics, are non-modifiable. However it is important to establish both types as even non-modifiable risk factors may give an indication of the biological mechanisms involved. The establishment of the most significant risk factors is necessary so that those most at risk can be recognised and the signs can be detected early by healthcare professionals or anyone in contact with the elderly individual.

2.5 Theories/Models of Suicide in Older People

While establishing risk factors for suicide is vital, this does not answer the question “What leads a person to become suicidal?”. This section will examine some of the theories that have been proposed to address this question.

The theories vary in their emphasis on personal, interpersonal and external factors in relation to suicide in elderly individuals. A basic model (as shown in **Figure 2.1**) suggests that suicide and suicidal behaviour are part of a continuum, whereby feelings of hopelessness lead to suicidal thoughts, ideation, plans, suicide attempts and finally suicide. While this is a good representation of the different aspects of suicidality, as research has shown, not every elderly person experiences each of these stages in order. For example, attempted suicide is less common in older persons (Gallo *et al.* 1994).

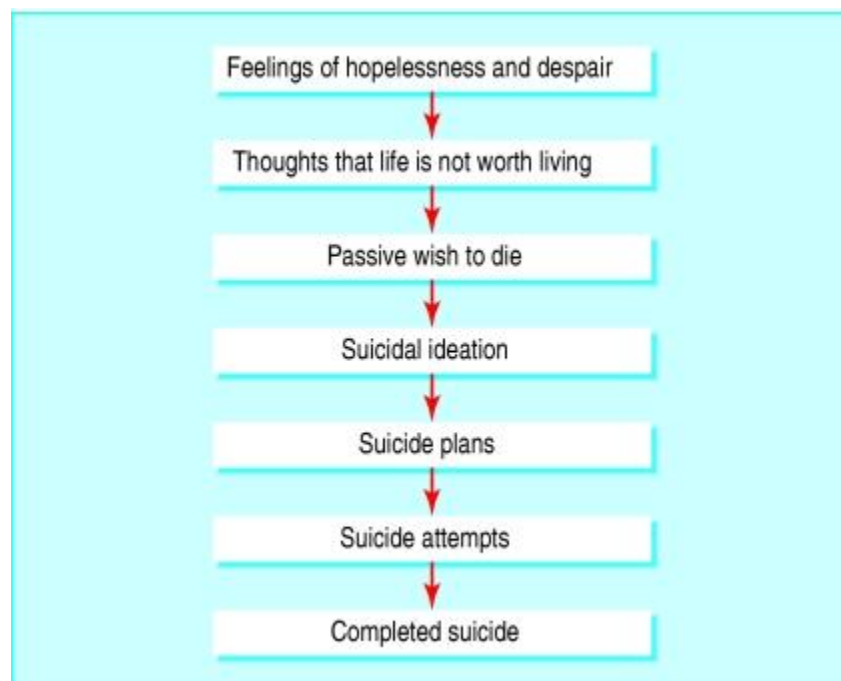


Figure 2.1: Model of suicidality, reproduced from ‘Recent developments: Suicide in older people’, O’Connell *et al.* (2004), *British Medical Journal*, vol. 329 (7471), pp. 895-899, with permission from BMJ Publishing Group Ltd.

Shah (2011b) has proposed the 'epidemiological transition hypothesis' to attempt to explain international differences, trends associated with age, and changes in elderly suicide rates over time. The hypothesis is based on a quadratic equation that specifies suicide rate is a function of socioeconomic status, as measured by gross national domestic product (GDP). A curvilinear relationship (an inverted U-shaped curve) between GDP and suicide rate was reported, i.e. those countries with the highest and lowest GDP experienced the lowest suicide rates in older people. However, the evidence was based on a cross-national study using World Health Organisation data, for which the validity and comparability of both suicide rates and socioeconomic status may be questionable, particularly for low income countries.

A more qualitative theory was proposed by Van Orden *et al.* (2010). This theory purports that the desire to commit suicide is the result of two interpersonal factors – thwarted belongingness and perceived burdensomeness. While this theory was not specifically intended for older people, it may be particularly relevant for this group as there is empirical evidence for the link between perceived burdensomeness and the degree of suicidal ideation in older people (Jahn *et al.* 2011).

Another theory based on qualitative evidence specifies the importance of control in elderly people who develop a wish to die. After analysing the results of psychological autopsies, Kjolseth *et al.* (2009) proposed that loss of control and an inability to accept the loss of function that is associated with ageing caused certain older people to end their own lives. Those most at risk were those whose self-worth was most strongly linked to being in control. While this theory was based on research with a very select sample of 23 suicide

victims in Norway, a recent study has found further support for the role of control in suicidal ideation in elderly people (Rurup *et al.* 2011).

Further qualitative research into the thought processes of suicidal elderly people will be necessary to begin to prove or disprove theories of suicide such as those discussed above.

Theories of suicidal behaviour are relatively lacking in the scientific literature (Van Orden *et al.* 2010) and therefore deserve more attention.

2.6 Prevention of Suicide in Older People

The ultimate goal of research into elderly suicides is prevention; this may occur at various points along a suicidal person's 'trajectory of risk'. Each modifiable risk factor provides an opportunity for prevention, and the involvement of both primary and secondary care services is important. Reducing access to means of committing suicide is another possible strategy for prevention. The main preventive measures that have been studied in older people will now be discussed.

As depression and associated mood disorders are considered the greatest risk factors for suicide in later life (Juurink *et al.* 2004; Beautrais 2002), these disorders have been the focus of many studies of interventions. Since high numbers of elderly suicide victims are in contact with their GP in the months before suicide (Cattell & Jolley 1995; Bruce *et al.* 2004), primary care interventions are key. A randomised controlled trial of depressed elderly primary care patients (the PROSPECT trial) found that an intervention based on the use of a protocol specific to the treatment of depression in older adults, and the involvement of a depression care manager, resulted in reduced suicide ideation (Bruce *et al.* 2004). The intervention was effective for both mild and severe cases of depression. While the study did

not aim to examine completed suicides, the findings are promising in that they show such interventions are feasible for reducing suicidal tendencies in older people in a primary care setting.

There is still much room for improvement in the treatment of depression in older people however. Cattell and Jolley (1995), in their review of coroners' records, found that while at least 60 % of elderly suicide victims were clinically depressed at the time of death, only 25 % had been prescribed antidepressants. The situation does not appear to have improved significantly; a more recent study found that only 20 to 30 % of elderly victims had been treated with medication for depression (Pompili *et al.* 2008). Treatment of depression is another area in which there appears to be differences between the 'young old' and 'old old' populations. Waern *et al.* (2003) reported that the suicide victims over 75 were less likely to have received treatment for their depression than the 'young old'. Improved detection and faster treatment of depression in older people, especially the oldest old, is clearly needed.

The reduction of social isolation is another principal target for prevention. Participation in organisations and hobbies has been linked to decreased risk of suicide in elderly people (Rubenowitz *et al.* 2001). A prospective intervention study in northern Italy, in which the most isolated and disabled elderly people (mean age 80 years) were provided with a 24-hour telephone helpline including twice-weekly telephone interviews, found that this led to a significant long-term reduction in suicide rates in elderly women (De Leo *et al.* 2002). The researchers proposed that this was due to an increased sense of connectedness and reduction in isolation felt by the users of the service.

The results of a recent cross-national European study by Yur'yev *et al.* (2010) showed that countries with more positive perceptions and attitudes towards older people had lower

suicide mortality rates in this age group. This demonstrates the role that the community as a whole can play in improving wellbeing and reducing the risk of suicide in the older population. While this was a large study that used European Social Survey data, further research is needed to exclude the possibility of the association being spurious.

There is much historical evidence that reducing access to methods can help to prevent suicides. As an example, the detoxication of domestic coal gas in Britain from the 1960s onwards resulted in a reduction in suicides by coal gas poisoning and was associated with a reduction in the overall suicide rate (Stengel 1980). There is evidence that reducing access to means may be an effective measure in the prevention of suicides in older people, and may be even more effective than for their younger counterparts. A detailed study of elderly suicide attempters who had taken an overdose of prescribed medication (a common method in older people) found that availability and ease of access were major factors in determining suicidal behaviour (Gavrielatos *et al.* 2006). The effect of limiting access to firearms on suicide rate was investigated by Ludwig and Cook (2000). The researchers found that after implementation of new legislation concerning access to firearms in certain states in America (the Brady Handgun Violence Prevention Act), there was a significant reduction in the number of suicides by firearms in those over 55 years in those states when compared with 'control' states that already had such legislation in place. No significant change was observed for younger age groups.

A recent systematic review showed that the majority of prevention programs have been more effective for older women than for older men (Lapierre *et al.* 2011). The next step will be to determine what measures work for men, and more intervention trials with large samples of older participants are needed.

The prevention of suicide in later life is the responsibility of many different people, ranging from health and social care organisations, voluntary groups and charities such as the Samaritans and Age UK, to the general population. Everyone concerned must work together to identify those at risk and intervene at an appropriate time.

2.7 Conclusion

Suicide in older people is a traditionally neglected area of research, but with suicide risk increasing with age, and population ageing due to rising life expectancy, it is becoming an increasingly significant issue. Despite heterogeneity between studies and the methodological problems faced by suicide researchers, there is now growing empirical evidence for a number of psychological, biological, physical, social and cultural factors in influencing suicide risk.

Theories that attempt to explain why an individual develops a desire to commit suicide are based mainly on qualitative research. Promising recent theories have placed emphasis on interpersonal and personal factors including thwarted belongingness, perceived burdensomeness and loss of control.

Prevention of elderly suicide is possible, but collaboration between various stakeholders will be necessary to achieve this goal. Improved recognition and treatment of depression in later life, the prevention of isolation and ageist attitudes, and restricting access to methods as far as is practicable will likely be effective measures.

Despite the growing body of research findings, many gaps in this domain still exist. Future research should focus on interactions between risk factors, and additional research is

needed on suicide risk in those with terminal illnesses and cancer, an area in which conflicting findings remain in the literature. Studies of gender differences in suicide in older people, as well as further comparisons of the 'young old', 'old old' and 'oldest old' are also directions for future research. More intervention studies will be essential to assess the effectiveness of various preventive measures, and there is a clear requirement for more systematic reviews of both qualitative and quantitative studies of suicide risk, theories and prevention.

Chapter 3: Methods

3.1 Introduction

The project involved the use of mixed methods. This approach is increasingly being taken in public health studies to produce better quality evidence (Moffatt *et al.* 2006) and can overcome some of the problems associated with both qualitative and quantitative methods (Barbour 1999). Quantitative epidemiological analysis of suicide and comparison of suicide data was combined with a qualitative retrospective case study analysis of individual suicides in addition to a questionnaire survey that included open-ended questions. Quantitative methods allow suicide to be studied from a population perspective, allowing the identification of high risk groups, trends over time and prevalence of methods, while qualitative studies are more valuable in explaining what leads a particular individual to suicidal behaviour and in the development of theories. The methodology used in the study of suicides and the survey will now be discussed in detail.

3.2 Suicides in the 75+ Age Group in Cornwall

3.2.1 Data Sources

Research questions 1 to 3 and 5 to 7 were addressed by the analysis of data that was collected from three different sources; these were coroner's reports, the Office for National Statistics (ONS) Public Health Mortality Files (PHMF) and the pre-existing local suicide audit database that was created by the NHS Cornwall and Isles of Scilly Public Health team. These sources were chosen for reasons of availability and because they contained all of the

information needed to meet the aims of the research, however other sources of suicide data exist such as the National Confidential Inquiry (NCI) and medical records. The NCI was not selected as a source for this research as it only contains data about patients in contact with mental health services and most of the reported information is based on ONS Mortality File data (Appleby *et al.* 2012).

The PHMFs were used for the quantitative study of suicide rates while coroner's records and the audit database provided more detailed information for the study of individual cases. There is only one coroner for all deaths occurring in Cornwall (whether residents or non-residents), and privileged access to these records was given as the research was being conducted in conjunction with the Primary Care Trust. A different coroner holds information on deaths on the Isles of Scilly, but it was not necessary to access these records as there were no suicides in this location for the age range and time period studied. The PHMFs and local audit database included all deaths of Cornwall residents regardless of where they occurred. Data from the three sources was compared in terms of numbers and completeness.

The data collected included suicides and deaths of undetermined intent (i.e. open verdicts) occurring in people aged 75 and over in Cornwall and the Isles of Scilly between 2006 and 2010. Open verdicts were included for two main reasons; firstly in order to remain in accordance with national suicide statistics, and secondly existing research has shown that the majority of open verdicts are likely to be suicides (Linsley *et al.* 2001).

The decision was taken to focus on completed suicide (rather than attempted suicide or suicide ideation) as this could be more easily measured quantitatively from available statistics, and detailed qualitative information could also be easily accessed from coroner's

records. Precise numbers and data on attempted suicides may be more difficult to access and measure systematically as not every suicide attempt is likely to be recorded.

3.2.2 Epidemiological Study of Suicide in Cornwall

To answer research question 1, the relevant records in the ONS PHMFs were identified from the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) codes for suicides (X60 to X84) and deaths from injury of undetermined intent (Y10 to Y34, excluding Y33.9) (World Health Organisation 2010).

Crude suicide rates were calculated for the years 2006 to 2010 (using ONS mid-year population estimates) for the 75+ age group in Cornwall and the Isles of Scilly to assess the size of the problem and to examine trends over time. To enable comparison of people aged 75 and over with younger age groups in Cornwall, mean suicide rates (with 95 % confidence intervals) for different age groups were calculated in 10-year age bands, as this was more specific than conventional data on suicide rates as reported by the ONS and previous audits. In addition, a Standardised Mortality Ratio (SMR) was calculated for the five year period (using 2008 mid-year population size) to allow comparison of suicide rates in the 75+ age group in Cornwall with the same age group in the UK overall.

3.2.3 Case Study Analysis of Suicides

Research questions 2, 3, 5, 6 and 7 were addressed through a retrospective case study analysis, involving the collection of more detailed data on all suicides and open verdicts in

the 75+ age group from coroner's records and the local suicide audit database.

Retrospective analysis of these documents (as opposed to the psychological autopsy method) was selected as this gave a large amount of rich information that was sufficient to answer the research questions, and the coroner's records included documentation of pre-conducted interviews with family members and associates of the deceased individuals. A psychological autopsy approach was therefore not deemed necessary. Although psychological autopsies are a popular method for establishing risk factors (e.g. Conwell *et al.* 1991; Pompili *et al.* 2008) they are subject to various problems including reporting biases (Conwell *et al.* 2002) and time delays between death and interviewing, which can lead to memory decay and 'reconstruction' of events (Pouliot & De Leo 2006).

The particular time range of deaths between 2006 and 2010 was chosen for reasons of availability in the two data sources, and it was also felt that this would give more relevant information than older data. Records where the year of death was later than 2010 were not included to give complete data years, as delays of up to 12 months are common in registering suicides (South West Public Health Observatory 2011). Coroner's records were systematically searched to ensure that no cases were missed. Any open verdicts that could be identified as obviously not suicide or very unlikely suicide were excluded. In any cases where this categorisation was not clear, a second or third person was consulted until a consensus was agreed. Examples of excluded open verdicts were: accidental falls with bronchopneumonia and fractures, malignant mesothelioma, and cases of advanced decomposition where suicide was considered unlikely (see **Appendix A** for full list). Any deaths occurring outside Cornwall and the Isles of Scilly were also excluded.

Based on the review of risk factors in **Section 2.4**, the data collected on suicides and open verdicts included age, gender, year of death, season of death, marital status, living circumstances, previous occupation, suicide method, place of death, presence of suicide notes or other warnings, contact with health services, previous suicide attempts or self-harm, psychiatric disorders, physical disorders, and other factors that may have contributed to suicide (e.g. debt, bereavement, etc.). Contributing factors were determined as they were reported by the coroner, who based this on the detailed inquest that included interviews with doctors, family members or anyone else in contact with the individuals prior to their death. Problems stated in suicide notes (where these were available) were also presumed to have contributed to the desire to commit suicide. The data was stored in a temporary database (with individual identifiable information such as name, address, date of birth and date of death removed to protect confidentiality), from which analysis was carried out.

3.2.4 Analysis of Suicide Data

Quantitative analysis of suicide data was performed using MS Excel and SPSS. Detailed analysis of suicide cases was mainly performed through descriptive statistics (due to the relatively small sample size) with the calculation of mean, mode, and proportions or percentages for the variables listed above. Some variables were re-coded and grouped into broader categories; for example, location of suicide was classed as either 'Home' or 'Public place' and physical disorders were classified according to body system affected. This was done to facilitate analysis and to protect individual confidentiality. In order to further protect confidentiality and to comply with ONS policy, where small numbers were involved,

any counts (or proportions based on counts) of fewer than three cases were grouped for analysis and reporting (Office for National Statistics 2010).

Descriptive analysis was also performed to consider gender and age-related differences in suicide method and location, risk factors and warnings. Inferential statistical analysis was undertaken where appropriate, for example the independent samples t-test was used to examine age differences in the proportion of open verdicts.

Some qualitative content analysis was undertaken where appropriate, such as identification of documented behavioural changes prior to suicide, recognition of key or recurring themes in suicide notes, and consideration of social factors that were judged by the coroner to have contributed to the suicide.

3.3 Survey of Adults Aged 75 and Over in a Rural Community in Cornwall

Research question 4 was answered through a questionnaire survey that was conducted between March and April 2012.

3.3.1 Rationale for Survey

Suicide can be understood using a diathesis-stress model (Mann *et al.* 1999). While psychiatric and physical illnesses are commonly implicated in suicide in older people, they are not involved in every elderly suicide, and are often combined with social factors and stressful life events which often appear to precipitate a suicide (e.g. Conwell *et al.* 1991;

Rubenowitz *et al.* 2002). Social isolation has been implicated in suicide risk in older people (Conwell *et al.* 1991; Beautrais 2002; Turvey *et al.* 2002), so this was given a particular focus in the questionnaires.

The principal aims of the survey were:

1. to produce a better understanding of the most common concerns, worries and problems faced by older people living in a geographically isolated region and
2. to allow them to make some suggestions about how these could be reduced, thereby helping to identify possible preventive measures for stress and social isolation.

The questionnaire/structured interview method was selected because of its advantages of eliciting comparable responses relatively quickly and cheaply (Couchman & Dawson 1990). Both closed multiple choice questions (including rating scales) and open questions were included in the questionnaire. This was designed to complement the suicide data, adding more qualitative information. In addition to a literature review, the questionnaire content was based on an informal discussion with a convenience sample of three people of the age group to be surveyed. The questionnaire was piloted with five elderly respondents and no changes to either the content or layout were necessary. A sample questionnaire copy is included in **Appendix B**.

3.3.2 Participants and Area Surveyed

Community dwelling older people aged 75 years and over (to match the age of the suicide cases) living in a rural village in mid Cornwall and six surrounding hamlets were invited to take part. The area was chosen for reasons of convenience due to time and resource

constraints, but also because this type of area is typical of a large part of Cornwall and the Isles of Scilly; only 8 % of the Cornwall population live in urban areas, compared with 73 % in England overall (Health Protection Agency 2012). Moreover, rural suicide rates have been shown to be higher than in urban areas (Levin & Leyland 2005; Hirsch 2006). The area surveyed was also lacking in terms of facilities and services for older people (there was no shop or public transport, for example) so the questions on proposed and suggested ways to improve the experience of ageing (see questions 18 to 22 in **Appendix B**) were particularly relevant to those surveyed.

Older people living in the community were considered more representative of the general elderly population than groups such as hospital patients, social groups, and nursing home residents, which could have produced biased results. In addition, living in the community is the most common situation for older people in the UK, with around three quarters of people aged 90 and over continuing to live in private households (Soule *et al.* 2005). The only exclusion criterion used was anyone with an obvious cognitive impairment.

3.3.3 Recruitment and Completion

The convenience sampling method was used and every individual of the 75+ age group in the area was asked to participate to ensure there was no bias within the sample. Potential survey participants were identified by visiting the local village hall, chapel and also through word of mouth to identify more isolated, difficult to reach and immobile individuals. All participants were approached in person and asked if they wished to take part; this was done either at a social event in the village or at their home. The survey began in the village and

continued in the surrounding hamlets until the end of the period for data collection and until a sufficient number of cases for analysis had been obtained.

The decision to complete questionnaires in person was taken as research has shown that personal interviews tend to lead to better quality information than postal questionnaires, which are more likely to result in information being underreported or not reported at all (Bergmann *et al.* 2004). In addition, the results of a study by Thorslund and Wärneryd (1990) suggested that response inconsistency may be a particular problem with elderly respondents, with face-to-face surveys yielding more accurate information than postal surveys with the same questions.

Some participants preferred to fill out the questionnaire themselves. Clarification or guidance, whether during self-completion or interviewing, was given only when required so as to minimise any potential interviewer bias. Questionnaires were supplied in a larger font format for those with poor eyesight.

3.3.4 Analysis of Survey Data

All quantitative analysis of survey data was performed in SPSS. Closed and multiple-choice responses were analysed quantitatively using descriptive analyses including calculation of mean, mode and proportions. Some questions were re-coded into broader categories (for example, occupation was broken down into five categories).

Content analysis was used for the more qualitative open-ended questions in the questionnaire. The purpose of this was to enable the responses to be quantified objectively and systematically (Polit & Hungler 1991).

Analysis involved the identification of key themes, the classification of responses into categories and sub-categories according to these themes, and finally quantification of responses. Attitudes that were implicit in responses were also considered for certain questions, for example identification of positive or negative attitudes towards young people regarding perceptions of respect. The consideration of such latent content in addition to manifest content in actual phrases used can provide richer data (Wood 2001). Any remaining outlying responses or 'deviant' cases that did not fit into the categories were considered separately. To overcome the problem of subjectivity that is frequently associated with qualitative analysis (Silverman 2005), a second individual independently classed the responses into categories according to content.

To enable some further statistical analysis, survey respondents also acted as a control group with the suicide victims so that certain characteristics such as occupation, marital status and living circumstances could be compared.

Chapter 4: Results

4.1 Introduction

In this chapter the findings of the research will be presented, including a comparison of data sources and epidemiological study of suicide in Cornwall, the case study analysis of suicides from coroner's records and the local audit database, and the key findings from the survey of the 75+ age group in a rural community in Cornwall.

4.2 Part 1: Suicide Data and Epidemiology

4.2.1 Comparison of Data Sources

There were some differences between the three data sources (the ONS Public Health Mortality Files, coroner's records and the local suicide audit database) in terms of both number of deaths (see **Table 4.1**) and completeness of records.

Data source	No. of pure suicides	No. of undetermined deaths (open verdicts)	Total suicides and undetermined deaths	Ratio of undetermined deaths:suicides
ONS Mortality Files	22	17	39	0.77
Coroner's records	21	13	34	0.62
Local audit database	11	6	17	0.55

Table 4.1: Number of records available (suicides and undetermined deaths/open verdicts occurring in the 75+ age group, 2006 to 2010)

N.B. Numbers are after exclusion of cases that were obviously not or very unlikely suicides

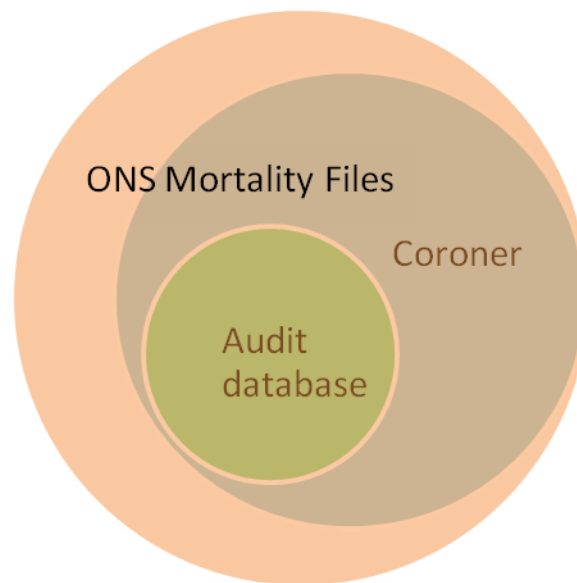


Figure 4.1: Comparison of cases in each data source

After exclusion of those cases that were obviously not suicide or where suicide was considered highly unlikely, there were minor differences in the number of suicides and undetermined deaths (i.e. open verdicts) reported by the ONS and the coroner. These differences are shown in the Venn diagram in **Figure 4.1**. Although the coroner's records had no cases that were not reported by the ONS, information on five additional cases was held by the ONS, so the Mortality Files consequently had a higher ratio of undetermined deaths:suicides than the other data sources. Examination of these cases revealed that the discrepancy was mainly in the open verdicts; the ONS had included four cases that were stated to be likely accidents or highly unlikely suicides by the coroner. An example of such a case was where the body was found in a state of advanced decomposition and there was no evidence to suggest suicide had taken place. These cases were therefore excluded from the detailed analysis.

Additionally in one suicide case the person was residing in a care home outside Cornwall at the time of death, therefore the information was held by a coroner in another region as the death was not registered in Cornwall. This case was also excluded from the analysis.

The Cornwall and Isles of Scilly Primary Care Trust's suicide audit database contained information on approximately half of the suicides occurring in Cornwall in the over 75 age group between 2006 and 2010. This was an incomplete resource as the public health team rely on data being sent from other sources (the deceased person's GP, Cornwall Partnership Foundation Trust mental health service and coroner). The records that were available on this system were therefore more detailed than the Mortality Files and the coroner's records as they were comprised of information from the three sources.

4.2.2 Epidemiological Study of Suicide in Cornwall

Using the ONS data, suicide rates were calculated for the 75+ age group in Cornwall and the Isles of Scilly. The number of suicides and crude rates in this age group between 2006 and 2010 are shown in **Table 4.2**. There are fluctuations from year to year in the number of deaths from suicide and injury of undetermined intent, and it is difficult to establish trends in suicide rate in those aged 75 and over as such small numbers are involved. However, the latest year examined, 2010, had the highest rate of 22.0 deaths from suicide per 100,000 population.

Year	No. of suicides and undetermined deaths	Crude rate per 100,000 population
2006	10	19.1
2007	6	11.3
2008	4	7.5
2009	7	13.0
2010	12	22.0

Table 4.2: Number and rate of suicides and undetermined deaths (i.e. open verdicts) in the 75+ age group in Cornwall and Isles of Scilly 2006 to 2010

Source: ONS Public Health Mortality Files

Note: Male and female numbers/rates not reported separately due to small numbers

As **Table 4.3** shows, suicide accounts for a relatively large proportion of deaths in younger age groups, particularly those aged under 35 years, and makes up a tiny proportion of deaths in those aged 75 years and over, in whom all-cause mortality is highest. Suicide (and deaths from injury of undetermined intent) is responsible for a slightly higher proportion of mortality in the 75+ age group in Cornwall than in England overall, accounting for 0.3 % of all deaths in males of this age group compared with 0.2 % in England between 2008 and 2010.

	Number of deaths from suicide and injury of undetermined intent		Number of deaths from all causes		Suicide as proportion of total deaths (%)	
	Male	Female	Male	Female	Male	Female
Cornwall & IOS						
15-34	25	13	134	62	18.7	21.0
35-64	66	15	1,303	873	5.1	1.7
65-74	6	3	1,634	1,125	0.4	0.3
75 +	15	8	5187	7175	0.3	0.1
England						
15-34	2593	708	13,395	6,037	19.4	11.7
35-64	5829	1796	126,034	82,849	4.6	2.2
65-74	659	281	131,454	92,338	0.5	0.3
75 +	677	329	393788	537662	0.2	0.1

Table 4.3: Suicide and all-cause mortality by age group and gender for Cornwall and Isles of Scilly and England, 2008-10

Source: South West Public Health Observatory, ONS Public Health Mortality Files, and NHS Information Centre

Table 4.4 shows the total number of suicides occurring between 2006 and 2010 and the calculated mean crude rates (with 95 % confidence limits) for each 10-year age group in Cornwall and the Isles of Scilly. The mean rates by age group and gender are represented graphically in **Figure 4.2**. It can be seen that overall males were at greater risk of suicide than females; between 2006 and 2010 males had a mean annual rate of 16.8 deaths per 100,000 population (95 % confidence interval or CI 11.4 – 22.2), which was significantly higher than the female rate of 6.3 (95 % CI 3.1 – 9.5) during this period.

The age group with the highest suicide rate between 2006 and 2010 was the 75 to 84 years category, with a crude mean annual rate of 15.5 (95 % CI 2.9 – 28.1) deaths per 100,000 population. The 85+ age group had a lower overall suicide rate of 12.5 (95 % CI 0 – 29.9) deaths per 100,000 population per year. Males aged between 75 and 84 years were at highest risk of suicide, with a crude rate of 25.8 (95 % CI 1.1 – 50.5) deaths per 100,000

population per year. For females however the age group at highest risk was the 25 to 34 years category, with a crude rate of 9.4 (95 % CI 0 – 21.3) deaths per 100,000 population per year, although females aged 85 and over had the second highest crude rate, which was 9.1 (95 % CI 0 – 27.1) deaths per 100,000 population. Interestingly, the ‘young old’ (the 65 to 74 age group), both males and females, were at lowest risk of suicide.

Due to the small numbers involved (as suicide is a rare event), it was difficult to compare the different age groups in Cornwall statistically to determine whether one group had a significantly higher rate than another. Wide confidence intervals were an inevitable outcome of the comparison of subgroups in Cornwall, and these are shown for each category in **Table 4.4**. Confidence intervals are much larger for the older age groups, which have smaller populations and a smaller absolute number of suicides, so it cannot be shown that persons aged 75 and over have a significantly higher suicide risk than younger age groups in Cornwall.

Gender	Age group	No. of suicides (total 2006 to 2010)	Crude mean annual suicide rate per 100,000 population	Lower confidence limit (95 %)	Upper confidence limit (95 %)
Male	15-24	22	13.9	0.9	26.8
	25-34	24	18.7	2.0	35.4
	35-44	37	21.6	6.0	37.1
	45-54	39	22.6	6.7	38.5
	55-64	33	16.9	4.0	29.7
	65-74	7	5.0	0.0	13.2
	75-84	21	25.8	1.1	50.5
	85+	5	19.8	0.0	58.7
	Overall male	188	16.8	11.4	22.2
Female	15-24	9	6.3	0.0	15.4
	25-34	12	9.4	0.0	21.3
	35-44	15	8.1	0.0	17.3
	45-54	11	5.9	0.0	13.7
	55-64	10	4.9	0.0	11.6
	65-74	6	4.1	0.0	11.4
	75-84	8	7.5	0.0	19.2
	85+	5	9.1	0.0	27.1
	Overall female	76	6.3	3.1	9.5
Overall Male and Female	15-24	31	10.3	2.2	18.3
	25-34	36	14.1	3.8	24.3
	35-44	52	14.6	5.7	23.4
	45-54	50	13.9	5.3	22.6
	55-64	43	10.7	3.6	17.9
	65-74	13	4.5	0.0	10.0
	75-84	29	15.5	2.9	28.1
	85+	10	12.5	0.0	29.9
	Overall M & F	264	11.4	8.3	14.4

Table 4.4: Number of suicides and mean rate with 95 % confidence limits for 2006 to 2010 (including suicides and undetermined deaths/open verdicts) in Cornwall and Isles of Scilly by gender and 10-year age group

Source: ONS Public Health Mortality Files

Note: Age group with highest rate highlighted in red

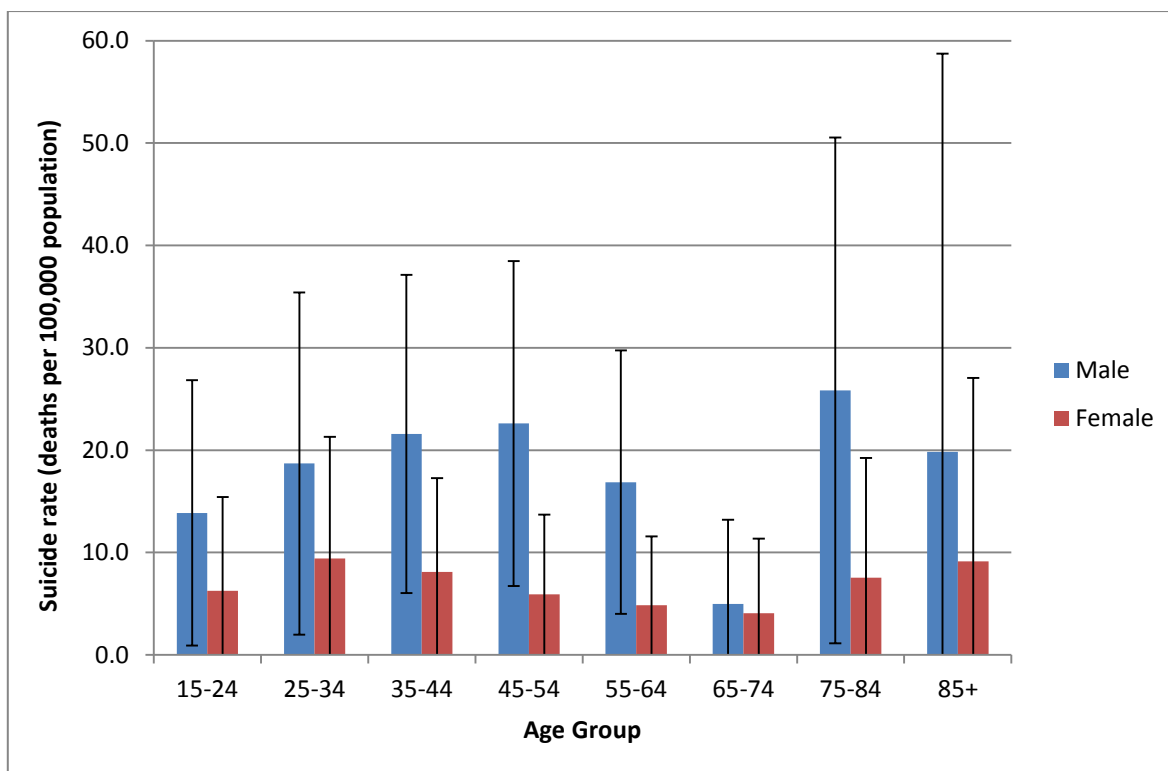


Figure 4.2: Mean suicide rate in Cornwall and Isles of Scilly, including suicides and undetermined deaths, 2006 to 2010, by age group and gender (with 95 % confidence intervals)

Source: ONS Public Health Mortality Files

Figure 4.3 shows a comparison of suicide rates for different age groups in Cornwall (and the Isles of Scilly) with the UK. With the small numbers involved when calculating a mean annual rate, and the resulting wide confidence intervals for Cornwall, the suicide rates for the 15 to 44, 45 to 74, and 75+ age groups did not differ significantly between the two regions. However, the largest difference in the mean rate for Cornwall and the UK overall was in the 75+ age group, which appeared to have a considerably higher suicide rate in Cornwall and was therefore investigated further. The mean rate between 2006 and 2010 for males of this age group was 24.4 deaths per 100,000 population in Cornwall and the Isles of Scilly compared with only 14.4 deaths per 100,000 for the UK. The suicide rate for

females aged 75 years and over was also higher in Cornwall, with a mean rate of 8.1 deaths per 100,000 compared with 4.4 for the UK overall.

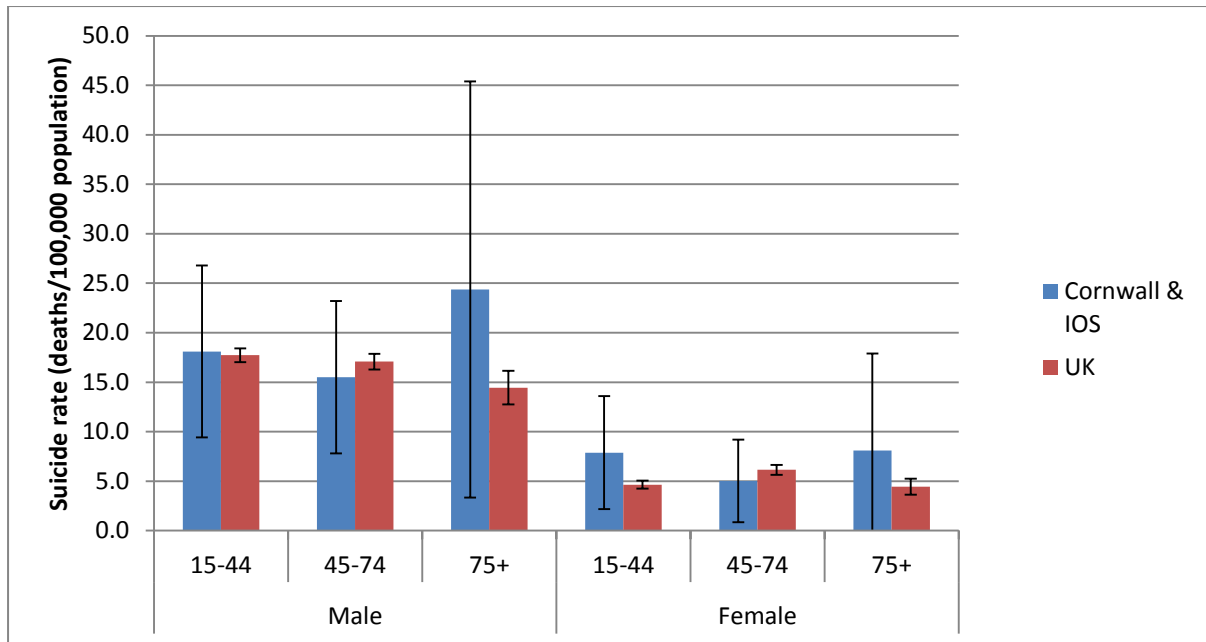


Figure 4.3: Comparison of mean suicide rates (2006 to 2010) with 95 % confidence intervals, including suicides and undetermined deaths, for Cornwall and Isles of Scilly with United Kingdom by age group and gender

Source: Office for National Statistics 2012b (UK data) and ONS Public Health Mortality Files (Cornwall and Isles of Scilly)

As another measure of statistical significance for the apparently elevated suicide rate in people aged 75 years and over in Cornwall, a Standardised Mortality Ratio (SMR) was calculated for the total number of suicides between 2006 and 2010 in Cornwall and the Isles of Scilly compared with the United Kingdom overall. This gave larger numbers to enable statistical comparison. The result showed that in the over 75 age group in Cornwall there were 39 observed deaths from suicide and injury of undetermined intent in total in the five-year period, compared with an expected 23 deaths. The calculated SMR was 172.4 (i.e. the death rate from suicide was 72 % higher than expected) with a 95 % confidence interval (CI)

of 122.6 to 235.6, showing that the suicide rate in those aged 75 years and over in Cornwall was statistically higher than the UK average.

To test the hypothesis that the high suicide rate in people aged 75+ years in Cornwall was due to random variation with a lower than average rate in younger age groups, the SMR was calculated for the 15 to 74 age group. There were 225 deaths from suicide and injury of undetermined intent in this age group between 2006 and 2010 in Cornwall and the Isles of Scilly, compared with an expected 222 deaths using the standard population of the UK. The SMR was 101.3 (95 % CI 88.5 to 115.5), showing that the suicide rate in younger age groups did not differ significantly from the UK average. Even the 65 to 74 age group, which had the lowest suicide rate in Cornwall, did not have a significantly lower rate than the UK overall (SMR 60, 95 % CI 32 to 102.7).

While some random variation is inevitable when looking at a relatively rare outcome in a small region, this was reduced as much as possible by pooling the deaths between 2006 and 2010 for calculation of the SMRs. The higher than average suicide rate observed in the 75+ age group in Cornwall is therefore unlikely to be due to random variation.

4.3 Part 2: Case Study Analysis of Suicides in the 75+ Age Group in Cornwall and Isles of Scilly

Note: *Throughout this section, where there are counts (or proportions based on counts) of only one or two cases, these are not reported to protect individual confidentiality and to comply with ONS policy; instead, cases are grouped or 'Fewer than 3' is stated.*

4.3.1 Suicides and Open Verdicts

According to the coroner's records, there were 54 open verdicts and 21 suicides in total in those aged 75 years and over in Cornwall between 2006 and 2010. Of the open verdicts, 41 were excluded as they were obviously not suicide or very unlikely suicide (see **Section 3.2.3** and **Appendix A** for details of excluded cases). There were therefore 34 detailed cases in total; 21 of the included cases were reported as suicides, while 13 were open verdicts, giving an open verdict:suicide ratio of 0.62. Of note, there was only one narrative verdict (i.e. recording of circumstances of death as opposed to a definitive verdict) in the specified age group and time range. In this case the cause of death was related to carcinomatosis and was therefore excluded (see **Appendix A**).

4.3.2 Demographics

All 34 cases were residents in Cornwall who also died in the same county (there were no suicides in this age group and time period in the Isles of Scilly). The age of the suicide victims ranged from 75 to 94 years, with a mean age of 80.9 years (standard deviation 4.7).

The majority of individuals were aged between 75 and 84 years; 28 fell into this age group compared with only six in the 85+ group. 23 individuals were male while 11 were female.

The mean age of those with an open verdict was 80.6 years, compared with 81.1 years for those with a suicide verdict; an independent samples t-test showed that these were not significantly different ($t = 0.285$, $d.f. = 32$, $p = 0.778$). However, open verdicts appeared to be more common in females, comprising 55 % of the total cases (6/11) compared with 30 % in males (7/23).

All of the individuals who committed suicide were retired at the time of death. In terms of previous occupation, professional, technical and skilled workers were the group with the highest frequency of suicide, with 14 of the individuals falling into this category. Manual and unskilled workers also had a relatively high frequency of suicide, with eight comprising this group. Those whose previous occupation was administrative and clerical work were less represented in the suicides; only three fell into this category. The other and unclassified category ($n = 4$) included homemakers.

Regarding marital status and living circumstances, four of the suicide victims were single, and the same number were divorced or separated. 15 were married, while approximately a third ($n = 11$) were widowed. 14 individuals were living alone at the time of death, while 20 were living with another person.

4.3.3 Location and Method of Suicide

Suicide location was accurately determined as it equated to the place of death in all cases, i.e. none of the individuals attempted suicide at home and subsequently died in hospital.

The majority of suicides took place in the person's home; 28 died either inside their home or in a shed or garage. The remaining six died in a public place; the most common public locations were rivers and coastal areas. All of those who chose to take their lives in a public place were male, and all except one were in the 75 to 84 age group.

Figure 4.4 and **Table 4.5** show the methods used for suicide. Jumping from a high place was the most frequent method, accounting for almost a quarter of deaths (n = 8). Four of these deaths occurred in a public place and the same number took place at the person's home or at a residential home and involved jumping from high windows. Jumping was closely followed in prevalence by suffocation, with approximately one in five of the suicides occurring via this method. All of the deaths from suffocation involved a plastic bag. Hanging or strangulation and self-poisoning were also frequent methods, each accounting for six deaths. The substances most frequently used in self-poisoning were benzodiazepines or other hypnotics, tricyclic antidepressants, paracetamol and related compounds, and opiates (e.g. morphine). This medication was taken with alcohol in a small number of cases. Other methods, together involved in six of the suicides, included carbon monoxide poisoning, use of firearms, cutting or stabbing and self-immolation. In a small number of cases more than one suicide method was used by an individual and it was not clear which method had directly caused the death, for example self-poisoning combined with suffocation. There were no clear trends over time in relation to suicide method in the 75+ age group.

Regarding gender differences in suicide method, for males the most popular method was jumping from a height (7 of the 23 male suicides). This was closely followed by hanging and strangulation, and suffocation, which each accounted for five male deaths. For females, the

most common method was self-poisoning, which was used for three of the 11 female suicides.

Although there were very few suicides in those aged 85 years and over (n = 6), some age-related differences in method were apparent. For the 75 to 84 age group, jumping from a height was the most commonly used method, accounting for eight of the 28 suicides in this group. Hanging and strangulation were the second most commonly used, accounting for six of the 28 suicides in those aged 75 to 84 years. In the 'oldest old' category (i.e. those aged 85 years and over), suffocation with a plastic bag was the most frequently used method, accounting for three of the six deaths in this age group.

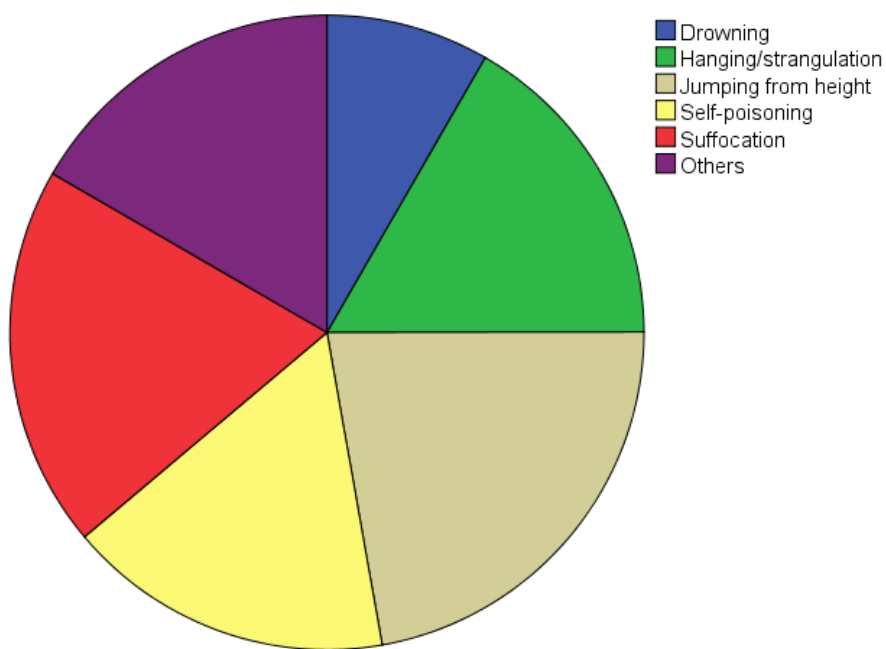


Figure 4.4: Frequency of suicide methods (suicides and open verdicts in 75+ age group, 2006 to 2010)

Source: Coroner's records and ONS Public Health Mortality Files

Suicide method	Frequency	Percentage
Jumping from height	8	24
Suffocation	7	21
Hanging/strangulation	6	18
Self-poisoning	6	18
Drowning	3	9
Carbon monoxide	Fewer than 3	-
Firearms	Fewer than 3	-
Cutting/stabbing	Fewer than 3	-
Self-immolation/burning	Fewer than 3	-

Table 4.5: Frequency of suicide methods including suicides and open verdicts

Source: Coroner's records and ONS Public Health Mortality Files

Note: In some cases more than one method was used therefore the total may not add up to 34. 'Fewer than 3' to protect individual confidentiality and to comply with data source regulations.

The high number of deaths caused by jumping might have been partially due to the fact that open verdicts were more frequently associated with this method. When only definitive suicide verdicts were included in the analysis, the results were different as **Table 4.6** shows.

Suicide method	Frequency	Percentage
Suffocation	6	29
Hanging/strangulation	6	29
Jumping from height	3	14
Self-poisoning	3	14
Carbon monoxide	Fewer than 3	-
Firearms	Fewer than 3	-
Cutting/stabbing	Fewer than 3	-

Table 4.6: Frequency of suicide methods: clear suicide verdicts only

Source: Coroner's records and ONS Public Health Mortality Files

Note: In some cases more than one method was used. 'Fewer than 3' to protect individual confidentiality and to comply with data source regulations.

The results show that with clear suicide verdicts, suffocation and hanging or strangulation were the most common methods, each accounting for six deaths.

4.3.4 Risk Factors

Due to small numbers it was not possible to draw any definitive conclusions relating to season as a risk factor. 10 of the suicides occurred in the spring. Summer was the season with the lowest frequency of suicides (n = 6). Nine deaths occurred in the autumn, and the same number died in winter.

Psychiatric disorders were fairly prevalent in the suicide cases; 56 % (n = 19) had a current diagnosed psychiatric disorder at the time of death (95 % confidence interval 39 to 73 % for the population). The frequencies of various psychiatric disorders in the cases studied are shown in **Table 4.7**. In addition a small number had a previous history of depressive illness and were therefore not receiving treatment for this at the time of death.

Psychiatric illness	Number of cases	Percentage of total cases
Depressive illness (including psychotic depression)	11	32
Anxiety/phobia/panic disorder/OCD	6	18
Dementia including Alzheimer's	3	9
Bipolar affective disorder	Fewer than 3	-
Alcohol misuse	Fewer than 3	-
Other specified (e.g. acute confusion)	Fewer than 3	-

Table 4.7: Current psychiatric illnesses at time of death

Source: Coroner's records

Note: Some individuals had more than one diagnosis. 'Fewer than 3' to protect individual confidentiality.

The most common psychiatric disorder was depressive illness, with almost a third of individuals (n = 11) diagnosed as depressed at the time of death. The second most prevalent condition was anxiety disorder; this was a current illness in six individuals. Dementia including Alzheimer's disease was present in three of the suicide victims, all of whom were in the early stages. Other psychiatric conditions were involved in four cases; these included bipolar disorder, alcohol misuse, and acute confusion. None of the suicide victims suffered from schizophrenia, although some had psychotic depression. There were no obvious gender or age-related differences in the role of psychiatric illness in suicide.

In addition to psychiatric disorders, personality of the suicide victims was reported in the coroner's records as a possible contributing factor in four cases. Examples were being a lifelong worrier or having a strong or cantankerous personality.

Physical illness was highly prevalent; 29 (85 %) of the suicide victims (95 % CI 73 to 97 %) had one or more physical disorders, while the remaining five had no known physical health conditions at the time of death. These illnesses ranged from mild to severe. Of those with physical illnesses, the illness was stated by the coroner as a likely contributing factor to the suicide in more than two thirds of cases (n = 20). Where physical illness contributed to suicide, this was combined with psychiatric pathology in nine of the 20 cases (45 %). The main categories of physical disorders are shown in **Table 4.8**. The most frequently contributing physical illnesses were musculoskeletal disorders including arthritis, osteoporosis and spinal disorders, chronic or severe pain resulting from a range of musculoskeletal, neurological and digestive disorders, and blindness and hearing loss.

Physical illness	Number of cases	Percentage of total cases
Musculoskeletal disorders	10	29
Chronic or severe pain	8	24
Sensory disorders (including loss of vision/hearing)	7	21
Chronic obstructive pulmonary disease (COPD)	3	9
Neurological disorders (e.g. neuropathy)	3	9
Terminal illness (including metastatic or terminal cancer)	3	9
Long-term incontinence	Fewer than 3	-
Other (including diabetes and cerebrovascular disease)	Fewer than 3	-

Table 4.8: Current physical illnesses at time of death, where illness perceived to be a contributing factor to suicide

Source: Coroner's records

Note: More than one illness was involved in some individuals therefore the total does not add up to 29. 'Fewer than 3' to protect individual confidentiality.

Physical illness was slightly more likely to be seen as a contributing factor to suicide in females; 64 % (7/11) of women who committed suicide had a contributing physical illness, compared with 57 % (13/23) of men. However, due to the small sample size there were no statistical differences between the two groups; the 95 % confidence interval for physical illness as a contributing factor in women was 36 to 92 %, compared with 37 to 77 % in men. Physical disorders were thought to have played a role in two thirds (4/6) of the 'oldest old' individuals, and 57 % (16/28) of the 'old old'.

The main social and other contributing factors (as reported by the coroner) are shown in **Table 4.9**. These factors were involved in 56 % of the total cases (19/34).

Contributing factor	Number of cases	Percentage of total cases
Bereavement (including death of pet)	6	18
Fear of becoming a burden	4	12
Anxiety over crime committed/fear of prison	4	12
Financial issues	3	9
Fear of losing independence/moving into residential home	3	9
Isolation or loneliness	Fewer than 3	-
Fear of hospital admission	Fewer than 3	-
Family history of depression/suicide	Fewer than 3	-
Stress associated with moving home	Fewer than 3	-

Table 4.9: Additional factors reported to be involved in suicide

Source: Coroner's records

Note: More than one factor was involved in some cases therefore the total does not add up to 19. 'Fewer than 3' to protect individual confidentiality.

Bereavement was the most significant social contributing factor to suicide, with recent death of a friend, family member or pet reported to have been involved in six of the 34 cases. Two thirds of the individuals (4/6) in whom bereavement was a stated factor in the suicide were male. Fear of becoming a burden was implicated in four of the suicides (all of whom were males aged between 75 and 84 years), and anxiety over a crime committed was implicated in the same number, again all of whom were males in the same age group. Financial issues and fear of loss of independence (including having to move into a residential home) each contributed in three of the cases. Additional factors stated as each having contributed to a small number of suicides included isolation and loneliness, fear of hospital admission, a family history of depression and suicide, a spouse having committed suicide by the same method previously, and stress associated with moving home. However, these factors combined were implicated in seven of the total suicides (21 %).

4.3.5 Warnings

A history of either self-harm or one or more previous suicide attempts was noted in just over a quarter of cases (n = 9). A greater proportion of males (7/23) than females (2/11) had a documented history of self-harm or attempted suicide.

The majority of suicide victims (88 %, n = 30) had been in contact with their GP or seen by another health professional within three months of their death. This contact took place within one month of death for 62 % of individuals (n = 21), in the week before death in 38 % of cases (n = 13) and as recently as the day before death or the day of death in 24 % (n = 8). Regarding reasons for last contact with the health service, most of the individuals (71 %) had sought help for a physical health problem (as shown in **Table 4.10**). A mental health problem or mental combined with physical disorder was the reason for contact in 10 of the 34 cases (29 %).

Reason for contact	Frequency	Percentage
Physical	24	71
Mental	6	18
Both	4	12

Table 4.10: Reasons for last contact with GP or other health service before death

Source: Coroner's records and local suicide audit database

Risk of suicide was documented by the individual's GP or another health service in 10 of the cases. In the majority of these (n = 7), the risk was stated as suicidal thoughts and ideas expressed by the individual, while only three had shown clear suicide intent or plans.

A suicide note was left in 14 (41 %) of the cases (95 % CI 24 to 58 %). The contents of the note were available in a small number of these; the notes were all short and direct, and the

most common themes identified were a keen desire to die, a wish to end pain and suffering, apologies, and gratitude and affection for family members.

Behavioural changes prior to the suicide were noted in a few cases; these included putting affairs in order (selling possessions, organising finances etc.), appearing to lose interest in life and failing to attend doctors' appointments in the weeks before death. A small number of individuals were known to have researched euthanasia and/or were members of a voluntary euthanasia group. It was also noted by the coroner that a small number had withdrawn from taking antidepressants; reasons for this included failure to respond to medication and anxiety about developing an addiction to the tablets.

In a very small number of cases (i.e. fewer than three) it is possible that suicide intent could have been missed, where there were no clear warnings, but the individual had mockingly talked about suicide or given hints such as "Not long to go". In a small minority, the suicide was believed by family members and health professionals to have been a cry for help gone wrong.

4.4 Part 3: Results from Survey of Adults Aged 75 and Over in a Rural Community in Cornwall

4.4.1 Demographics/Characteristics of Participants

Of the 65 people who were invited to participate in the survey, 49 agreed to take part, giving a response rate of approximately 75 %. The age of respondents varied between 75 and 94 years (the same age range as the suicide victims), with a mean age of 81.6 years

(standard deviation 4.8). 51 % of respondents (n = 25) were male, and 49 % were female (n = 24). The majority of those surveyed were married (53 %, n = 26), 27 % (n = 13) were widowed, 12 % (n = 6) were divorced or separated and 8 % (n = 4) were single.

All of the respondents were retired at the time of completing the survey. Considering previous occupations, the majority were classed as professional, technical and skilled workers with 45 % (21/47) in this category. 15 % (7/47) were in each of the administrative/clerical and other/unclassified categories. A smaller proportion were manual/unskilled workers and managers/business owners; six individuals were classed in each of these categories.

The survey respondents were compared with the suicide victims, which showed that the two groups were demographically similar. The Pearson Chi-Square test revealed there were no significant differences in either marital status ($\chi^2 = 0.834$, *d.f.* = 3, *p* = 0.841) or occupation ($\chi^2 = 2.164$, *d.f.* = 4, *p* = 0.706), although there is little power to find a difference due to the small numbers involved.

4.4.2 Living in Cornwall

43 % of respondents (21/49) reported that they had lived in Cornwall their whole life; the remaining 57 % (28/49) had moved to Cornwall. Among those who had moved from another area, the time spent living in Cornwall ranged from 5 to 63 years, with a mean duration of 26.2 years (standard deviation 17.3).

The main reason for moving was simply liking the area; this was selected by 71 % (20/28) of respondents. Almost half of the respondents (46 %, 13/28) selected retirement as a reason for moving, and approximately one third (32 %, 9/28) had relocated to Cornwall for work

reasons. A small proportion (11 %, 3/28) had moved to be closer to family and two specified other reasons for moving, namely due to illness and the belief that there was less traffic in Cornwall.

Growing older in Cornwall was generally perceived as a positive experience, with 69 % (n = 34) stating that in their opinion Cornwall was a better place to grow old than other parts of the UK. 16 % (n = 8) believed Cornwall to be similar to other areas in this respect, but no respondents thought that the county was worse than other places. The main reasons given for Cornwall being perceived as a better area are shown in **Table 4.11**.

Reason	Number of times mentioned
Pace of life/relaxed lifestyle	15
Pleasant scenery, coast and countryside	10
Friendliness of local people and community spirit	8
Pure/clean air and environment	5
Climate or weather	4
Less crowding or traffic	4
Less crime	3
Other	3

Table 4.11: Reasons why Cornwall is a better area to grow old

A slower pace of life or more relaxed lifestyle was most commonly stated, followed by references to the scenery, coast and countryside that are characteristic of Cornwall. The friendliness of local people and sense of community spirit was also frequently mentioned; for example, “People, in general, are less distant in their relationship” and, “More opportunities to get involved in village life and be part of a community”. There were a few references to the purer air and cleaner environment of Cornwall, as well as a warmer climate or better weather conditions. The county was perceived to be less crowded by a few respondents, and with less crime and violence than other regions, for example, “I feel

safer here”. Additional comments included “Better medical services”, “Cornwall is as it used to be, not yet ruined by over border enterprise or the fast trends”, and “Everything is better!”.

4.4.3 Measures of Isolation

While most respondents (96 %, 47/49) reported having a person to confide in and share their worries with, a small minority (n = 2) did not. A spouse (49 %, 23/47) or child (43 %, 20/47) were the most commonly stated people available to confide in. Others stated they were able to confide in their friends, neighbours, siblings, grandchildren, son- or daughter-in-law, sister-in-law, niece or nephew and church fellowship leaders.

As shown in **Table 4.12**, the majority of survey respondents reported having one or more close friends, with 37 % having five or more. Only four individuals said they had no close friends.

Number of close friends	Frequency	Percentage
None	4	8
1 or 2	11	22
3 or 4	16	33
5 or more	18	37
Total	49	100

Table 4.12: Number of close friends reported

Figures 4.5 a and b show how frequently respondents reported seeing their close friends and family. The patterns of contact with close friends and family were different; the results for contact with close friends were represented in a normal distribution ranging from ‘Every day’ to ‘Less than once a month’, with most (38 %, 17/45) having contact with these friends

once or twice a week. However, contact with family members was negatively distributed with the majority (41 %, 20/49) seeing family they did not live with less than once a month.

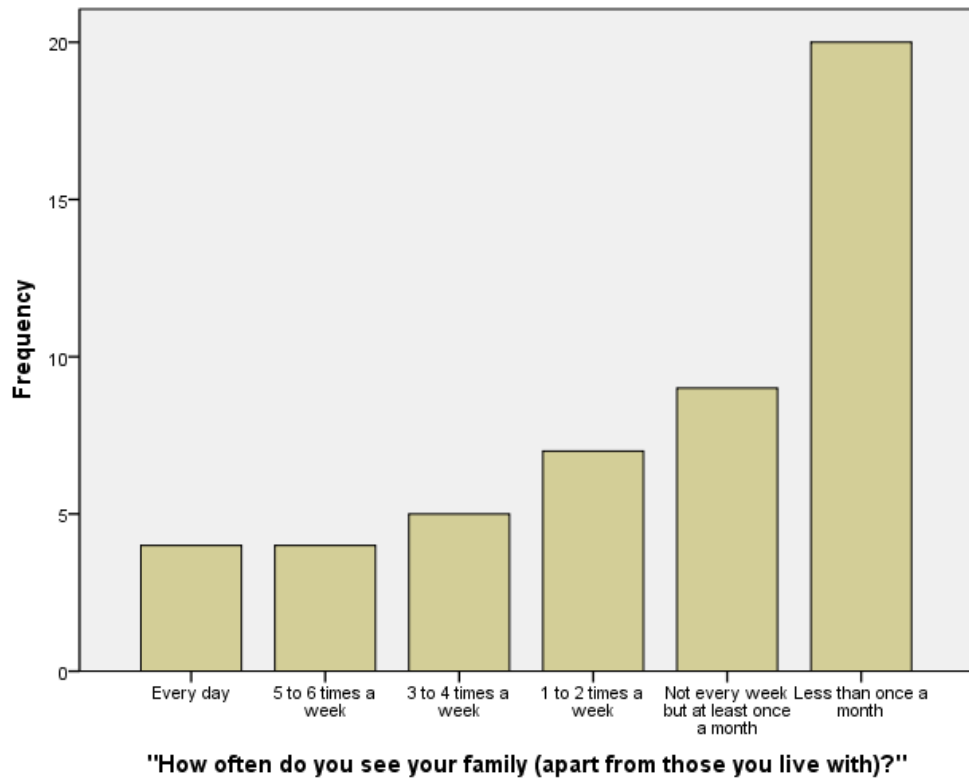


Figure 4.5a: Frequency of contact with family

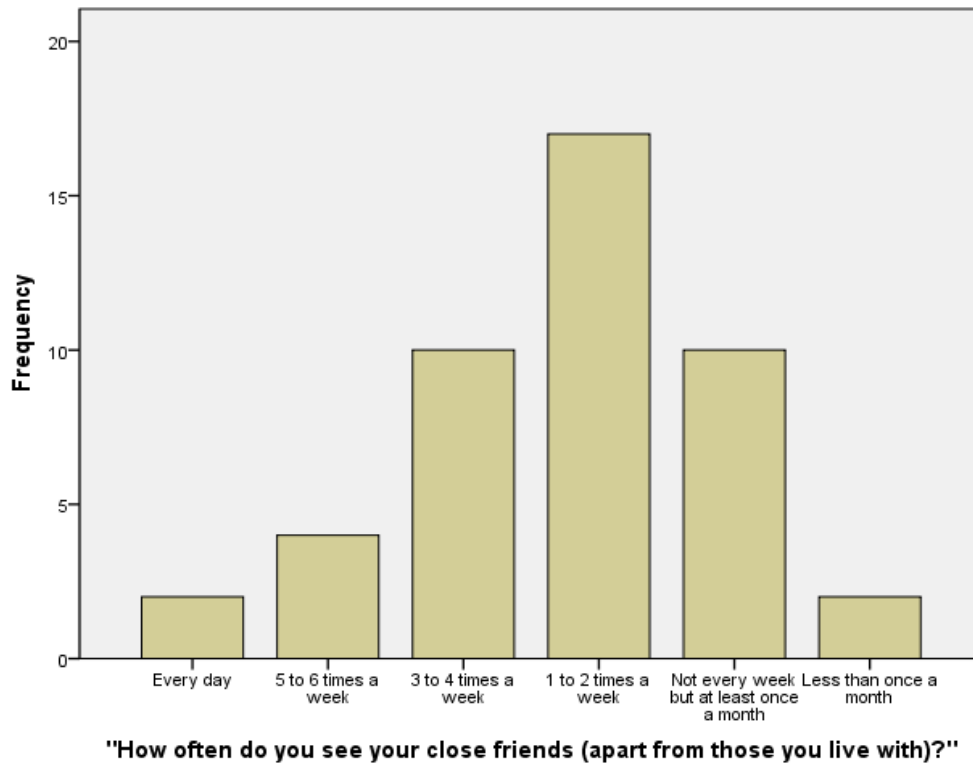


Figure 4.5b: Frequency of contact with close friends

Note: Four individuals had no close friends and are not included in the graph

Most respondents (67 %, 33/49) answered ‘About right’ regarding how they felt about the contact they had with close friends and family. The remaining 33 % (n = 16) said they did not see their close friends and/or family often enough.

The proportion of respondents living alone at the time of completing the survey was 39 % (n = 19), while 61 % (n = 30) were living with another person. This did not differ significantly from the 41 % of suicide victims who lived alone ($\chi^2 = 0.048, d.f. = 1, p = 0.826$). Of the 19 respondents who lived alone, two had no close friends and almost a third (n = 6) reported seeing their family less frequently than once a month.

In the 30 respondents who did not live alone, the majority felt that they were able to share their worries and confide in the person they lived with to either a great extent (70 %, n = 21)

or some extent (23 %, n = 7). Only two individuals were not able to confide in the person they shared their home with.

The majority of respondents did not experience feelings of isolation; 59 % (n = 29) reported that they never felt isolated in any way. However, just over a quarter (n = 13) sometimes felt isolated, and seven always or frequently felt isolated.

The main reasons given for feelings of isolation and reasons given by those who did not feel isolated are shown in **Table 4.13**. The two most common themes were distance from family and friends, and rurality and associated remoteness of the village they lived in. Several respondents mentioned that many of their family members and friends had died and consequently they were left on their own. A lack of social activities specifically for older age groups and transport problems were also key concerns. Responses relating to transport included: "I no longer drive and it can be difficult to get to the shops as there is no bus service here" and "The cost of travel is prohibitive". Loneliness and isolation resulting from living alone were also frequently mentioned, for example, "I hardly ever see people except the postman".

Among those who did not feel isolated, reasons given were mainly the reverse stated by those who felt isolated, such as closeness to family and friends and opportunities to travel and participate in social activities (e.g. "We go caravanning"). A small number also stated that religion or faith prevented feelings of isolation, and access to the internet was also mentioned.

A small number of individuals believed it was natural to feel isolated at times, and others enjoyed living in a remote area (e.g. “I enjoy living in a small village which is quiet... I like to be able to walk away from habitation”).

Common reasons for feeling isolated	Reasons for not feeling isolated
Distance from or lack of family and friends	Proximity to family, friends, and neighbours
Remoteness of village/rural area	Religion/faith
Lack of social activities and amenities for older people	Participation in social activities
Transport problems	Still able to drive/travel independently
Living alone/loneliness	Access to internet

Table 4.13: Reasons for feeling isolated or not feeling isolated

4.4.4 Perceptions of Ageing and Attitudes Towards Older People

The majority of those surveyed (59 %, n = 29) felt that their general level of happiness had not changed since they were 65. More respondents reported feeling less happy (n = 11) than more happy (n = 7) than they were at 65 years of age.

The main reason for feeling less happy was poor health, for example “I don’t like feeling old and less fit”. Reduced mobility and loss of the ability to go out independently were reasons given by some respondents, as well as problems with home maintenance (“Since my husband died it has been harder to look after the house on my own.”). Others mentioned they were unhappy due to bereavement or loneliness, or because places were more crowded than a few years ago.

Reasons for feeling happier than at age 65 included more social activities and opportunities, being financially better off than previously and having more leisure time during retirement. Many reported feeling more confident than they had ever felt before; as an example, “I am

able to express myself more... not worried about showing myself up". An improved ability to appreciate the present was also apparent: "I now appreciate every day" and "You have to be happier as the day of death is coming nearer".

37 % (n = 18) believed that people of their age group were not respected by younger people, compared with only 27 % (n = 13) who believed they were. There appeared to be some negative feelings associated with the relationship between older and younger generations, for example: "They think we are silly old people", "Young people have no time or patience for older slower people", and "They don't realise how difficult it can be for old people and most don't seem to care". Many respondents appeared to believe that lack of respect had become more widespread in recent years, with statements including "Sign of the times", "I don't think many people respect each other anymore", and "Upbringing is not as strict now – they are not taught to respect their elders". However, contrasting views were also expressed such as "Young people are more responsible than some years ago". Some respondents (n = 10) recognised that there were individual differences between young people and believed that respect for older people depended on factors such as upbringing and location. Interestingly, those with negative or stereotyped views of younger people more commonly referred to media reporting and were less likely to base their views on personal experience than those with more positive views.

4.4.5 Problems, Worries and Concerns

Table 4.14 shows the main problems, worries and concerns of the older people surveyed. The greatest concerns were loss of independence and transport problems including loss of a driving licence, which had mean scores of 7.08 and 6.98 respectively. These concerns ranked slightly higher than physical health problems and death of a loved one. Fear of

becoming a burden to others and moving into a residential home also ranked highly. Being unable to keep up with technology and finances or debt were the lowest concerns. Other concerns were specified by three respondents; these were the current economy, employment for younger people and who to include in their will.

Problem/worry/concern	Mean of scores
Losing my independence	7.08
Transport problems/losing my driving licence	6.98
Physical health problems	6.92
Death of a loved one	6.73
Becoming a burden to others	6.67
Having to move into a residential home	6.57
Spending time in hospital	5.90
Being a victim of crime	5.65
Loneliness	5.39
Memory loss/dementia/mental health problems	5.29
Problems with home/garden maintenance, paperwork etc.	4.65
Not being able to keep up with technology	3.37
Finances/debt	3.29

Table 4.14: Mean responses to “How much does each of the following concern you?, where 1 = not at all and 10 = greatly” (ranked in order of importance)

4.4.6 Improving the Experience of Ageing in the Local Area

As **Table 4.15** shows, the most popular suggestion for reducing stress and isolation among older people was a social group or organised day trips specifically for this age group; 21 of the 49 surveyed stated that they would definitely join such a group, and 16 would consider it. Listed benefits of more opportunities to socialise were the prevention of loneliness and filling time that would otherwise have been spent alone. One respondent stated, “I like to take advantage of any facility which would include my wife who has dementia... I find it difficult to occupy her all day long”. Approximately half of the most isolated individuals

would be keen to participate if more social opportunities were available; one of the two people without a confidante would definitely join a social group, as would four of the seven who reported feeling isolated 'always' or 'frequently'. However, such a facility did not appeal to all of the socially isolated, with two of the four respondents with no close friends stating they would not be interested in participating in a social group. Barriers identified to the use of such a group included being unable to go out due to health problems and finding socialising difficult due to hearing loss. In addition, some respondents reported that they would prefer to go out independently with friends as opposed to an organised social group, and some stated a preference for a social group for a range of ages or backgrounds.

A free advice service to obtain help with household chores, gardening, maintenance or paperwork was also a popular suggestion, with 17 stating that they would use this if available, and 21 answering 'Maybe'. The main perceived advantage of such a service was the screening of workers or checking for a criminal record, to reduce the vulnerability felt by older people when letting strangers into their homes. A small number reported they did not need an advice service as they had family who were available to help with household maintenance or they were able to source their own information.

There were mixed responses to the suggestion of a telephone helpline for older people in the local area. While some were clear that they would not use a helpline as they had friends and family who were always available to help, others viewed this as a useful addition to their support network, for example, "Sometimes it is helpful to hear the perspective of an outsider, someone who is not family", and, "I know such systems work and would like a facility if my family moved away".

A visiting scheme was the least popular proposed service among those surveyed, with only nine respondents stating they would use this compared with 20 who would not. The most common reason for not wanting to use such a scheme was having family and friends to speak to instead, while others felt this would be an invasion of their privacy. Some respondents stated that while they had no need for such a service at the present time, they would consider it in the future.

Would you use a...	Number answering			
	Yes	No	Maybe	Don't know
Social group/organised day trips	21	10	16	2
Telephone helpline	13	14	14	8
Visiting scheme	9	20	17	3
Free advice service	17	9	21	2

Table 4.15: Acceptability of some suggested services for older people

Most of the respondents (86 %, n = 42) suggested additional ways in which they believed the experience of ageing in their local area could be improved. The main themes identified are shown in **Table 4.16**.

Theme	Number of respondents mentioning
Transport	33
Internet access	10
Social activities/events	9
Local support groups	8
Opportunities to volunteer	5

Table 4.16: Main areas for improvement identified in relation to ageing in Cornwall

By far the greatest issue identified by those surveyed was transport; 33 of the respondents recognised this issue, stating that the lack of any public transport in their village or hamlet was a particular problem for older people. The high cost of petrol and public transport was also mentioned.

One in five respondents (n = 10) believed that internet access would improve their experience of growing old in the area, as the broadband service was very limited in the rural villages surveyed. One person stated that this “causes the elderly to lose out with the latest communication. It would be like having someone to talk to.”

A greater range of social opportunities was desired by nine respondents; most of these wanted the opportunity to interact with younger people as well as those of their own age group. Local support groups for older people were also frequently suggested, particularly for those who were disabled or living with chronic health conditions. One idea included a local internet group for older people who were unable to join in with social events.

Approximately one in ten respondents (n = 5) wished for more opportunities to volunteer locally.

Other needs identified included improved medical services (such as the opening of surgeries at weekends and more home visits by medical and social care professionals), improved quality of care homes and more local sheltered accommodation, local shop deliveries (which were not available in the area), and financial factors such as more generous pensions for widows and discounts on essential items. One individual stated that they wished for older people to be treated with more dignity, in particular “those who are mentally able but are not as agile”.

Chapter 5: Discussion

5.1 Introduction

In this chapter the main findings resulting from the suicide data and survey will be interpreted, including an examination of the relevance of these findings for suicide prevention in older people in Cornwall. The contribution of the present study to suicide research will briefly be discussed, followed by a consideration of the limitations of the study and suggested areas for future research.

5.2 Part 1: Suicide Data and Epidemiology

The differences between the three data sources in terms of number of suicides and open verdicts recorded were similar to those reported in another Cornish study by Shankar *et al.* (2010); in this study the researchers compared four data sources and found inconsistencies in numbers, in particular those recorded by the coroner and the ONS. The main differences reported by Shankar and colleagues were in the numbers of open verdicts, and the present study has replicated these findings. Accurate and consistent recording of suicide data is important as it allows the identification of regions and populations that are most at risk and impacts on decisions about preventive strategies. Accuracy of suicide statistics is of particular importance when studying rates in small regions where small numbers are involved, but the benefits of increased accuracy must be weighed up against the costs to determine an appropriate level of precision. Nevertheless, there is an apparent need for

more effective communication between the relevant stakeholders and there should be clear criteria for determining whether an open verdict is to be included in suicide statistics.

There may also be variation in the practice of coroners by region, for example in terms of the ratio of open verdicts to suicides. Before exclusion of cases that were obviously not or highly unlikely suicide, the ratio of open verdicts:suicides was 2.57, compared with 0.98 in a study of coroner's records in Newcastle by Linsley *et al.* (2001). This suggests that there may be more open verdicts in Cornwall or simply more open verdicts in older people.

However most of these open verdicts are not included in suicide statistics. After exclusion of cases, there was a lower ratio of open verdicts:suicides (i.e. fewer open verdicts) than that reported by Linsley and colleagues. Such possible variations in coroners' practices and verdicts between regions are a subject for future research in a wider area, but this was beyond the scope of the present study as there was only one coroner for Cornwall. The possibility of changes in practice in the recording of open verdicts over time should also be considered (Linsley *et al.* 2001).

In the coroner's records in the over 75 age group in Cornwall, open verdicts were more frequent in females, however due to small sample size it is not possible to infer statistical significance or determine whether this represents a more widespread practice.

Nevertheless, the recording of open verdicts is a subject in need of further research.

Interestingly there was a lack of narrative verdicts in the suicide records studied. The increasing number of narrative verdicts being recorded by coroners has been expressed as a concern as it is believed that this practice could lead to an underestimation of the number of suicides (Gunnell *et al.* 2011). However, there remains a possibility that narrative verdicts

could have an effect on the recording of suicide data in other age groups (or other regions), so this is a possible area for further research.

Overall, the coroner's records proved to be the most reliable method for determining which cases were actual suicides, compared with the Public Health Mortality Files which lacked the qualitative information to determine this, and had included some cases that appeared to be very unlikely suicides. Combining and comparing these data sources (along with some cases in the suicide audit database) gave a truer picture of suicide in the 75+ age group in Cornwall, and the use of coroner's records in particular provided a more detailed insight into individual cases. This was an important contribution of the research; previous studies had relied upon a single (and often quantitative) source of data, for example the South West Public Health Observatory's report was based solely on the Public Health Mortality Files.

A novel approach was taken to divide age into narrower bands than those conventionally used in suicide statistics, which gave a more precise measure of suicide rates than the wide age bands of 15-44, 45-74, and 75+ years that are used by the ONS to report suicide rates by region. This revealed that the 75 to 84 age group had the highest overall rate in Cornwall and the Isles of Scilly in the five-year period studied. These findings differ from the national picture where the over 75s are at lowest risk of suicide (Office for National Statistics 2012a) and also from the South West overall where males over 85 years are at highest risk (South West Public Health Observatory 2011). Although wide confidence intervals for suicide rates in Cornwall (due to the small number of suicides occurring each year) were an unavoidable outcome, calculation of the Standardised Mortality Ratio (SMR) for 2006 to 2010 showed that the suicide rate in the 75+ age group in Cornwall was statistically higher than the national average. This was consistent with previous audit findings from 1993 to 2009

(Roberts *et al.* 2010). Although suicide accounts for a smaller proportion of all-cause mortality in older people than in younger age groups, people aged over 75 years in Cornwall have a higher risk of suicide compared with younger age groups and other regions. Moreover, the number of suicides in the 'old old' and 'oldest old' are likely to increase as life expectancy rises.

Gender differences in suicide rate in older people in Cornwall reflected the findings of previous national studies. There were more male than female suicides in those aged 75 years and over, with a ratio of 2 or 3:1, which is slightly lower than the ratio of 3 or 4:1 reported by O'Connell *et al.* (2004).

Cornwall has not shown the clear long-term downward trend in suicide rate (Hill *et al.* 2005) that is evident in the UK in general. In particular, the rate in persons aged 75 years and older remains statistically higher in Cornwall than other areas. Despite the small number of suicides involved and fluctuations from year to year, it is a concern that 2010, the most recent year studied, had the highest suicide rate for the 75+ age group in Cornwall and the Isles of Scilly. This suggests that current preventive strategies may be inadequate.

5.3 Part 2: Case Study Analysis of Suicides in the 75+ Age Group in Cornwall and Isles of Scilly

In addition to focusing on a more specific, high-risk group, the case study analysis provided more qualitative information than the South West Public Health Observatory's (2011) report. The findings were in some ways similar to this report but there were also several differences, as well as some additional qualitative contributions to knowledge in terms of

risk factors and warnings. These will be discussed in this section, as well as comparisons with existing research into suicide in older people and a discussion of potential preventive measures suggested by the findings that are relevant to the over 75 age group in Cornwall.

The results suggested that older people do not appear to travel to commit suicide, as all of the individuals studied were Cornwall residents who died in the county, and the large majority of suicides occurred at home (particularly the 'oldest old'). The proportion of deaths occurring at home was 82 % (95 % confidence interval 69 to 95 %), considerably higher than the 54 % reported for all ages in the South West (South West Public Health Observatory 2011). The findings were similar to other studies of elderly suicides; for example, Cattell and Jolley (1995) found that of 100 cases of suicides in those aged 65+, 89 died at home. Among those who did choose a public location for the suicidal act in Cornwall, the main places were rivers and coastal areas. This could be a finding that is unique to Cornwall as these locations are widespread in the county.

The fact that suicide location equated to the place of death in all individuals of the age group studied provides further evidence for the severity and lethality of suicide attempts that has been reported in older people (e.g. Fung & Chan 2011). This also suggests that suicide location can be accurately determined from 'place of death' information in the ONS mortality files for the majority of cases in this age group.

Despite small numbers for analysis, the popularity of jumping from a height as a suicide method in the 75 to 84 year age group (8/28 cases) was an unexpected finding. Again, this may be characteristic of Cornwall due to the relatively easy accessibility of locations such as cliffs, although several jumping incidents occurred at the person's home or in a residential home. The findings appear to contrast with other studies of suicide method in the UK and

South West England, where jumping has been reported as one of the least common methods in older age groups (Shah & Buckley 2011; South West Public Health Observatory 2011), and appear instead to be more similar to the findings of an Italian study by Zeppegno *et al.* (2005), where jumping from a height and hanging or strangulation were the most common methods used by elderly people.

However, it seems that the pattern of findings relating to suicide method could be due in part to the inclusion of open verdicts, where it could not be definitely determined whether the death was suicide or an accidental fall. With pure suicides only, suffocation and hanging or strangulation were more common. This is closer to the pattern observed by Shah and Buckley (2011), where these were the most frequently used methods in older males. Self-poisoning was the most common method used by elderly females in Cornwall, the same as reported in other parts of England and Wales (Shah & Buckley 2011). A novel finding, although based on a very small sample of six people aged 85 years and over, was suffocation with a plastic bag as the most popular method among the 'oldest old' in Cornwall (accounting for three of the six suicides in this age group and time period). This is possibly because this was the most easily accessible method for them due to reduced mobility compared with younger individuals. As reducing access to means has been shown to be an effective measure in elderly suicide prevention (Gavrielatos *et al.* 2006; Ludwig & Cook 2000), these findings have potentially important implications. Better fencing, signage with helpline numbers and telephone boxes at cliff edges or other suicide 'hotspots' may be needed, and have historically been shown to be effective in preventing suicides. For example, Harvey and Solomons (1983) reported that the majority of fatal suicide attempts on the Sydney Harbour Bridge occurred before the erection of a safety barrier. Similarly,

the number of car park suicides in the New Forest was reduced after signs with the Samaritans' helpline number were displayed (King & Frost 2005). Better security and increased vigilance in residential homes may also be needed to prevent jumping incidents from windows, which accounted for a small number of suicides in the sample studied. Another possible measure is the redesign of plastic bags to prevent use for suffocation.

The risk factors for suicide in older people in Cornwall did not seem to differ significantly from those reported by other studies. However, there were some differences in relation to the estimated prevalence and contribution of various factors to suicide. Four main categories of risk factors were considered in the present study: seasonal, psychiatric, physical and social. Studying this wide range of factors was an important strength of the research, and it would not have been possible without the valuable qualitative information held in the coroner's records. The South West Public Health Observatory's (2011) report was limited in its study of risk factors to occupation and a measure of socioeconomic status based on postcode, the only information (in addition to basic demographics and suicide method) that was available in the Public Health Mortality File data fields.

There were no clear seasonal effects for suicide among older people in Cornwall. However, it is not possible to draw any definitive conclusions as due to small numbers, consideration of a specific age group in only one area is unlikely to give statistically significant results. Previous reports have shown that summer is the highest-risk season for older people (Steffens & Blazer 1999).

Psychiatric illness was clearly an important risk factor in many of the suicides. Over half (56 %, 95 % CI 39 to 73 %) had a diagnosed psychiatric disorder at the time of death, which did not differ statistically from the 71 to 95 % prevalence in elderly suicide victims reported

by Conwell and Duberstein (2005). While depression was the most significant psychiatric illness, the prevalence of mood disorders appeared to be considerably lower in this sample than the estimated Population Attributable Risk (PAR) of 73.6 % for mood disorders in the general elderly population (Beautrais 2002). It is likely however that many more had disorders that were undiagnosed at the time of death.

There may therefore be a need for improved detection of depression in elderly people in Cornwall; this could be achieved through regular health checks that include mental as well as physical health, or opportunistic screening (for example using the Geriatric Depression Scale) for depression and suicidal thoughts or ideation in older people with multiple risk factors. The fact that the majority of suicide victims had seen their GP or another health professional within three months of their death suggests that this could be an effective measure. Depression screening tailored for elderly people in primary care has been shown to be effective in reducing suicidal ideation (Bruce *et al.* 2004). Education and training of GPs and other health professionals is necessary for the success of such screening; it is important that medical professionals are able to quickly recognise the signs of suicide risk and directly question the most at-risk individuals. The benefits of educating healthcare professionals were shown in a study by Rutz and colleagues (1989), where an education programme about affective disorders that was implemented for GPs on the Swedish island of Gotland led to improved diagnosis of depression, as well as a significant long-term reduction in suicide rates in the area. Although replication of the study has proven difficult, it demonstrates the impact that training can have. While some GPs in Cornwall have received training relating to suicide risk (Roberts *et al.* 2010), such training programmes could be extended to the wider category of health and social care workers in the county (or

other parts of the UK). Shah and De (1998) report that courses should be repeated yearly for optimal effects.

It was a concern that among the suicide victims with recognised depression, some had withdrawn from antidepressant treatment. Closer monitoring of depressed elderly patients, particularly those who are isolated or have recently experienced stressful events such as bereavement, may be needed. It is important for primary care teams to ensure concordance with treatment for depression or other mental illnesses; for example some patients may need additional counselling if anti-depressants prove to be ineffective. Follow-up of missed appointments should be undertaken wherever possible, although this may be difficult due to limited resources (Roberts *et al.* 2010).

A fairly high proportion of the sample studied had a diagnosed anxiety disorder. This appears to concur with the findings of Juurlink *et al.* (2004) where anxiety was an independent risk factor for elderly suicide, but contrasts with the findings of Artero *et al.* (2006) where it was not. The fact that all of those with dementia were in the early stages of the disease suggests that suicide is most likely to occur while they still have some insight into the condition. The lack of psychoses including schizophrenia in the sample reflects previous findings that these conditions are less prevalent in older suicides (Qin 2011).

There is a need for increased attention to and awareness of depression and mental illness in general. The statistic that mental health receives only 13 % of total NHS expenditure (London School of Economics and Political Science 2012) demonstrates a need for improvement in this area. This may be of even greater importance in rural locations, where there is thought to be more stigma associated with mental illness, leading to lower rates of GP consultation (Gunnell & Martin 2004). This problem could potentially be overcome in

part by the availability of an out-of-area GP service for anyone who would prefer not to go to their local surgery. Nevertheless, a better understanding of the barriers to the treatment of depression and suicidal behaviour in rural areas is clearly needed (Hirsch 2006). As an initial measure, more information leaflets or posters relating to the symptoms and treatment of mental illness could be displayed at local doctors' surgeries or other places where older people will see them, or leaflets could be posted with hospital letters. The media can also play a role in reducing the stigma associated with mental health conditions; information could be presented in older people's magazines, newspapers, radio, or television programmes.

Personality was a perceived contributing factor for some individuals in this study, as other researchers have reported (Heisel *et al.* 2007; Segal *et al.* 2011). While this is a non-modifiable risk factor, such knowledge could help to identify those most at risk of suicidal behaviour.

The prevalence of physical illness in the sample studied was high, as would be expected in the over 75 age group, but more importantly physical disorders contributed to a large number of suicides. This matches the findings of existing studies of the effects of physical illness on suicide in elderly people (Cattell & Jolley 1995; Juurlink *et al.* 2004; Artero *et al.* 2006; Miller *et al.* 2008). Moreover, the proportion of older people in whom physical illness was seen as having contributed to the suicide was actually higher than the proportion diagnosed with a psychiatric illness. From these results, it could be argued that physical health problems are the single most important risk factor for elderly suicide in Cornwall.

It has previously been suggested that suicide in older people is unlikely to occur as a result of physical illness alone, which is usually combined with psychopathology (De Leo &

Meneghel 2001). The results of this study, whereby less than half of those in whom physical illness was a contributing factor to suicide had a concurrent psychiatric condition, do not appear to support this and suggest that the importance of physical health factors alone has previously been underestimated.

The findings seemed to suggest that physical illness was a greater contributing factor in the 'oldest old', but as there were so few suicides in this age group in Cornwall this will require further investigation in other regions. Interestingly, physical illness appeared to be as influential in elderly female suicides as in males, which differs from previous research that has reported this to be a greater factor in male suicides (such as Manthorpe and Iliffe 2010). Of the contributing physical illnesses, musculoskeletal disorders, chronic or severe pain and sensory disorders (i.e. vision and hearing loss) were the three most important categories. Pain has previously been implicated in elderly suicides (Juurlink *et al.* 2004; Manthorpe & Iliffe 2010) and is closely related to musculoskeletal disorders, but the impact of sensory disorders in older people may require further research. A psychological autopsy performed by De Leo *et al.* (1999) suggested that blindness (or fear of blindness) was associated with increased suicide risk, but as the study only included 12 suicide victims this subject should clearly be studied on a larger scale, and specifically in older people.

The large contribution of physical illness to the suicides studied suggests a requirement for better recognition of the psychological effects of physical disorders. Training programmes focusing on the close relationship between physical and mental health could be implemented for health professionals (or anyone interested) in Cornwall or other regions. Knowledge of and research into the mental health problems (i.e. stress, depression and anxiety) that can result from physical illness, in addition to the somatic symptoms of mental

illness, are extremely important. Of note, the current Geriatric Depression Scale does not measure somatic symptoms; there may therefore be a need for new screening tools.

Importantly, the high contact with GPs in the months prior to death suggests that it would be possible to reach the majority of elderly people with chronic health conditions. Better access to home care and rehabilitation, as well as improved pain management and palliative care services for those with terminal illness are also likely to be effective measures to prevent suicide.

Social and other external factors contributed to a significant proportion of elderly suicides in Cornwall. Bereavement was the largest risk factor in this category, and has been frequently implicated in previous studies (Conwell *et al.* 1991; Guohua 1995). Local bereavement counselling should therefore be targeted for improvement, for example the reduction of waiting lists for such services. A novel finding was the death of a pet being perceived as a contributing factor in a small number of cases, which may be understandable in the context of extreme loneliness and isolation.

Although isolation was only identified as having contributed to suicide in a very small number of cases, this does not mean it was not an important factor. There is existing evidence for isolation and loneliness as independent risk factors for elderly suicide (Conwell *et al.* 1991; Turvey *et al.* 2002; Beautrais 2002; Waern *et al.* 2003). It may simply be more difficult to identify these factors retrospectively than overt events such as bereavement.

Marital status and living circumstances of the individuals may give clues as to the level of isolation; while the majority of the suicide victims were married, a fairly large number lived alone, with more males living alone than in the general population of adults aged 75+ years in Cornwall (Projecting Older People Population Information System 2012).

Although all of the suicide victims were retired, those with a previous professional, technical or skilled occupation seemed to be highly represented. However, in order to assess whether certain occupations are a risk factor for suicide it would be necessary to compare the proportions of people with the same previous occupation in the general population. This was not studied due to difficulties in obtaining data for comparison; it has previously been noted that it can be impossible to find reliable up-to-date data on occupation at a regional level (South West Public Health Observatory 2011), so no definitive conclusions can be drawn.

The fear of becoming a burden that was expressed by several of the suicide victims has previously been reported as a risk factor for suicide ideation in older people (Jahn *et al.* 2011) and has also been identified in a study of suicide note themes (Foster 2003). This suggests a need for a change in attitude towards older people and a need for better integration into society. Such actions would also help to prevent feelings of isolation.

Other factors involved in a few cases were anxiety linked to a crime committed or fear of prison, financial issues, fear of loss of independence or having to move into a residential home, and fear of hospital admission. The availability of specialist counselling for older people in contact with the criminal justice system or those with financial difficulties, wider availability of warden-controlled accommodation and improving perceptions of residential homes are all potential preventive measures. Expressed fear of hospital admission suggests there may also be a need to improve older people's perceptions of health services. Distrust of health services had previously been implicated in elderly suicides in a European study (Kjolseth *et al.* 2010). The fact that a small number had a family history of suicide matches previous research findings (Rubenowitz *et al.* 2001). It is important to recognise that

anyone with such family history, particularly when diagnosed with depression, may be more at risk.

In general, suicide in older people appeared to be the result of multiple risk factors that had built up over time; this is a reason for optimism as it suggests considerable potential for prevention. Furthermore, most of these factors are either modifiable or could be controlled more effectively.

The analysis showed that in many of the suicide cases there were various warnings, i.e. points at which it might have been possible to intervene and prevent harmful suicidal behaviour. A detailed record of the health service contacts in the weeks and months prior to suicide was accessible in the coroner's documentation. Only around a quarter had previously self-harmed or attempted suicide, which is further evidence for the relatively low prevalence of failed suicide attempts in later life (Gallo *et al.* 1994; Paraschakis *et al.* 2012). The high level of contact with general practitioners and other healthcare professionals in a short period before death (albeit principally for physical illnesses) corresponds to the findings of previous studies of elderly suicides. For example, Shah and De (1998) reported that 90 % had seen their GP in the three months prior to death, compared with around 88 % in the present study. This health service contact, together with the fact that several of these individuals had a documented risk of suicide, suggests that prevention might have been achievable.

Suicide notes were left by around 41 % of individuals, a proportion similar to that found in studies of the same age group in other regions. For example, Salib and colleagues' (2002) study of coroner's records in Cheshire reported that suicide notes were left by 43 %. The content and style of suicide notes written by elderly people in Cornwall also matched that of

previous research, in that they were short and direct, and characterised by clear intent and determination (Shah & De 1998), with apologies, affection for those left behind, and pain and suffering as key themes (Foster 2003). However, the content of suicide notes was not available for all cases.

An additional outcome of the study of elderly suicide cases in Cornwall was the identification of behavioural changes that occurred prior to death. It is important for anyone in contact with the individual concerned to be able to recognise such behaviours. Any hint of suicidal thoughts or ideation should be taken seriously, even if said jokingly as in some of the cases studied. Putting affairs in order and missing appointments may suggest that there is a problem. Researching euthanasia or joining euthanasia groups showed seriousness of intent.

The qualitative findings of the research also have some implications in relation to theories of suicide in elderly people. The importance of fear of becoming a burden that was expressed in several of the cases adds some weight to Van Orden *et al.*'s (2010) interpersonal theory where the two proposed contributing factors are thwarted belongingness and perceived burdensomeness. The findings of fear of loss of independence as an additional risk factor in the present study, along with the effects of physical illness and disability, also appear to support control theories such as that proposed by Kjolseth *et al.* (2009).

5.4 Part 3: Survey of Adults Aged 75 and Over in a Rural Community in Cornwall

The response rate was high, and survey respondents were similar to the suicide victims in terms of age, marital status and previous occupation. However, there was a greater proportion of female respondents than female suicide cases.

While a large number of respondents had lived in Cornwall all their life, the majority had moved to Cornwall. This move had most frequently taken place in mid to late adulthood, and a high proportion had moved for retirement. This would be expected as Cornwall is a popular retirement region. It is possible that many of the individuals who committed suicide had also retired to Cornwall and become isolated after the death of a spouse; this could be investigated further, however this information was not available from coroner's records or the other data sources.

While only a small minority of respondents appeared to be isolated, with infrequent contact with family and friends, a fairly large proportion had feelings of isolation. This is a concern as isolation has been demonstrated to be a greater risk factor for depression in elderly people in rural areas than in urban areas (Friedman *et al.* 2007), and has been recognised as an independent risk factor for suicide (Conwell *et al.* 1991; Turvey *et al.* 2002; Beautrais 2002; Waern *et al.* 2003). The small minority in the survey who had limited social contact could therefore be at greatest risk of suicide. This shows the importance of taking various measures to reduce isolation in those who live in rural parts of Cornwall. As the principal reasons for not feeling isolated were based around social activities, internet access and the ability to travel independently, these areas should be targeted.

Among those surveyed, perceptions of living and growing old in Cornwall were very positive. This appears to contrast with the high suicide rate in older age groups. However, the older people surveyed recognised several of the typical problems associated with ageing as sources of a great deal of stress. The most stressful issues identified were loss of independence and transport problems, physical health problems, death of a loved one, fear of becoming a burden and moving into a residential home. Some of these problems were closely related to others, for example physical illness is linked to loss of mobility and subsequently independence. These issues closely matched those that were shown to have contributed in many of the suicides; for example, physical health was a major factor in both the suicide cases and the survey, as well as bereavement, and fear of losing independence and becoming a burden. It is important to deal with each of these issues and reduce the level of stress experienced by older people before extreme anxiety develops and the crisis point is reached that can lead to suicide.

High financial strain has been shown to be a significantly greater risk factor for depression among rural elderly than urban elderly (Friedman *et al.* 2007), and financial problems were involved in a small number of the suicides studied, however finances and debt were considered the least troubling issues in the survey sample. This may reflect the relatively high affluence of the area surveyed.

The survey also revealed a need to improve the perceptions of ageing in general. Again, physical health was a major theme, with negative feelings associated with ageing based mainly on this. Loss of independence or difficulty staying independent, bereavement and loneliness were also recurring themes.

Additionally, the results suggested there is a need to improve the relationship between older and younger age groups, with many respondents expressing negative and stereotyped views of younger people. A substantial number believed they were not respected by younger generations. These findings concur with those of a recent report, where the UK ranked most negatively out of four European countries in terms of age discrimination (Women's Royal Voluntary Service 2012). In the same report, the UK also ranked low on social inclusion and participation of older people. There is clearly a need for a change in attitude towards elderly people in general and to help to integrate them into society and reduce feelings of isolation. It is important to provide opportunities to allow different generations to mix and support one another. In the present study, those with more positive perceptions of younger people more commonly referred to personal experiences. Yur'yev *et al.* (2010) reported a direct link between attitudes and suicide; elderly suicide rates were lower in countries with more positive perceptions and attitudes towards older people.

The most popular suggestion in the survey for reducing stress and isolation and improving the experience of ageing in Cornwall was a local social group or organised day trips for older people. These facilities were not available in the rural areas surveyed, but would clearly be welcomed by the majority. The results from existing studies show that increasing the opportunities to socialise and build support networks may be effective in improving wellbeing and preventing depression (Golden *et al.* 2009) and also in reducing the risk of suicide (Rubenowitz *et al.* 2001; Oyama *et al.* 2005) in older people. With such important psychological benefits, participation of the most socially isolated individuals should be encouraged. As the main barriers to the use of a social group by the survey respondents were health related (as reported in other studies, e.g. Cissett 2001), the proposal of a

support group specifically for those who are physically disabled or with chronic health conditions is also likely to be well received.

There were mixed reactions to the suggestion of a local telephone helpline for older people, with many respondents believing they did not need this service as they had family and friends to discuss their worries with. It is therefore possible that such a service would be used by the most isolated individuals. However, De Leo and colleagues' (2002) finding that a telephone helpline in Northern Italy was beneficial for reducing the suicide rate in older people in the short- and long-term suggests that it might be worthwhile to pilot a similar service in Cornwall.

According to the results of the survey, a free advice service for older people would also be well received locally. This could be effective in reducing stress and problems associated with the desire to continue living independently in old age. A visiting scheme was a less popular suggestion. Home visits are currently provided by Age UK and Cruse Bereavement service, but these results suggest that further research may be needed into the effectiveness of such schemes or barriers to their use.

The main needs pertaining to the local area that were identified by the survey respondents were improved transport and internet access. Both of these were lacking in the areas surveyed but could reduce feelings of isolation in older people living in rural parts of Cornwall. Other benefits of these services would include helping older people to remain independent for as long as possible and subsequently making it less likely that they will feel they are a burden to others.

5.5 Summary of Implications for Prevention

The findings from both the study of suicide records and survey of older people have some important implications for the prevention of suicide in elderly people in Cornwall. This section will summarise some of the existing preventive strategies relevant to this group and some proposed strategies resulting from the research findings. The suggested strategies and the evidence for their recommendation have been discussed in **Sections 5.3** and **5.4**. This is not intended to be an exhaustive list and represents only a selection of existing and suggested approaches.

5.5.1 Existing Initiatives and Preventive Strategies

- Voluntary groups, charities and counselling services:
 - The mental health charity MIND formed a partnership with the Department of Health (Rural Minds) in 1997 to improve the mental health of people in isolated and rural areas (MIND 2012).
 - The Samaritans have a local office in Truro and offer a confidential counselling service and emotional support for anyone in distress or experiencing suicidal thoughts.
 - Contact the Elderly is a charity for people aged over 75 years that aims to prevent loneliness and social isolation by hosting regular tea parties nationally (including Cornwall).
 - AgeUK provides a befriending service and support for those who have been bereaved.

- Cruse Bereavement Care in Cornwall, the local branch of the charity, provides a counselling service (either by telephone or home visits), information and 'Friendship Groups' for those affected by bereavement, however there is a waiting list of several weeks for counselling (Cruse Bereavement Care in Cornwall 2006).
- Outlook South West offers guided self-help and counselling to anyone registered with a GP in Cornwall and the Isles of Scilly, aiming to reduce stress, low mood, anxiety and associated conditions.
- Training of healthcare staff:
 - Some general practitioners in Cornwall have received training around suicide risk and a regular suicide prevention newsletter aimed at primary care staff is published (Roberts *et al.* 2010)
 - A special edition newsletter focusing on suicide prevention for pharmacists in the local area has also been produced
- Raising awareness of suicide: Cornwall and Isles of Scilly Health Community's health promotion service runs an annual course in suicide prevention that is available for everyone.
- A 6 month pilot project in Week St Mary, where church members provided a telephone helpline available for people in the community, has now been implemented on a larger scale and takes referrals from Adult Social Care (Roberts *et al.* 2010).
- An 'Engaging Communities' event in Truro Cathedral aimed to raise awareness of the older population in Cornwall and encourage everyone to help elderly people.

5.5.2 Proposed Preventive Strategies for Older People in Cornwall

- Improved counselling services:
 - Reduction of the waiting list for counselling (in particular bereavement counselling) as provided by charities such as AgeUK and Cruse
 - A local telephone helpline specifically for older people so they are able to speak to someone about their problems
 - Consideration (and pilot studies) of specialised counselling services for older people in contact with the criminal justice system and those with financial problems
- Measures to reduce isolation:
 - Social groups in rural areas, particularly in areas where there is a lack of public transport or for those with mobility problems
 - Rural self-help groups for older people, especially for those with chronic health conditions
 - Improved internet access and online support groups for elderly people
- Improved detection and treatment of depression, including:
 - Opportunistic screening for depression and suicidal ideation in older people, particularly those with multiple risk factors
 - Recognition of the large psychological impact of physical illness
 - Development of new screening tools for depression in elderly people, to include somatic symptoms (i.e. an updated Geriatric Depression Scale)
 - Annual training relating to affective disorders and suicide risk for GPs, other health workers in primary and secondary care, and social workers

- Close monitoring of those who are being treated for depression, including home visits and follow-up of missed appointments wherever possible
- An out-of-area GP service for those who do not wish to go to their local surgery (to reduce the stigma associated with treatment of mental illness in rural areas)
- Strategies to increase awareness of depression and other mental health problems, e.g. information leaflets/posters, media campaigns
- Improved rehabilitation for chronic physical illness
 - Improved pain management and palliative care services
 - Home visits by health professionals where practicable
- Helping people to remain independent for as long as possible, including:
 - More local sheltered/warden-controlled accommodation
 - A free advice service to reduce stress associated with home/garden maintenance and independent living
 - Improved quality and perceptions of care homes
- Improving the relationship between older and younger people:
 - Regular events such as 'Engaging Communities' above, with a focus on older people (to encourage change of attitude towards elderly people in general)
 - More opportunities for older people to volunteer and meet younger age groups
- Reducing access to means:
 - Improved fencing and signage at cliff edges or suicide 'hotspots' to reduce jumping incidents
 - Improved security in residential homes to prevent jumping from windows

- Redesign of plastic bags to prevent use for suffocation (and restricted access in residential homes/clinical settings)

5.6 Summary of Additional Recommendations

In addition to the suggested strategies for suicide prevention, it is recommended that the accuracy of suicide statistics and rates should be improved in the following ways (which were discussed in **Section 5.2**):

- Regional data on suicide numbers and rates should be made available in narrower age bands (i.e. five or ten years) to determine who is most at risk
- Where small numbers exist, pooling of data over a number of years should be performed by local health authorities when comparing suicide rates with other regions
- More effective communication may be needed when transferring suicide data between organisations, in particular coroners and the ONS
- There should be clearer criteria for determining whether an open verdict is to be included in suicide statistics, and coroners' practices should be standardised as far as possible in different regions
- Additionally, the use of narrative verdicts should be researched and monitored on a local and national level

5.7 Contribution of Present Study to Research

This study has made some important contributions to suicide research. These contributions, along with the key findings of the research, will be summarised in this section.

This was the first study to look at suicide in a specific population group (the 75+ age group) in Cornwall, involving comparison of local data with national data and national and international research findings. This allowed the identification of some preventive strategies that may be particularly effective in Cornwall or areas of similar rurality, including restricting access to means and dangerous coastal locations, social groups, self-help and support groups in local communities, improved access to bereavement counselling, increasing awareness and reducing the stigma of mental illnesses, and improved transport and internet access to prevent isolation.

Various sources of suicide data (coroner's records, the ONS Public Health Mortality Files, and the local Primary Care Trust's suicide audit database) were combined and compared in the research. This differs from many studies that have only used one source (e.g. Hill *et al.* 2005 and South West Public Health Observatory 2011 – ONS data, Salib *et al.* 2002 – coroner's records). In addition to the advantage of supplying richer information, the use of multiple sources revealed discrepancies between them that should be addressed in order to provide more accurate and reliable suicide statistics (although costs should be considered, as previously discussed).

The suicide rate in Cornwall was averaged over five years and age groups were divided into more categories than conventional suicide data to assess the significance of the problem of elderly suicides. While it was previously known from audit findings that persons aged 75

years and older were at high risk of suicide in Cornwall (Roberts *et al.* 2010), this confirmed that males aged between 75 and 84 years had the greatest risk. Moreover, calculation of the Standardised Mortality Ratio showed that the over 75 age group had a statistically higher suicide rate in Cornwall than other regions, and this was unlikely to be due to random variation as the suicide rate was at least average for younger people in Cornwall.

Rather than focusing on a single factor as many previous studies had done, the research covered a range of aspects of suicide including rate, trends, locations, methods, risk factors, and warnings. This was achieved through the use of multiple data sources, and gave a fuller picture of suicide than previous studies, including the South West Public Health Observatory's 2011 report which was limited to a study of suicide rates, methods and the effects of occupation and socioeconomic status. For each of these aspects, the implications for suicide prevention were recognised.

Although the findings were based on small numbers, recognition of jumping from a height as a popular suicide method in those aged over 75 years in Cornwall was an unexpected and novel finding. Another of the most significant findings was the large importance of physical health conditions (including sensory disorders) and bereavement as contributing factors in addition to psychiatric illness.

The research compared the 'old old' (75-84) and 'oldest old' (85+) age groups. This has not been done by other researchers, who have tended to focus on differences between the 'young old' and 'old old' (e.g. Paraschakis *et al.* 2012). Although based on very small numbers, the main differences appeared to be that suicides were more likely to occur at home in the 'oldest old', suffocation by plastic bags was more commonly used by the 'oldest old', and physical illness possibly contributed more to suicides in this age group.

Similar to the findings of previous studies in other regions, the results suggested there are gender differences in suicide methods used by older people in Cornwall, with jumping and hanging/strangulation more prevalent in males, and self-poisoning used more in females. Physical illness also appeared to be as high a contributing factor in females as in males, which was a novel finding, although again based on very small numbers for analysis.

The survey identified the main sources of stress and isolation, and self-reported ways to reduce these problems and improve the experience of ageing in the age group most at risk of suicide in Cornwall. Sources of stress were closely related to several of the contributing factors in suicides, the most important factors being fear of losing independence, bereavement, physical health problems and fear of becoming a burden, in addition to isolation and loneliness and fear of hospital admission. It is clear that social activities and support groups for older people, transport, internet access, bereavement counselling, pain management and rehabilitation, perceptions of health services and residential homes, and the relationship between older and younger generations, are areas that need urgent improvement.

5.8 Limitations of Present Study

The main limitation of the suicide research was sample size. This problem was unavoidable when studying a specific population group in a relatively small area, but the small numbers involved made it more difficult to obtain statistically significant results. When comparing suicide rates in a sub-section of the population of Cornwall, wide confidence intervals were an inevitable outcome. Pooling the data over several years overcame this problem to some

extent, and did in fact show that the over 75 age group were at statistically greater risk of suicide in Cornwall than other regions.

The same issue of limited sample size applied in the analysis of suicide methods and risk factors, and made it particularly difficult to investigate gender- and age-related differences. While the comparison of 'old old' and 'oldest old' was attempted in the present study, as there were only six suicides in the 'oldest old' category over the five years studied, this did not allow a reliable comparison. However, despite this limitation, the results did give some suggestion as to the differing characteristics of suicide in different age groups and genders (for example, the typical 'oldest old' suicide occurred at home by plastic bag suffocation).

The survey was conducted specifically in a rural area; while this type of area is similar to a large part of Cornwall, and suicide rates are normally higher in rural areas (Levin & Leyland 2005; Hirsch 2006), it is not possible to generalise the findings to the whole of the county as different problems may be faced by older people in urban areas. Urban dwelling elderly people were not surveyed due to time and resource constraints, but suicide and stress in older people living in towns and cities could potentially be the subject of future research. In addition, it cannot be definitely stated that the rural area surveyed was representative of the whole rural community in Cornwall. For example, financial issues were perceived as unimportant while lack of transport and poor internet access were seen as pressing issues. It is possible that in certain other rural localities the findings would be very different.

The decision to include or exclude open verdicts was subjective. However, this was checked by a second or third person when there was some doubt as to whether to include or exclude certain cases. Qualitative analysis (of both suicide cases and survey data), by its very nature, is also subjective. However, to minimise the problems associated with subjectivity, content

analysis was done as systematically as possible and a second individual was involved in categorisation.

5.9 Suggestions for Further Research

The results of this study suggest that further research will be needed into open verdicts; this is extremely important as they are included in national suicide statistics and used for decision-making. Research should aim to determine whether the practice of recording open verdicts varies between coroners in different regions, and whether open verdicts are more likely to be recorded for some individuals than others (such as females, as indicated in the present study). It was not possible to compare coroners' practices in the present study due to there being only one coroner to cover the whole region. While narrative verdicts were not used for potential cases of elderly suicide in this study, their use should be investigated and monitored in other age groups and regions.

Larger-scale controlled studies, both retrospective and prospective, are necessary to reliably determine the relative importance of various risk factors for suicide. Comparing the characteristics of suicide in younger and older age groups (as performed by Pompili *et al.* 2008) or comparing suicides in regions with the lowest and highest rates are approaches that could be taken. Further studies of differences between the 'old old' and 'oldest old' should also be undertaken in future with larger samples; this would be appropriate for study at a national level.

As physical health factors had such a large contribution to suicides in the present study, large population studies (for example using medical record linkage) will be needed to determine which conditions have the greatest impact on psychological wellbeing in older

people. Specifically, the effects of sensory disorders should be investigated further.

Additionally, future research should aim to clarify the role of anxiety disorders and dementia in suicidal behaviour in elderly people.

Qualitative regional studies can be used to provide richer information on suicide. Life history of suicide victims could be studied retrospectively to determine who is most at risk. As an example, how many of the individuals who committed suicide had moved to Cornwall from another region and become isolated, and is this the case in other regions? The evaluation of theories to explain suicide in general or specifically for elderly people could also be achieved through qualitative studies of suicide notes or detailed psychological autopsies.

Finally, there will be a requirement for controlled studies to assess the effectiveness of the different interventions that have been suggested in this research (and also barriers to their use).

Chapter 6: Conclusions

It is apparent from the findings of this research that suicide in elderly people in Cornwall is a significant problem that is in need of greater attention. The epidemiology of suicide in older people in the region differs considerably from the national picture, with those aged 75 years and over (in particular the 'old old') at highest risk. Although suicide contributes to a lower proportion of total mortality in elderly people, the over 75 age group has a statistically higher suicide rate in Cornwall than in the UK overall. Furthermore, absolute numbers of suicides in older people are likely to rise in future as a result of increasing life expectancy.

To enable reliable regional comparisons of suicide rates, it is important that the discrepancies between various sources of suicide data that were highlighted in this research are addressed. There is a need for accurate, consistent reporting of open verdicts. This could be achieved through widespread use of a standard procedure for determining whether a specific open verdict is to be included in suicide statistics. More precise statistics on suicide rates can also be determined by dividing age into narrower bands than those used in conventional ONS data.

Risk factors for suicide in older people in Cornwall did not appear to differ significantly from those in other regions of the UK and elsewhere in the developed world. Most of the suicides were multifactorial, with depression, physical illness and bereavement most commonly involved. The results suggested a need for improved detection and treatment of depressive and other psychiatric illnesses, and improved access to and reduction of waiting lists for bereavement counselling. Physical illness was a factor of particular importance and

not associated with psychiatric disorders in many cases. Subjective experiences of physical health problems in older people should be considered, in particular the psychological impact of musculoskeletal disorders, chronic pain and sensory disorders. There may be a need for improved pain management and palliative care services.

With regard to suicide location and method, the majority of suicides took place at home, but jumping from a height and suffocation using a plastic bag were the most commonly used means of committing suicide. The prevalence of jumping that appeared to be characteristic of suicides in older people in Cornwall may reflect the relatively easy access to coastal areas such as cliffs. This has important implications for prevention. Better fencing and signage at cliff edges and suicide 'hotspots' have been historically effective preventive measures that could be applied to Cornwall. The fact that several deaths involved jumping from windows suggests a need for vigilance and improved security, particularly in residential homes where a small number of suicides occurred. Similarly, the redesign of plastic bags (or restricted access wherever possible, for example in residential homes or clinical settings) may be necessary to prevent use for suffocation.

There were some gender and age-related differences in suicide rate, method and location. Older males were at greater risk of suicide than females, and male suicides were more likely to occur in a public place and use more violent methods including jumping, hanging or strangulation and firearms. The 'oldest old' appeared more likely to take their lives at home by suffocation. Future studies with larger samples should further examine the differences between subgroups of elderly people to enable the identification of those most at risk of suicide and to allow more targeted preventive strategies.

Warnings that an elderly person was considering suicide that were identified retrospectively were similar to those reported by previous studies, and included previous self-harm or attempted suicide, contact with a health professional in the months prior to death, expressed suicide ideation or plans, behavioural changes and research into euthanasia. It is important to take any consideration of suicide seriously and monitor the individual closely.

The survey of older people in a rural part of Cornwall revealed that growing older in the region was perceived as a positive experience overall, but feelings of isolation were prevalent and a small number were extremely isolated. The greatest concerns (most of which were also implicated in the suicides) were loss of independence, problems associated with transport, physical health problems, death of a loved one and fear of becoming a burden. Several possible ways of dealing with these problems, improving the experience of ageing, and reducing isolation, that could be relevant for suicide prevention were identified. Social groups or organised day trips for older people in rural areas, an advice service to assist with independent living, support groups for isolated or disabled elderly people, and improved public transport and internet access were the most popular suggestions. There also appears to be a need for a universal change in attitude towards the ageing process and the role of older people in society.

The next step to reduce suicide in older people in Cornwall will be to pilot and implement various preventive strategies, with controlled studies to investigate the effectiveness of such interventions. Better communication between the relevant organisations is needed in terms of transferring data and determining accurate suicide statistics (and inclusion of open verdicts), and in working together to prevent suicides. Involvement of health services, councils, voluntary groups, and the community as a whole will be necessary to improve the

experience of ageing, reduce stress and improve the sense of connectedness felt by older people.

Appendix A: Open Verdicts Excluded (as very unlikely/obviously not suicides)

2010/2009

- 1 spontaneous brain haemorrhage
- 1 subdural haemorrhage and cerebral contusion (very likely fall)
- 2 malignant mesotheliomas
- 1 accidental overdose
- 2 fall and bronchopneumonia
- 1 fall with haemothorax and rib fractures
- 1 accidental fall with fractured pelvis
- 1 fall with bronchopneumonia and fractured neck of femur
- 1 asbestosis (uncertainty whether direct cause of death)
- 1 chronic lung disease (possibly due to industrial fumes)
- 1 left ventricular failure and pulmonary oedema
- 1 bronchopneumonia and stroke
- 1 bronchopneumonia and chronic obstructive pulmonary disease (COPD)
- 1 cause of death could not be ascertained as advanced decomposition (2009)

2008

- 1 COPD and asbestosis
- 4 mesotheliomas
- 2 asbestosis (uncertainty whether direct cause of death)
- 1 myocardial infarction following burglary

1 road traffic accident (pedestrian)

1 subdural haematoma and multiple rib fractures (very likely accidental fall)

1 complication of surgery for repair of oesophageal hernia

1 death from fire in residential home (very likely accident)

2007

1 road traffic accident

1 sepsis and fall (not clear if accidental fall or collapse)

2006

1 accidental fall

2 mesotheliomas

1 asbestosis (uncertainty whether direct cause of death)

1 pulmonary embolism and hip fracture

1 accidental fall and coronary artery thrombosis

2 accidental falls, fractured neck of femur and pneumonia

1 haematoma following accidental fall in palliative care setting

2 cause of death could not be ascertained as advanced decomposition

Also 1 narrative verdict – carcinomatosis.

54 open verdicts in total, 41 of which were excluded as obviously not suicide or very unlikely suicide. 13 open verdicts were included.

Appendix B: Sample Participants' Letter and Questionnaire



Dear Sir/Madam,

I am a research student working with the University of Plymouth and Cornwall and Isles of Scilly NHS Primary Care Trust. I am researching ageing in Cornwall, and the problems and concerns of older people in this area. I would be very grateful if you would take a few minutes of your time to complete the attached questionnaire.

Participation is entirely optional and you may withdraw your answers at any time if you wish to do so without providing a reason and without detriment to your relationship with the researcher or Plymouth University. Also, if there are any questions you do not wish to answer then feel free to leave these blank.

Please be assured that your identity and responses will remain completely anonymous and confidential at all times and will not be used for any purpose other than this project.

If you have any further questions or are interested in finding out the results of the finished project, please contact Sarah Buckingham on (01726) 882776 or e-mail: sarah.buckingham@postgrad.plymouth.ac.uk.

Alternatively contact my supervisor Professor Catherine Hennessy on (01752) 586516 or e-mail: catherine.hennessy@plymouth.ac.uk.

Thank you for taking the time to read this information.

Yours faithfully,

Sarah Buckingham

Older People in Cornwall Questionnaire



1. What is your age?
2. Are you male or female? M F
3. What is your marital status? (Please tick one)
- Single Married Widowed Divorced/separated

4. What is/was your occupation? (Please state)
-

5. Have you lived in Cornwall all your life? Yes No

If yes, go to Question 8. If no, go to Question 6.

6. ***If no***, how long have you lived in Cornwall? _____ years

7. And what were your reasons for moving to Cornwall? (Tick all that apply)

Retirement Moved for work reasons

To be nearer to family Liked the area

Other – *please specify* _____

8. In your opinion, is Cornwall generally a better or worse place to grow old in than other parts of the UK?

Better Worse About the same Don't know

Please explain why better or worse: _____

9. a) Is there anyone that you are able to confide in and share your worries with?

Yes No

b) ***If yes***, please indicate the nature of this relationship (e.g. spouse, friend, sister):

10. How many close friends do you have?

None 1 or 2 3 or 4 5 or more

11. a) How often do you see your **family** (apart from those you live with)?

Every day 5-6 times a week 3-4 times a week

1-2 times a week Not every week but at least once a month

Less than once a month

b) How often do you see your **close friends** (apart from those you live with)?

Every day 5-6 times a week 3-4 times a week

1-2 times a week Not every week but at least once a month

Less than once a month

c) How do you feel about how often you see these family members and close friends?

Not often enough Too often About right

12. Do you live alone? Yes No

If yes, go to Question 14. If no, go to Question 13.

13. **If you do not live alone**, are you able to share your worries with and confide in the person you live with?

Yes, to a great extent Yes, to some extent

No, not really No, not at all

14. Do you ever feel isolated in any way?

Yes, always Yes, frequently Yes, sometimes

No

Please explain why: _____

15. In general, would you say you are more or less happy now than when you were 65?

More Less About the same

Don't know/prefer not to answer

Please explain why: _____

16. Do you think that people of your age group are respected by younger people?

Yes No Don't know

Why do you think this? _____

17. On a scale of 1 to 10, where **1 = not at all** and **10 = greatly**, how much does each of the following concern you?

	Score /10
a) Physical health problems	
b) Memory loss/dementia or other mental health problems	
c) Finances/debt	
d) Death of a loved one	
e) Losing my independence	
f) Loneliness	
g) Transport problems/losing my driving licence	
h) Becoming a burden to others	
i) Spending time in hospital	
j) Having to move into a residential home	
k) Being a victim of crime	
l) Problems with home/garden maintenance, paperwork etc.	
m) Not being able to keep up with technology	
n) Other – <i>please state</i>	

18. If there was a social group or organised day trips for older people in your local village, would you use it?

Yes No Maybe Don't know

Please explain: _____

19. If there was a telephone helpline for older people in your area where you could speak to someone about any worries that you may have, would you use it?

Yes No Maybe Don't know

Please explain: _____

20. If there was a scheme where someone could visit you and talk through any worries, would you use this?

Yes No Maybe Don't know

Please explain: _____

21. Would you use a free advice service for obtaining help with household chores, gardening, maintenance or paperwork?

Yes No Maybe Don't know

Please explain: _____

22. In your opinion, is there anything else that could be done to improve the experience of growing old in your local area? (For example, improved transport, more opportunities to volunteer, support groups, free local internet access).

Thank you very much for completing the questionnaire and for your valuable help with this research project.

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