Attempted Suicide in Older People: A Review of the Evidence

By Kate Deuter and Nicholas Procter

INTRODUCTION

In most countries of the world, the elderly have a higher rate of death by suicide than younger age groups (Lapierre et al. 2011) and the attempted suicides of older people often involve relatively high suicidal intent (Hawton et al., 2006). The ratios of attempted suicide to death by suicide have been estimated to be 4:1 among the elderly, but between 8:1 and 15:1 for the general population (De Leo et al., 2001). So too, the likelihood of death by suicide following an attempt is greatly increased compared with general population risk and multiple self-harm episodes are the main risk factor for suicide following an attempt (Hawton et al., 2006; Kim, 2014). The risk of subsequent suicidal behavior is substantial in elderly suicide (Kim, 2014). A study by Murphy et al. (2012) found that the risk of suicide was 67 times higher among older adults presenting to hospital with self-harm relative to the general population. Research into suicides and attempted suicides of older people is often concerned with understanding the nature and prevalence of risk factors contributing to harm. Furthermore, a specific focus on psychological theories typically has not addressed the issue of suicide or has limited the potential for broader understanding (De Leo, 2004).

BACKGROUND

According to a critical review of attempted suicide in old age by Draper (1996), the seminal works of the 1950s identified most of the same key factors also found in contemporary research; depression, physical illness, social isolation and being unmarried. Further, Draper (1996) noted that there had been a 'disappointing lack of refinement in our understanding of the processes by which these and other factors contribute to an older person's suicide attempt' (p. 585). The elderly who attempt suicide provide opportunities to further our awareness of the factors that contribute to suicide, in particular health professionals who must consider the complex interaction between medical, psychological and social factors that impact upon older people's lives (De Leo et al., 2013; Lawrence et al., 2000). Draper (1996) also argued that such opportunities had 'yet to be firmly grasped by researchers' (p. 585). Building on Draper's work, Chan et al. (2007) reviewed

ABSTRACT

Older adults are at higher risk of dying by suicide than younger age groups, particularly where a previous attempt has been made. The aim of this study was to identify and review quantitative and qualitative research studies of attempted suicide in older people published between 2005 and 2014. Of the 128 relevant studies identified 23 were included for review. Content analysis was employed to extend conceptually the interaction between biological, psychological and social factors in the context of the suicidal process. The perspectives of older people who have survived a suicide attempt are critically needed to inform future prevention and intervention strategies, specific to the sociocultural frameworks within which they operate.

SAMMENDRAG

Eldre har høyere risiko for å dø i selvmord enn yngre, spesielt når de tidligere har utført selvmordsforsøk. Målet med denne studien var å identifisere og gjennomgå kvantitative og kvalitative undersøkelser av selvmordsforsøk blant eldre, publisert mellom 2005 og 2014. Av 128 relevante studier, ble 23 inkludert i denne gjennomgangen. Innholdsanalyse ble brukt for å utvide forståelsen av samspillet mellom biologiske, psykologiske og sosiale faktorer i den suicidale prosessen. Å bedre forstå hvilke betraktninger eldre som har overlevd selvmordsforsøk gjør seg er nødvendig for å kunne forbedre strategier for forebygging og intervensjon, tilpasset den sosio-kulturelle rammen hvor de skal brukes.

the literature published between 1995 and 2004. In summarising the advances in their understanding of attempted suicide in later life, they argued the need for increased generalisability, prospective studies (to disentangle the direction of causality), better cross-cultural studies (inclusive of the developing world) and health service research on the utilisation, costs and barriers to general health and psychiatric care.

Large numbers of people born between 1946 and 1964 referred to as 'baby boomers' are now entering older adulthood. When compared with earlier or subsequent birth cohorts, they have had a relatively higher rate of suicide. Consequently, a substantial increase in the absolute number of deaths of older people by suicide is expected

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(Conwell et al., 2011). Therefore, it is timely that we address gaps in knowledge so that we can provide effective care and support to a population who possess a historically high susceptibility to suicide. The major aim of this review is to build on the work of Draper (1996) and Chan et al. (2007) by identifying and critically reviewing research studies which examined

the attempted suicides of older people. Because no single risk factor can explain suicide attempts in older people, a theory of suicide offers a multifaceted framework from which to advance our understanding of this phenomenon and develop effective interventions (Stanley et al. 2015). Inherent in the biopsychosocial model of suicide is recognition of the relative contributions of biological, psychological and social factors (Bryan & Rudd, 2011). Drawing on the specific recommendation of Chan et al. (2007) for future research in the field, quantitative and qualitative studies examining the interaction of biological, psychological and social factors within the suicidal process were of key interest.

METHOD

Search Strategy

Our aim in integrating both quantitative and qualitative research findings was to maximize the empirical content by adopting a pluralistic approach to data collection and analysis (Feyerabend, 1995). According to Malterud (2002), both types of approaches require systematic and reflective development of new knowledge and each process is subject to inspection and challenge. Firstly, a broad search of Google Scholar was conducted using the keywords *attempted suicide* (and) *elderly* from 1990–2014. This preliminary search revealed 33 published research studies within the first 150 citations, providing the researchers with a broad scoping of the field. Regarding the nomenclature used to identify relevant studies, there has been a significant lack of consistency in the terminology and definitions adopted which describe suicidal behaviour over the last twenty years. The use of multiple terms to indicate similar behaviour such as 'parasuicide', 'attempted suicide' and 'deliberate self-harm' has resulted in confusion, although renewed international debate to address these issues is in progress (Arensman, 2015). Secondly, we conducted an exhaustive search of the data-

base PsychInfo via Ovid MEDLINE, utilising the following combinations of keywords: *attempted suicide* (and) *elderly*, *attempted suicide* (and) *older people*, *deliberate self-harm* (and) *elderly*, *deliberate self-harm* (and) *older people*, *parasuicide* (and) *elderly* and *parasuicide* (and) *older people* – in English from 1994–2014.

Inclusion criteria

- Peer-reviewed research studies inclusive of older people who had survived a suicide attempt(s);
- Research studies that reported on attempted suicide in combination with death by suicide were included due to their high correlation in elderly suicide;
- Fifty years was applied to the lowest age limit as studies varied in their international classifications of older age.

Exclusion criteria

- Commentary, opinion pieces, discussion papers and editorials;
- Research studies that examined the association between attempted suicide and a single phenomenon (i.e., dementia, cognition, substance use), and
- Research studies that reported on attempted suicide in combination with suicidal ideation and/or suicidal intent.

Analysis

Qualitative content analysis is defined by Hsieh et al. (2005) as 'a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns' (p. 1278). Drawing on the recommendations of Chan et al. (2007), content analysis took a *directed* approach with the aim to extend conceptually the interaction between biological, psychological and social factors in the context of the suicidal process. Of particular interest was the latent content; statements extracted from the descriptive findings that constituted a deeper understanding of the relationship between the biopsychosocial characteristics reported. The major aim of coding the latent content was to identify patterns in the data. We began by sorting key concepts or variables into initial coding categories (Potter & Levine-Donnerstein, 1999), also referred to as *deductive category application* (Mayring, 2000). Sub-categories for each main category were then determined. Finally, data that could not be coded were identified and analysed to establish whether they represented a new category or subcategory of an existing code (Hsieh et al., 2005).

RESULTS

From a total of 274 results, (n=128) relevant studies were identified. After screening for inclusion and exclusion criteria, individual review of primary sources cited within Draper (1996) and Chan et al. (2007) and the identification and inclusion of four studies not included in Draper (1996) and Chan et al. (2007), (n=104) studies were rejected. A further paper by Kim (2014) came to the attention of the researchers via email alert and met inclusion criteria. In total, (n=23) studies were included for review. They are presented in Table 1.

A theory of suicide offers a multifaceted framework from which to advance our understanding of this phenomenon and develop effective interventions

1. Physical illness

Physical illness was identified as a significant issue in nearly half the older UK attempters studied by Hawton et al. (2006), while 40 percent of the UK patients in Lamprecht et al. (2005) study suffered from a debilitating illness, with ongoing pain a prominent complaint for men. Abdul-Hamid et al. (1999) reported an association between physical health problems and elderly suicide attempts. Approximately 45% of elderly patients in the Singaporean study by Kua et al. (2003) cited physical illness as the main reason for their suicide attempt. According to Sharlin et al. (1997), declining health might also be a contributing factor in the incidence of suicide among the elderly in Israel. Of the 71 elderly Japanese attempters studied by Kato et al. (2013), 78.9% presented with a physical disorder, compared with 20.6% in the non-elderly group. In contrast to these findings, Ruths et al. (2005) UK study did not find any impact of physical health factors on deliberate self-harm behaviours in psychiatric patients.

In addition to distress resulting from physical illness itself, findings from Yang et al. (2001) Taiwanese study

argue that the impact on lifestyle, discomfort associated with treatment, fear of being a family burden and loss of hope of recovery may contribute to an attempt. Although interpersonal problems were a leading cause of suicide attempts in younger and older age cohorts in the Korean study by Kim et al. (2011), physical illness explained more suicide attempts in the elderly group. Even after controlling for depression, anxiety and substance use disorders, the presence of physical illness and chronic pain was associated with increased risk of suicide attempts. Kim (2014) found many of their elderly Korean participants suffered greater physical, psychological and relationship strain after their attempt.

The Israeli study by Bergman Levy et al. (2011) found an association between physical illness and the increased risk of suicide attempts through several possible modes of interaction. Disorders mainly of the central nervous system directly increased the risk, while the physiological effects of the disorder that may contribute to severity of depression and physical illness were directly related to increased psychosocial distress. Lebreton et al. (2006) who

studied older French suicide attempters found that being older than 75 years, hospital stay over 35 days associated with physical illness, previous suicide attempt, pre-existing physical impairment, serious physical consequences of the attempt, several physical illnesses or medical treatments and a past history of psychiatric illness other than depression significantly affected overall survival and survival without repeat attempts. Prior to their attempt, many of the older participants interviewed by Crocker et al. (2006) felt they had lost control, particularly where health, mobility, social status and social support and changing life circumstances were concerned.

2. Depression

All of the elderly Korean attempters studied by Kim (2014) were diagnosed with severe depression following their attempt. In the Swedish study by Wiktorsson et al. (2010), over two thirds of the cases fulfilled criteria for major depression, whilst nearly a quarter fulfilled criteria for minor depression. Six of those who attempted suicide had Bipolar I disorder, all of which had a major depression at the time of the attempt. None of the comparison subjects had bipolar disorder. Similarly, Yang et al. (2001) also found that depressive disorders (major depression or dysthymic disorders) were the most common diagnoses for older Taiwanese attempters but organic mental disorders were rarely diagnosed. In the UK study by Dennis et al. (2005), approximately 40% of both self-harm and control groups experienced severe life events during the 6-month study period; comparable with earlier UK studies. When coupled with other factors, in particular social support, life events appear to be influential

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Gibbs et al. (2009) found a lack of positive problem orientation and rational problem-solving to be associated with depression. Their findings contradict the widespread view of late-life suicide attempters and those who die by suicide as being non-impulsive; a difference which persisted after accounting for comorbid substance use

disorders. Findings by Wiktorsson et al. (2011) demonstrated an association between low Sense of Coherence and non-remission in suicidal elders, although they suggest that this association may be mediated by depression. The proportion of older people who were already prescribed depression treatment at the time of the attempt was relatively high. In Kim's (2014) study, many older people drank alcohol and smoked as a means to deal with their depression, anxiety and despair, prior to their attempt. Hawton et al. (2006) could not report on the prevalence of psychiatric disorders in their sample because this information was not systematically recorded. Previously they showed that the prevalence of psychiatric disorders in deliberate self-harm patients in general, especially

depression and alcohol abuse, and comorbidity with personality disorders, is similar to that found in studies of suicides.

3. Gender

Most women in Lebre et al. (2006) French study were widows, whereas men were either married or in a de-facto relationship; contrary to numerous studies which have reported a higher incidence of suicide attempts in widowers and single or divorced men. Kim et al. (2011) found the male-to-female ratio was approximately 1:2 in the less than 65 years group, but nearly 1:1 in the 65 years and over group. This study did not support gender differences on marriage status, reason for attempt and severity of index attempt in the elderly group. Other demographic and clinical features of older Greek patients in Gavriellatos et al. (2006) study were markedly different. A greater prevalence of women – 75% of whom were married or living with relatives – experienced factors related to domestic conflict rather than social isolation and loneli-

ness. Abdul-Hamid et al. (1999) described the profile of elderly suicide attempters as 'mostly female, divorced or widowed, who have experienced life events in terms of bereavement and who have had chronic health problems for more than a year' (p. 95). Males were significantly represented (70%) in the elderly UK suicide attempters studied by Packer et al. (2012).

4. Loneliness, hopelessness and social isolation

Examining attempted suicides of older Israelis, Sharlin et al. (1997) described old age as a 'time of multiple losses of friends and family and often resulting in widowhood and intense loneliness' (p. 364). Sixty percent of older Swedish suicide attempters studied by Wiktorsson et al. (2010) reported feeling lonely, compared with 17.6% of the individuals in the comparison group. Just over half (58.4%) reported their situation as being hopeless. The proportion reporting hopelessness was greater among those with major depression (71.2%) than in those with

minor depression (31.8%). Elderly Korean participants in the study by Kim (2014) became sadder and lonelier after their attempt because they believed they were not understood by their children. Participants revealed a tension between suppressing their suicidal intent and not bringing reproach on their children. Prior to their attempt, participants in Crocker et al.

(2006) UK study experienced reduced visibility. This was expressed through feelings of isolation, loneliness and a general sense of being distanced from and less connected with friends and loved ones. However some participants still felt isolated in the presence of others. Lack of support from services and poor community integration were reported by Dennis et al. (2005) as important factors in determining suicidal behaviour in older adults in the UK. In addition to loneliness and social isolation, Gavriellatos et al. (2006) reported circumstances of interpersonal conflict or dependence, psychiatric history (particularly depression), medical morbidities and polypharmacy. Varying degrees of real or perceived incapacity in different combinations were present in the majority of the older attempters. This was significant in producing vulnerability to and precipitating an overdose.

5. Marital status

Marriage was not protective against suicide attempts in the elderly UK group studied by Packer et al. (2012). This correlates to findings in the literature that marriage may no longer be a protective factor in preventing suicide attempts, particularly among older men. In line with this suggestion, Lamprecht et al. (2005) found that a significant number of older men were married at the time of their attempt. This contrasts with previous findings where a significant proportion were widowed or not married or where those who were married constituted the smallest proportion of the sample of males with attempts. In the study by Yang et al. (2001), 60% of attempters were unmarried at the time of the attempt, with social isolation

or loneliness cited as motives by twenty of the older Taiwanese attempters. In the study by Ruths et al. (2005), married persons were under-represented, whilst widows were over-represented (41% and 45% respectively).

6. Family problems

Yang et al. (2001) found that family problems accounted for approximately half of the attempts with some attempters attributing their motivation to children that were not filial. Others feared being a burden to their children. In their study of older Koreans, Im et al. (2011) found the meaning of suicide (prior to their attempt) consisted of four core components: (i) conflict with family; (ii) powerlessness and despair in their life with a drop in self-esteem; (iii) using internal and external resources to resolve problems, and (iv) awareness of imminent crisis. Tsoh et al. (2005) argue that family discord – even in the absence of a serious depressive disorder – amplified suicide risk among the older adults in their Hong Kong study.

7. Living Arrangements

Findings by Ruths et al. (2005) revealed that 38% of people aged 65 years or over lived alone. Similarly, older attempters in the Swedish study by Wiktorsson et al. (2010) were less likely to have a partner and lived alone more often than individuals in the comparison group. The proportions of those living in an institution were almost identical in the two groups. Whilst living with family is normally thought of as protective against mental illness, 60% of patients who presented in Packer et al. (2012) UK study were living with family.

8. Past psychiatric history/contact with mental health services

Murphy et al. (2012) identified independent risk factors for non-fatal repetition of self-harm in people aged 60–74 years, with previous episode of self-harm and previous psychiatric treatment. According to Hawton et al. (2006), relatively few patients were in psychiatric care at the time of their attempt, although four out of ten had a history of previous psychiatric treatment. Over half of the cases and one tenth of the individuals in the comparison group in the study by Wiktorsson et al. (2010) had a history of psychiatric treatment. Ruths et al. (2005) argued that the overall impact of psychiatric care on suicide and prevention of attempted suicide was unclear.

DISCUSSION

Qualitative content analysis was applied to the descriptive findings of (n=23) research studies in order to examine the most commonly reported interactions of biological, psychological and social factors associated with attempted suicide in the elderly. In endeavouring to meet this objective, several challenges were manifest. Firstly, the included studies examined different groups of older people and different methods were used, thus the likelihood of a high level of heterogeneity was foreseeable. Methodological weaknesses identified in the review by Chan et al. (2007) were evident across some studies in the present review, including highly selected populations and small sample sizes; although these may be somewhat

Marriage may no longer be a protective factor in preventing suicide attempts

mitigated by the considerable extent and richness of qualitative description included for analysis. Secondly, the review aimed to examine relationships between contributing factors within the suicidal process. Despite efforts to describe findings in the specific contexts of pre and/or post-attempt periods, studies varied in their specific focus on pre-attempt (43%), post-attempt (17%) or both pre- and post-attempt (39%).

As a contributing factor for suicide, physical illness inhabits a contentious space within the research literature (Ruths et al., 2005). Chan et al. (2007) argued that physical health status did not appear to be strongly associated with deliberate self-harm. In our review, there was a significant amount of reference to physical illness, most notably within the Korean (Kim 2014; Kim et al., 2011), Japanese (Kato et al., 2013) and Singaporean (Kua et al., 2003) studies, while three UK studies (Abdul-Hamid et al., 1999; Hawton et al., 2006; Lamprecht et al., 2005) reported moderate associations with attempted suicide. In line with Draper's (1996) discussion of physical health factors, our

findings also suggest that it is the interaction of physical incapacity with other psychosocial factors. More specifically, physical illness was situated within discussions of social isolation and social support, interpersonal conflict, psychiatric illness, bereavement and loss of autonomy and control.

Depression was significantly linked to issues of problem solving, social support, substance use and

personality disorders; to a lesser degree it was associated with gender differences, marital status and family problems. Personality attributes, including specific domains of extraversion and neuroticism were found by Chan et al. (2007) to be associated with both hopelessness and suicidal behaviour. Importantly, provision of care should not be reduced to simply assessing and managing psychiatric conditions. The view that 'all suicide is caused by mental disorder' neglects other important and potentially modifiable factors (Pridmore, 2011, p. 81). Aspects of individuals' social, cultural, economic, and political lives are afforded relatively less attention than medicalized approaches (De Leo, 2004; Pridmore, 2011). Too often, mental deterioration in the elderly is accepted as a predictable response to the effects of aging – a prevailing attitude currently requiring critical review (International Association for Suicide Prevention, 2014).

According to Chan et al. (2007), being female, unmarried, having a psychiatric disorder (in particular depression) and having made a past attempt are associated with attempted suicide in older adults. Typically, the suicide rate for women shows a gradual increase with age, while men's suicide rate first peaks in middle adulthood, showing a marginal decline until a dramatic increase for the 75 and over group (World Health Organization, 2002). The present study revealed a higher proportion of elderly female attempters (Sharlin et al., 1997; Gavrielatos et al.,

2006; Hawton et al., 2006) (1.6:1, 2.7:1, 1.7:1) versus a higher male to female ratio reported by Murphy et al. (2012) 1.2:1, with Kim et al. (2011) reporting a 1:1 ratio. Explanations for gender differences within the study populations were culturally situated. Kim et al. (2011) describe older women as having greater access to resources of subjective well-being through their relationships with children, friends and community. As such, older men may experience difficulty in adapting to age-related changes, leading to an increased incidence of suicide attempts. However, Kim et al. (2011) did not confirm gender differences on marriage status, reason for and severity of attempt in their elderly group. Gavrielatos et al. (2006) noted that factors related to domestic conflict rather than social isolation and loneliness may be more closely associated with the distinct social and cultural characteristics of Greek people – in particular, the surviving extended family coupled with a growing liberation of younger generations.

Social support was also expressed in terms of cultural and social trends and expectations, particularly in the context of family life. According to Mellqvist et al. (2011) children and grandchildren may become the focus of older Swedes lives, as gradually their partners, relatives and friends die, impacting directly upon social support and social inclusion. Sharlin et al. (1997) emphasised the importance of honouring and caring for elderly Israeli within the family; responsibilities which have been formally expressed in legislation. While Chinese elders were traditionally provided with a high level of respect and care from family, modernization and industrialization of Taiwan has resulted in larger extended families being replaced by a more nuclear family structure (Yang et al. 2001). In response, Kua et al. (2003) suggest that adequate community services should be provided for families to reduce tensions that could arise in caring for an elderly relative. Tsoh et al. (2005) found that the risk of suicide in the older Hong Kong adults in their study was heightened by family discord. For Chinese people, in particular, suicide is perceived as a socially acceptable means of 'protest and escape' from interpersonal conflicts and situations that may result in 'loss of face', even without a serious depressive illness.

In view of the identified challenges, what this review supports firstly is the importance of our social and cultural backgrounds which, as Yang et al. (2001) and Chan et al. (2007) point out, significantly influence the expression of any of the contributing factors identified, as well as defining the barriers to seeking professional support. Full assessment with attention to sociocultural factors as well as the optimum management of mental disorders is required, as is the promotion of more appropriate problem solving methods (International Association for Suicide Prevention, 2014). Notably, cultural differences in the expression of suicidal behaviour (Hjelmeland & Knizek, 2011), reaching out to services, and the availability of those services all influence the extent to which findings might be transferred across settings (Wiktorsson et al., 2010). Secondly, much research has focused on risk factors and quantitative data; there is relatively less knowledge of lived experience or understandings of internal suicidal processes (Michel et al., 2009). As Webb (2006, p. 16) argues:

'For a more complete understanding of suicidality we need to bridge the "explanatory" gap between first-person, subjective experience and third person, objective knowledge.' It is crucial that the diversity of voices and experiences of suicide attempt survivors are represented in these narratives.

The perspectives of older suicide attempt survivors need to be embedded within international research and policy guidelines. In countries such as Australia for example, the peak non-government body known as Suicide Prevention Australia (SPA) advocates for greater 'inclusion of suicide attempt survivors' views and experiences in the policy, research and development of mental health services (including community-based services) and in the development of treatments for suicide attempt survivors' (2009, p. 11). Responding to this gap in knowledge, SANE Australia (2015) in collaboration with researchers from the University of New England examined in depth the experiences of suicide attempt survivors aged between 19 and 72. Their qualitative report *Lessons for Life* highlights the complexity of factors that contribute to a suicide attempt. It is pleasing to see that several qualitative studies included in the present review sought the views of older suicide attempt survivors, most notably, studies from Korea and the United Kingdom. Researchers from other countries would do well to follow their lead, thus contributing toward a more integrated body of knowledge in the field.

CONCLUSION AND IMPLICATIONS

Expected growth in the number of older people coupled with the potential for an increase in the absolute number of elderly suicides makes this a significant issue to explore at this time. Given that older adults are at particularly high risk of dying by suicide and that an attempt is a powerful predictor of suicide across the lifespan, improving our understanding of the complex interplay of contributing factors is of great value in generating strategies for intervention in this population. In order to deepen our understanding of the complex interrelationships identified, more qualitative studies with older people who have survived a suicide attempt are urgently needed. Such perspectives must be located within the specific sociocultural frameworks that influence the suicidal processes and behaviours of older people.

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KATE DEUTER is a PhD Candidate in the School of Nursing and Midwifery at the University of South Australia. Her current research explores the nature and scope of protective factors for older people who have survived a suicide attempt.

NICHOLAS PROCTER is a professor and holds the Chair of Mental Health Nursing at the University of South Australia. His specific areas of expertise are: risk and vulnerability in mental health, rural and remote mental health services, and community engagement in mental health promotion and suicide prevention.

Author(s) Year & Country	Type of study	Aims/Objectives	Sample	Pre-Attempt	Post-Attempt	Methods	Findings
Draper (1996) AUS	Literature review	Critically review the literature on attempted suicide in old age published between 1985 and 1994	55+	✓	✓	Studies were critically reviewed with reference to demography, suicide methods, stressors, psychiatric features and outcome	Associated factors included being unmarried, social isolation, impaired physical health, high suicidal intent and mental illness
Sharlin et al. (1997) ISR	Comparative analysis	Examine statistics of attempted and completed suicides among the aged in Israel from 1977 to 1986	65+	✓		Review of the major demographic data from 1977-1986 and a comparison of two decades 1962-1971 and 1977-1986	Increases in attempted suicide and death by suicide are discussed in context of Israeli social life
Abdul-Hamid et al. (1999) UK	Comparative analysis	Describe elderly deliberate self-harm (DSH) cases from one NHS trust and compare them with younger adult cases	65+		✓	Statistical comparison of risk factors for DSH and DSH act and suicide risk	Physical health problems and low referral rates to emergency departments were linked to elderly suicide attempts
Yang et al. (2001) TAI	Comparative analysis	Investigate characteristics of elderly Chinese suicide attempters in Taiwan over a six year period	65+	✓	✓	Statistical comparison of the characteristics and diagnosis and motive of attempt	Most attempters were unmarried. Depressive disorders, social isolation and loneliness were prevalent
Kua et al. (2003) SIN	Comparative analysis	Compare suicide attempts of elderly and young Chinese living in Singapore	65+	✓		Statistical comparison of number of cases, methods and precipitating factors	Differences were found in diagnoses, physical health and medications
Dennis et al. (2005) UK	Comparative analysis	Determine clinical factors that differentiate older adults with depression at high risk of self-harm and suicide	65+	✓	✓	Semi-structured interviews, Beck Depression Inventory (BDI), Beck Hopelessness Scale (BHS) and Suicide Intent Scale (SIS)	Attempters experienced loneliness, lack of social support and poor community integration
Lamprecht et al. (2005) UK	Retrospective observational study	Examine DSH in older people presenting to acute care over a 3 year period	65+	✓	✓	Review of 97 episodes of DSH in 82 patients from one NHS trust between 2000 and 2003	Older males were more representative. Marriage may not be protective for older male attempters
Ruths et al. (2005) UK	Retrospective case note study	Describe the prognosis and follow-up by psychiatric and social services of elderly residents who presented with DSH across three emergency departments	65+	✓	✓	Paper and electronic case note survey	A more integrated approach including mental, physical and social factors is needed

Author(s) Year & Country	Type of study	Aims/Objectives	Sample	Pre-Attempt	Post-Attempt	Methods	Findings
Tsoh et al. (2005) HK	Multi-group controlled study	Identify risk and protective characteristics of elderly attempters and compare with suicide completers and comparison subjects	65+	✓		Case-control design utilizing standardized measuring instruments	Major depression was the main indicator for a significant increase in risk of attempts
Crocker et al. (2006) UK	Qualitative interview study	Explore older people's understanding of the pathway to and from an attempt	65+	✓	✓	Semi-structured in-depth interviews and Interpretive Phenomenological Analysis	Themes related to struggling with life, maintaining control and feeling invisible
Gavrielatos et al. (2006) GRE	Retrospective case note study	Explore relevant factors associated with deliberate self-poisoning of 44 elderly subjects	65+	✓	✓	Analysis of demographic, clinical, and psychosocial characteristics, medical and drug history, circumstances surrounding attempt and medical and mental status	Loneliness, isolation, interpersonal conflict/dependence, history of depression, medical morbidity and polypharmacy contributed to attempts
Lebret et al. (2006) FRA	Retrospective case note and interview study	Assess outcomes and identify factors that impact on survival following an attempt	60+		✓	Telephone interviews with attending physicians and analysis of case notes	Socially isolated, lonely and depressed widowed women were at greatest risk
Hawton et al. (2006) UK	Prospective investigation	Follow-up of elderly who presented to acute care following DSH over a 20-year period	60+	✓	✓	Statistical analysis of demographic and clinical characteristics, repetition of DSH and death from suicide and other causes	Risk factors included multiple self-harm episodes, physical illness, social isolation, relationship issues, bereavement or loss
Chan et al. (2007) UK/AUS	Literature review	Review the literature on deliberate self-harm in older adults published between 1995 and 2004	50+	✓	✓	Review of prevalence and incidence, demography, psychiatric history, diagnosis, method of attempts, physical health status, social status and outcome	Describes impact of personality and cultural factors, access to services pre- and post-attempt and (lesser) effects of socioeconomic status and physical illness
Gibbs et al. (2009) USA	Cross sectional study	Assess self-perceptions of problem solving in a group of 64 elderly with and without suicide attempts and depression	60+	✓		Social Problem Solving Inventory (SPSI) revised short version assessing adaptive problem-solving dimensions and dysfunctional dimensions	Older depressed attempters displayed negativity and impulsivity toward problem solving
Wiktorsson et al. (2010) SWE	Case-controlled study	Identify factors associated with attempted suicide in the elderly	70+	✓		Social, psychological, and psychiatric characteristics were compared in elderly suicide attempters and a representative population sample	Associated factors included being unmarried, living alone, low educational level, psychiatric history and previous attempt
Bergman Levy et al. (2011) ISR	Case-controlled study	Examine the association between suicide and physical illness among depressed elderly psychiatric patients who were admitted to hospital after having attempted suicide	65+	✓		Review of case notes, Cumulative Illness Rating Scale (CIRS)	Relationship between higher rates of illness in depressed elderly and increased risk of suicide
Im et al. (2011) KOR	Phenomenological study	Examine the meaning of suicide for elderly people who had attempted suicide in older age	65+	✓		In-depth semi-structured interviews, analysis utilised Giorgi's descriptive phenomenology	Meanings related to family discord, powerlessness and despair, use of internal/external resources and crisis
Kim et al. (2011) KOR	Retrospective case note study	Investigate differences in psychosocial risk factors and clinical characteristics between old and young attempters	65+	✓		Medical and psychiatric chart review, Brief Emergency Room Suicide Risk Assessment (BESRA)	Interpersonal problems were experienced by both groups. Physical illness explained more attempts in the elderly group with a higher proportion of males present
Mellqvist et al. (2011) SWE	Interview study	Identify factors associated with low sense of coherence (SOC)	70+	✓		Sense of Coherence (SOC) questionnaire, Comprehensive Psychopathological Rating Scale (CPRS), Cumulative Illness Rating for Geriatrics (CIRS-G)	Strong association found between major depression and SOC. Social support variables independently associated with low SOC
Wiktorsson et al. (2011) SWE	Prospective cohort study	Investigate one-year outcomes in elderly suicide attempters and identify associated predictors	70+		✓	Face-to-face interviews, Montgomery-Asberg Depression Rating Scale (MADRS)	High depression and anxiety scores, high intent and low SOC related to non-remission
Murphy et al. (2012) UK	Multicentre cohort study	Calculate self-harm rates, risk factors for repetition and rates of suicide following self-harm in older adults	60+		✓	Review of case notes	Subsequent risk of suicide 67 times higher among older hospitalised attempters. Men 75 and over were at greatest risk
Packer et al. (2012) UK	Retrospective case study	Investigate the management of elderly patients attending hospital following presentation with DSH	60+	✓	✓	Review of case notes	High prevalence of personality disorder, previous history of attempted suicide and mental illness
Kato et al. (2013) JAP	Retrospective case study	Investigate the frequency and clinical features of elderly suicide attempters treated in an emergency department and compare with non-elderly suicide attempters	65+	✓	✓	Review of case notes	Higher prevalence of mood disorders and longer hospital stay in elderly attempters
Kim (2014) KOR	Qualitative descriptive study	Describe life experiences following attempted suicide	60+		✓	In-depth interviews and qualitative content analysis	Themes related to deteriorating health, sadness and loneliness, medication dependency and ambiguity about wanting to die