**Suicide in Older Adults: Risk Factors, Interventions and Clinical Considerations.**

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Suicide represents one of the main causes of death globally, with nearly a million suicides a year (WHO, 2002). This paper will review recent research on the epidemiology of suicidal behaviour and suicidal ideation in older adults, focusing on risk factors and resulting clinical implications. Unless specified otherwise all of the research discussed here relates specifically to older adults.

**Epidemiology and risk factors**

***Prevalence***

Research has consistently demonstrated the high incidence of suicide in older adults. In the U.K. there were 592 suicides in 2009 in older adults (WHO, 2011). Research suggests that suicide rates are higher in older adults than in any other age group (Biermann, Sperling, Bleich et al. 2009; WHO, 2002). In the U.K. completed suicide rates are 5.7 for age 65-74 and 6 for age 75 and above. The U.K. has one of the highest rates of attempted suicide in older adults in Europe, with 82.4 per 100,000 (De Leo et al., 2001). With baby boomers now reaching 65 there may be a considerable increase in rates of suicide in older adults (Conwell, 2009).

***Method and lethality***

Suicide attempts are more likely to be fatal in older adults (Crandall et al., 2007), and older adults tend to plan and make more determined acts (Conwell, 1998), and have higher suicidal intent than younger attempters (Miret et al., 2010). Methods such as hanging, drowning and suicide pacts may be more common in older adults (Hunt et al., 2006; Karvonen et al., 2008). Even with the same methods, mortality rates are higher in older adults (Eddleston, Dissanayake, Sheriff et al., 2006). In England the most common method appears to be hanging for men and overdose for women (Harwood, Hawton, Hope et al., 2000).

***Demographic risk factors***

Psychological autopsy studies have shown a number of demographic variables which increase risk. Perhaps the most consistently reported risk factor is male gender which has been shown to be related to higher risk of attempts (Crandall et al., 2007), and completion (Quan et al., 2002; Shah, 2007; Wanta et al., 2009). In the U.K. suicide rates for age 75 and above are 13.6 for men and 4.7 for women (Office for National Statistics, 2011).

Suicidal ideation decreases and becomes more passive with age (Ayalon, Mackin, Arean et al., 2007; Duberstein et al., 1999). The number of completed suicides increases with age in older adults (De Leo et al., 2001; WHO, 2002), though the number of attempts decreases (De Leo et al., 2001). Thus it may be that there are fewer attempts but they are more likely to be lethal. Low levels of education appear to be a risk factor for suicidal thoughts, attempts and completion in older adults (Chiu et al., 2012; Rubenowitz, Waern, Wilhelmson et al., 2001; Wiktorsson, Runeson, Skoog et al., 2010; Zhang, Conwell, Zhou et al., 2004). Those from low socio economic background are over-represented in completers (Voaklander et al., 2008; Zhang, et al., 2004).

***Social factors***

A number of social factors have been implicated in suicide risk for older adults. Completers and attempters are less likely to be married (Chiu et al., 2012; Duberstein, Conwell, Conner et al., 2004a, 2004b; Quan, et al., 2002; Wanta et al., 2009; Wiktorsson et al., 2010).. Living alone also appears to increase risk of attempt and completion (De Leo et al., 2001; Wiktorsson et al., 2010). Suicidal ideation is predicted by poor social support (Alexopoulos, Bruce, Hull et al., 1999; Mireault & DeMan, 1996), even after controlling for depression (Awata et al., 2005; Duberstein et al., 2004b). Loneliness is more common in completers (Rubenowitz et al., 2001; Waern et al., 2002), and predicts suicidal ideation in non-clinical populations (Cukrowicz, Cheavens, Van Orden et al., 2011).

Completers are less likely to have children (Duberstein et al., 2004b). Satisfaction with relationships and feeling of use to family and friends is also related to lower suicidal ideation (Rowe et al., 2006). Completers are more likely to have problematic family relationships and conflicts (Rowe et al., 2006; Waern et al. 2002; Zhang et al., 2004), and suicidal ideation is higher in those with marital distress (Ayalon et al., 2007). A study in England found that interpersonal problems contributed suicide in 31% of cases (Harwood, Hawton, Hope et al., 2006). Bereavement may also be related to suicide; Harwood et al. (2006) noted a recent bereavement in more than half of completers, and a study of 16 European countries found that the majority of completers were widowed (De Leo et al., 2001). These studies provide support for the interpersonal theory of suicide (Van Orden et al., 2010), and stress that social isolation is important to take into account when assessing risk, and social interventions may be of use for prevention.

***Other risk factors***

Personality is related to risk in older adults, with suicidal ideation or attempts being related to hostility (Scocco, Meneghel, Dello Buono et al., 2001), narcissistic traits (Heisel, Links, Conn et al., 2007) andlow extraversion (Duberstein et al., 2000).. Suicidal ideation is also related to past trauma such as sexual abuse (Talbot, Duberstein, Cox et al., 2004) and holocaust survival (Clarke et al., 2004). Some research suggests religious involvement is less common in completers (Nisbet, Durbenstein, Conwell et al., 2000), whereas other work suggests that belief in an afterlife is more common in completers (Zhang et al., 2004). Problems with accommodation appear to elevate risk (Harwood et al., 2006), as do financial difficulties (Chiu et al., 2012; Harwood et al., 2006; Rowe et al., 2006; Rubenowitz et al., 2001) and retirement (Harwood et al., 2006).

**Clinical Considerations**

***Physical Health***

Physical illness is related to suicidal ideation (Heisel & Flett, 2008), and completers have a greater likelihood of recent hospitalisation (Chiu et al., 2004; Erlangsen, Vach, & Jeune, 2005). One study found that physical health contributed to 62% of suicides (Harwood et al., 2006). Specific illnesses linked to an increased suicide risk include arthritis (Tsoh et al., 2005), visual problems (Forsell, Jorm, & Winblad, 1997; Waern et al., 2002; Yip, 2001), stroke (Voaklander et al., 2008), neurological disorders (Waern et al., 2002), respiratory problems (Levy, Barak, Sigler et al., 2011), liver disease (Voaklander et al., 2008) and vascular illnesses and heart failure (Levy et al., 2011; Chan, Lyness, & Conwell, 2007; Juurlink et al., 2004). Completers and attempters have been found to have an increased likelihood of cancer (Quan et al., 2002; Voaklander et al., 2008), and this may increase risk more than any other illness (Miller, Mogun, Azrael et al., 2008). Prostate cancer is especially common in completers (Miller, et al., 2008), and it increases the risk of suicide four fold in older men (Llorente et al., 2005). Pain also appears to relate to risk (Juurlink et al., 2004; Rowe et al., 2006).

Dementia may be related to risk, as suicidal ideation is predicted by cognitive functioning (Ayalon et al., 2007; Heisel, Flett, & Besser, 2002). Dementia was found to triple the risk of suicide in one study and many suicides were within 3 months of diagnosis (Erlangsen, Zarit, & Conwell, 2008). Suicidal ideation is more common in those with dementia who have depression (Draper et al., 1998). Thus suicide risk is important to consider in those with dementia, and interventions to target depression may reduce risk.

***Psychiatric Illness***

In England 77% of older completers have a psychiatric disorder (Harwood, Hawton, Hope et al., 2001). Specific diagnoses which increase risk in older adults include psychosis (Voaklander et al., 2008; Waern et al., 2002), personality disorders (Harwood et al., 2001; Miller et al., 2008), bipolar disorder (Juurlink et al., 2004) and anxiety disorders (Juurlink et al., 2004; Miller et al., 2008; Waern et al., 2002). Qin (2012) concluded that the risk associated with a psychiatric problem generally decreases with age, though stress and adjustment disorders represent a greater risk factor for older adults.

Depression predicts suicidal ideation in non-clinical samples (Heisel, Duberstein, Lyness et al., 2010; Heisel & Flett, 2008), and is the most common mental health problem in completers (Chiu et al., 2004; Harwood et al., 2001), more so in older than younger completers (Hunt et al., 2006; Ticehurst et al., 2002). Some research even suggests the majority of older completers have depression (Harwood et al., 2001; McGirr et al., 2008). However many completers have not received treatment for their depression (Pompili et al., 2008). Substance use disorders, in particular alcohol use, are common in older completers (Blow, Brockmann, & Barry, 2004). Alcohol problems predict suicidal ideation in non-clinical samples (Rowe et al., 2006). Those with co-morbid depression and alcohol problems are especially high risk (Blow et al., 2004).

***Deliberate Self-harm***

As with other age groups, a consistent predictor of risk in older adults is previous suicidal behaviour (Alexopoulos et al., 1999; Conaghan & Davidson, 2002; Wiktorsson et al., 2010). However acts of deliberate self-harm (DSH) are more likely to be high intent than in younger adults (Hawton & Harriss, 2008). The National Institute of Clinical Excellence has suggested that all acts of self-harm in older adults should be taken as showing suicidal intent (NICE, 2004). Previous DSH significantly increases the risk of later complete suicide in older adults (Hawton & Harriss, 2006), therefore it is important to examine the history of parasuicidal behaviour when judging risk.

***Standardised measures to assess risk***

In addition to taking into account the risk factors above, standardised measures may be of use. The Geriatric Depression Scale (Yesavage et al., 1982) correlates with suicidal ideation, and a cut off of 12 has been suggested to identify those at risk (Heisel & Duberstein, 2005). Specific questions on feeling worthless, not feeling happy, and not thinking it is wonderful to be alive are particularly related to risk (Heisel, Flett, Duberstein et al., 2005). On the 15 item Geriatric Depression Scale a score of four has been found to detect suicidal ideation with a sensitivity of .75 and a specificity of .81 (Heisel et al., 2010). The Beck Depression Inventory II (Beck, Steer, & Brown, 1996) has good psychometric properties when used with older adults (Segal, Coolidge, Cahill et al., 2008) and question nine specifically can be used to detect ideation in this population (Bhar & Brown, 2012). The Beck Hopelessness Scale (Beck & Steer, 1988) predicts suicidal ideation in older adults, though adapting responses to a likert scale format may be needed for this age group (Neufeld, O’Rourke, & Donnelly, 2010). The Geriatric Suicidal Ideation Scale has also been developed specifically for older adults and has good psychometric properties (Heisel & Flett, 2006).

**Interventions**

***Education for primary care practitioners***

A large proportion of completers have recently visited a primary care professional for (Harwood et al., 2000; Juurlink et al., 2004). Research suggests that many primary care doctors are uncertain how to assess suicidal ideation in older adults (Vannoy, Tai-Seale, Duberstein et al., 2011). They are also less willing to suggest treatment and are more pessimistic about whether psychologists can help compared to younger cases (Uncapher & Arean, 2000). Thus educational interventions may be of use. Huh et al (2012) recently founded that a training day for a multidisciplinary team considerably improved knowledge of risk in older adults.

In Sweden the Gotland study has provided an educational programme to General Practitioners focusing on the identification and treatment of affective disorders, leading to a reduction in older adult suicide rates (Rutz, Wålinder, Von Knorring et al., 1997). Alexopolous et al. (2009) used case management to help doctors recognise and monitor depression and offer interventions. This was found to reduce suicidal ideation over two years compared to treatment as usual (Alexopolous et al., 2009). A similar case management approach in Hong Kong reduced levels of completion (Chan et al., 2011). However there were no differences in reattempt rates and the prevention programme appeared to have little effect on men (Chan et al., 2011).

A number of suicide prevention efforts in Japan have primarily involved increasing screening for depression in primary care (Ono, 2004). Oyama, Fujita, Goto et al. (2006) implemented depression screening whereby all households were invited to an anonymous self-report depression screening for older adults. This combined with public education programmes led to 64% a reduction in suicide risk for women, but no change for men (Oyama, et al., 2006a). Such educational interventions seem promising, and a particular focus on identifying high risk men seems warranted for future research.

***Community prevention***

It has been suggested that as many older adults are reluctant to access mental health services, education efforts in community settings to try and reduce stigma are important (Heisel & Duberstein, 2005). In Japan community workshops run by nurses have been used to provide psychoeducation to older adults about depression and suicide risk, and social and recreational activities have been organised (Oyama, Goto, Fujita et al., 2006; Oyama et al., 2006b). Ono (2004) similarly used town meetings, newspapers and leaflets to promote awareness of symptoms of depression.

Suicide rates are especially high in those in care (Mezuk, Prescott, Tardiff et al., 2008), suggesting preventative efforts are needed in these settings. Podgorski, Langford, Pearson et al. (2010) suggest universal interventions should focus on teaching coping and problem solving skills, keeping active and increase social contacts, and decreasing means. Prevention in high risk groups should involve reducing stigma and increasing awareness and availability of specialist services (Podgorski, et al., 2010).

***Psychological Interventions***

A number of psychological variables are related to suicide in older adults which suggests scope for psychological interventions. Perceived burdensomeness has been found to predict suicidal ideation (Cukrowicz et al., 2011), thus therapeutic techniques to address such beliefs may reduce risk. High levels of future orientation is related to reduced risk (Hirsch et al., 2006), and those at risk have less positive thinking about the future (Conaghan & Davidson, 2002). Thus trying to increase a focus on positive events in the future is important.Thought suppression has been found to predict risk (Cukrowicz, Ekblad, Cheavens et al., 2008), thus mindfulness-based interventions may be of use. Maladaptive coping strategies such as emotional coping also appear to increase risk (Cukrowicz et al., 2008), so teaching coping skills may be appropriate. Older adults with previous attempts are poorer at problem solving (Gibbs et al., 2009), and interpersonal problem solving specifically (Howat & Davidson, 2002), thus work on problem solving skills may reduce risk. Unutzer et al. (2006) used a problem solving intervention as part of a wider intervention which was found to reduce suicidal ideation in older adults with depression.

At present there is a limited evidence base for psychological interventions for suicidal ideation and behaviour in older adults. Perhaps as a result, in current clinical practice few at risk older adults are offered formal and specific psychological interventions (Voshaar, Kapur, Bickley et al., 2011). Lynch et al. (2003) found that Dialectical Behaviour Therapy for older adults improves depression, but there no improvement in suicidal ideation. An interpersonal psychotherapy intervention has been adapted specifically for older adults with suicidal ideation (Heisel, Duberstein, Talbot et al., 2009). This focused on the bi-directional relationship between interpersonal problems and suicidal behaviour, and areas such as a role transitions, grief, and how to express interpersonal needs. A small case series found improved depression and reduced suicidal ideation (Heisel et al., 2009).

***Cognitive Behaviour Therapy***

Cognitive Behaviour Therapy (CBT) is effective for older adults with depression (Peng, Huang, Chen et al., 2009; Thompson, Coon, Gallagher-Thompson et al., 2001), however many trials exclude those with suicidal ideation (for example Serfaty et al., 2009). There is no research to demonstrate whether CBT reduces ideation though a trial is ongoing (Bhar & Brown, 2012). CBT should not be used untill a suicidal crisis is resolved, though techniques such as behavioural contracts and thought stoppng may be useful (Coon, DeVries, & Gallagher-Thompson, 2004).

Cognitive case conceptualisations should focus on the thoughts and behaviours which lead to suicidal ideation and behaviour (Brown et al., 2008). Bhar and Brown (2012) similarly suggest that core beliefs, negative automatic thoughts, triggers and early experiences all need to be related to suicidal thoughts. CBT should identify factors that contribute to hopelessness, and elicit evidence against hopeless thoughts (Brown et al., 2008; Bhar & Brown, 2012). A hope kit which includes important items such as photos, letters and prayer cards which can be viewed in a crisis may be useful (Bhar & Brown, 2012; Brown et al., 2008). Suicidal thought records can help show how such thoughts are related to mood, (Coon et al., 2004).

A safety plan is important, with warning signs, important phone numbers and a list of coping strategies for use in a crisis (Bhar & Brown, 2012; Brown et al., 2008). Activity scheduling may be of use in particular trying to increase social support (Brown et al., 2008; Bhar & Brown, 2012). Work on assertiveness and anger may also be needed (Brown et al., 2008; Coon et al., 2004). At the end of therapy using hypothetical situations or guided imagery can be useful to see how the client would cope in a crisis (Brown et al., 2008; Bhar & Brown, 2012).

**Conclusion**

This review has demonstrated that older adults are at an elevated risk for suicide. Such risk is elevated by a number of demographic and social variables, physical health and psychiatric problems in particular depression. High levels of primary care contact prior to suicide suggest a need for increased screening and education initiatives for health professionals. Similarly there is a good justification for community based prevention work though the effectiveness of these is not known. In particular such interventions appear to have a limited impact on men, and reasons for this need to be assessed. A number of psychological constructs are related to suicidal ideation and behaviour suggesting that interventions may be of use. Cognitive behaviour therapy helps depression and can be modified for use with suicidal clients, though whether it reduces ideation is not known. Given the ageing population in many countries, future research is needed to help ascertain which interventions aremost effective.

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