ENCEPHALOS 56, 77-81, 2019

Suicidality in Old Age: Epidemiology, Prognostic Factors and Prevention

A Brief Review

R. GOURNELLIS, V. EFSTATHIOU***

Abstract

Suicidality rates in the elderly are higher compared to any other age group in many countries of the world independently from their cultural background. It has been shown that the population sub-category of men over 85 years of age is associated with the highest suicide risk compared to any other population category in several countries, worldwide. The association between age and suicidality differs with regard to country, sub-population, gender and time. In particular, the ratio of suicide attempts to completed suicides ranges from 8-36/1 in the general population, 200/1 in the adolescents, while in the elderly this ratio is limited to approximately 4/1. According to the "stress-diathesis model" the manifestation of suicidal behavior may be better attributed to the complex interaction of neurobiological, psychological and psychosocial factors. Lower levels of the serotonin 5-HIAA metabolite in cerebrospinal fluid, as well as more "hyperintensities" in the subcortical gray matter have been found in studies using magnetic resonance imaging (MRI). Psychological autopsy studies of suicide showed that 71 to 95% of the suicide victims had a mental illness, with affective disorder being the most common. Suicidal behavior has been associated with aggression, impulsiveness, cognitive rigidity, bereavement, economic difficulties, marital disharmony, lack of support, physical morbidity, higher levels of neuroticism, and reduced motivation for new experiences. Patients with physical illnesses are in higher risk of suicide compared to those without such a diagnosis. Among the elderly, bereavement, financial problems, retirement, marital disharmony, lack of a support system and physical morbidity increase the likelihood of suicidal behavior. In order to prevent suicide among the elderly, the same -general- prevention measures that apply to the general population are proposed. Moreover, other measures that are recommended for the elderly include the assessment of suicidal intention in primary care services, the improvement of their well-being and feeling of autonomy, better integration of mental and physical health services and the promotion of social ties. Identifying suicidal behavior in male older adults is crucial considering that compared to their female counterparts, they present a threefold risk of completed suicide, but often avoid communicating their suicidal thoughts to mental health professionals. Therefore, the early identification of suicidal warning signs by primary health care professionals is of great importance.

Keywords: suicidality, elderly, old age, suicidal attempt, suicide, risk factors

* MD, Associate Professor of Psychiatry and Old Age Psychiatry, Second Department of Psychiatry, Medical School, National and Kapodistrian University of Athens, University General Hospital "Attikon", Postgraduate Study Programme "Liaison Psychiatry: Integrative Care of Physical and Mental Health", Medical School, National and Kapodistrian University of Athens

**Psychologist PhD, Second Department of Psychiatry, Medical School, National and Kapodistrian University of Athens, University General Hospital "Attikon", Postgraduate Study Programme "Liaison Psychiatry: Integrative Care of Physical and Mental Health", Medical School, National and Kapodistrian University of Athens

Introduction

Suicidality rates in the elderly are higher compared to any other age group in many countries of the world independently from their cultural background. Suicidality includes suicidal ideation, suicidal attempts, and completed (successful) suicides. Suicidal ideation may escalate from feelings of hopelessness and thoughts that *life is not worth living*, accompanied by wishes of death to even plans of suicide.

The severity of suicidal ideation varies according to the degree of premeditation and of the suicide intent. A suicide attempt can be defined as a nonfatal self-directed potentially injurious behavior with clear intent to die as a result of the behavior[1].

Epidemiology

Fifteen to twenty five percent of the individuals who die through suicide have previously attempted one, while 0.7-1% of the suicide attempters will die through suicide within the same year[2]. Suicide attempters are often women with minor psychopathology, while suicide completers are men with major psychopathology.

The association between age and suicide differs with regard to country, sub-population, gender and time[3]. Epidemiological studies have shown that individuals over 65 years of age have a higher suicide risk than other age groups, with men over 85 having the highest suicide risk of all (USA, Denmark). Especially, the ratio of suicide attempts to completed suicides in the general population ranges from 8-36/1, in the adolescents 200/1, while in the elderly it is limited to approximately 4/1 [4].

The increased mortality among the elderly can be attributed to the fewer warning “signs” given by individuals of older age regarding an imminent suicide attempt, to their more “fragile” health, living alone, as well as to the use of more lethal and violent methods. It is estimated that 20% of the older adults who die through suicide were examined within the previous 24 hours by a primary care professional, 41% within the previous week and 75% in the previous month.

In a Greek psychological autopsy study of 335 suicides, 118 individuals (35% of the sample) were of older age (> 60 years), 69.5% men and 30.5% women. 65.2% had a psychiatric history, 12.4% had been hospitalized in a psychiatric clinic within the last 12 months, 81.6% suffered from one or more physical illnesses, and 82% died in their first suicide attempt. Among those who died through suicide, the older individuals had communicated their intent to relatives to a greater extent than the younger ones[5]. The increased prevalence of suicide in the elderly is not a consistent finding across all countries (such as Canada). Suicidality is considered to be non-existent in indigenous populations of the US, Canada, Australia, New Zealand and of the Arctic Circle[6].

In a Greek study with a sample of 829 individuals who died through suicide using violent methods (hanging, jumping from height, self–immolation and use of firearms), those age 45 years and older used more often the method of self–immolation and less often firearms[7].

Risk factors

According to the “stress-diathesis model” [8], the manifestation of suicidal behavior can be attributed to the complex interaction of neurobiological, psychological and psychosocial factors. Lower levels of the serotonin 5-HIAA metabolite have been found in the cerebrospinal fluid of elderly depressed patients who had attempted suicide; a finding suggesting an under function in serotonergic system. Ahearn et al[9] in a study of elderly depressed patients with a history of suicidal attempt found using magnetic resonance imaging (MRI) that they presented more “hyperintensities” in their subcortical gray matter (mainly in basal ganglia) .

Psychological autopsy studies of suicide showed that 71% to 95% of the suicide victims suffered from a mental illness, with affective disorder of - usually - moderate severity being the most common (54-87% of suicide completers).[10] Suicidal behavior has been associated with aggression, impulsiveness, cognitive rigidity, bereavement, economic difficulties, marital disharmony, lack of support, physical morbidity[11], higher levels of neuroticism, and reduced motivation for new experiences[12, 13].

Patients with three physical illnesses had approximately a threefold increase in estimated relative risk for suicide compared with individuals who had no diagnosis, whereas older adults who had seven or more illnesses had approximately nine times greater risk for suicide [14]. In Denmark, in a sample of 1,849,110 individuals (1990-2009), elevated risks of suicide were identified for liver diseases, cancer (lung, gastrointestinal, breast, genital, urinary, leukemia), epilepsy, cardiovascular disease and obstructive pulmonary disease when compared to individuals not diagnosed within three years[15]. All individuals over 66 years of age who died through suicide in Ontario from January 1992 to December 2000 compared to age-and-sex matched, healthy

individuals were more likely to suffer from obstructive pulmonary disease (OR 1.6), cardiovascular disease (OR 1.7), epilepsy (OR 2.9), pain (OR 7.5), anxiety disorders (OR 4.5) and depression (OR 6.4) [16]. A systematic review of 65 studies showed increased suicidality in: malignancy, neurological disease, pain, arthritis and liver disease[17]. However, it has also been reported that suicidal ideation is infrequent among older individuals with physical illness, but with no comorbid affective disorder [14,16].

Among the psychosocial parameters that are associated with suicidality in younger individuals are marital disharmony (separation or divorce), lower educational level, substance use and unemployment; whereas in the elderly these include bereavement, financial problems, retirement, marital disharmony, lack of a support system, and physical morbidity.

A greater social support is related with reduced likelihood of suicidal behavior. On the contrary, suicide risk increases in the elderly who only trust a limited number of friends and relatives and live alone.

Regarding the relationship between the adaptive ability of the elderly and suicidality, older people report higher rates of well-being than younger ones. However, due to the fact that they mainly derive pleasure from established close family relationships[18], when those rupture or stop to exist they lose the meaning of living. The coexistence of physical and mental pain (mental illness), along with serious physical problems and disability, may lead to mental exhaustion and increased suicidality [19].

Prevention

Suicidal behavior of the elderly is strongly associated with depression, therefore management of depression should be the primary focus of suicide prevention strategies for older adults[20,21,22]. Patients with a history of suicide attempt should be monitored regularly, especially if feelings of hopelessness[23] remain after the remission of the major depressive episode. It is noted that older people who died through suicide had, in a high proportion (75%), visited a primary care professional during the past month. Therefore, the intervention for the early diagnosis of mental illness and suicidal ideation should include all health professionals who are involved in the treatment of chronic physical illnesses, especially those associated with affective disorders (cardiovascular diseases, diabetes, endocrinopathies, neurological diseases, etc.).

Access to firearms must be subject to strict legislation. In the United States, it has been found that attempted suicide with a handgun is related to its acquisition one week before this self-destructive behavior[24]. In South Australia there was a significant reduction (75%) of suicides with firearms, after gun possession was prohibited compared to other areas of the same country[3]. In the United Kingdom, through prescription control of paracetamol and salicylates (i.e. over the counter sales had been limited to 32 tablets), mortality and morbidity from overdose decreased significantly. In particular, deaths from paracetamol overdose decreased by 21%, liver transplants by 66%, and cases of salicylate overdose decreased by 34% [25].

Elderly with mental and / or physical health problems receiving telephone support in the Veneto area in northern Italy were found to have lower rates of suicide than individuals of the same age that lived in the same area but did not receive such support[26]. Intervention in primary care may lead to a reduction in suicidal ideation and depression. Conwell[27] proposes: firstly, general measures to limit suicide; and secondly assessment of suicidal intention in primary care services, improvement of older adults' well-being and feeling of autonomy, better integration of mental and physical health services and promotion of their social ties.

Mental illness increases the risk of suicide in women[28,29]. In men economic problems, living alone and alcoholism are related with a higher suicide risk[30]. According to established social standards, men should be "armed" with more aggression, power, success, courage, independence, efficiency, logic, competitiveness, self-control, emotional isolation and lack of vulnerability. The expression of anxiety and depressive symptoms, uncertainty, helplessness and hopelessness imply weakness. Men are usually trying to solve their problems by themselves, whereas seeking help is experienced as a loss of control and autonomy, ineffectiveness and dependency. Even survival from attempted suicide is less socially acceptable for men. In addition, retirement can deprive men of not only a social role that provides them self-esteem, but also of a network of interpersonal communication and contact, as their colleagues.

In conclusion, depression and suicide should be evaluated in all high-risk sub-populations of the geriatric population, especially when individuals of these sub-populations visit health services. Health professionals should be aware of the differences between men and women, and when they identify risk factors for suicide in elderly men they should directly involve

their supportive system so it may contribute to their better psychiatric care. Furthermore, awareness-raising and sensitization about suicide among all social support networks for the elderly (community mental health centers etc) is of crucial importance.

References

1. Mitty E, Flores S. Suicide in late life. *Geriatr Nurs* 2008; 29 (3): 160-165.
2. Hawton K, Houston K, Haw C, Townsend E, Harriss L. Comorbidity of Axis I and Axis II Disorders in Patients Who Attempted Suicide. *Am J Psychiatry* 2003; 160(8):1494–1500.
3. Snowdon J, Phillip J, Zhong B, Yamauchi T, ChiucH, Conwell Y. Changes in age patterns of suicide in Australia, the United States, Japan and Hong Kong. *J Affect Dis* 2017; 211:12-19.
4. Maris R. Suicide. Lancet 2002; 360: 319-326.
5. Paraschakis A, Douzenis A, Michopoulos I, Christodoulou C, Vassilopoulou K, Koutsaftis F, Lykouras, L. Late onset suicide: Distinction between "young-old" vs."old-old" suicide victims. How different populations are they?. Arch Gerontol Geriatr 2012;54(1):136-139.
6. Conwell Y, Thompson C. Suicidal Behavior in Elders. *Psychiatr Clin North Am*. 2008; 31(2): 333–356.
7. Christodoulou C, Papadopoulos I, Douzenis A, Kanakaris N, Leukidis C, Gournellis R, Vlachos K, Papadopoulos F, Lykouras L. Seasonality of violent suicides in the Athens greater area. *Suicide Life Threat Behav* 2009; 39(3): 321-331.
8. Mann J, Waternaux C, Haas G, Malone K. Toward a Clinical Model of Suicidal Behavior in Psychiatric Patients. *Am J Psychiatry* 1999; 156:181–189.
9. Ahearn E, Jamison K, Steffens D, Cassidy F, Provenzale J, Lehman A, Weisler R, Carroll B, Krishnan KRR. MRI Correlates of Suicide Attempt History in Unipolar Depression. *Biol Psychiatry* 2001; 50:266–270.
10. Wærn M, Runeson B, Allebeck P,Beskow, J, Rubenowitz E, Skoog I, Wilhelmsson K. Mental Disorder in Elderly Suicides: A Case-Control Study. *Am J Psychiatry* 2002; 159:450–455.
11. Γουρνέλλης Ρ, Κονταξάκης. Αυτοκτονικότητα. Στο «Στοιχεία Ψυχογηριατρικής» Επιμ. Έκδοσης Λύκουρας Λ, Πολίτης Α, Γουρνέλλης Ρ, Μαϊλης Α. ΒΗΤΑ Ιατρικές Εκδόσεις, Αθήνα, 2011, σελ 165-176.
12. Duberstein PR. Openess to experience and completed suicide across the second half of life. *Int Psychogeriatr*1995; 7:183–198.
13. Duberstein PR. Are closed-minded people more open to the idea of killing themselves? *Suicide Life Threat Behav* 2001; 31:9–14.
14. Conwell Y, Lyness JM, Duberstein P, Cox C, Seidlitz L, Di Giorgio A, Caine ED. Completed suicide among older patients in primary care practices: a controlled study. *J Am Geriatr Soc* 2000; 48:23–29.
15. Erlangsen A, Stenager E, Conwell E. Physical diseases as predictors of suicide in older adults: a nationwide, register-based cohort study. *Soc Psychiatry Psychiatr Epidemiol* 2015; 50:1427–1439.
16. Juurlink DN, Hermann N, Szalai JP, Kopp A, Redelmeier DA. Medical illness and risk of suicide in the elderly. *Arch Intern Med* 2004, 164:1179–1184.
17. Mellqvist Fassberg M, Cheung G, Canetto S, Erlangsen A, Lapierre S, Lindner R, Draper B, Gallo J, Wu W, DubersteinP, Wærn M. A systematic review of physical illness, functional disability, and suicidal behaviour among older adults. *Aging Ment Health* 2016; 20:166-194.
18. Charles S, Carstensen L. Social and Emotional Aging. *Annu Rev Psychol* 2010; 61:383-409.
19. Sachs-Ericsson N, Van Orden K, Zarit S. Suicide and aging: special issue of Aging & Mental Health. *Aging Ment Health* 2016; 20:110-112.
20. Beautrais AL. A case control study of suicide and attempted suicide in older adults. *Suicide Life Threat Behav* 2002; 32:1–9.
21. Ro J, Park J, Lee J, Jung H. Factors That Affect Suicidal Attempt Risk Among Korean Elderly Adults: A Path Analysis. *J Prev Med Public Health* 2015; 48:28-37.
22. Gournellis R, Efstathiou V, Yotsidi V, Tournikioti K, Papazahos C, Ferentinos P, Douzenis A, Michopoulos I. Guilt Delusional Beliefs Increase the Risk of Suicidal Attempt in Elderly Unipolar Psychotic Depressives. *J Nerv Ment Dis* 2019;207(1):29-33.
23. Efstathiou V, Papadopoulou A, Christodoulou C, Gournellis R, Michopoulos I, Ferentinos P, Papageorgiou C, Douzenis A. The Relationship between Hopelessness and Clinical Characteristics of Hospitalized Patients with Recent Suicide Attempt. *Issues Ment Health Nurs* 2018;39(10):876-882.
24. Miller M. Geriatric suicide: the Arizona study. *Gerontologist* 1978; 18:488–495.
25. Hawton K, Townsend E, Deeks J, Appleby L, Gunnell D, Bennewith O, Cooper J. Effects of legislation restricting pack sizes of paracetamoland salicylate on self poisoning in the United Kingdom:before and after study. *BMJ* 2001; 322: 1203-7.
26. Leo D, Padoani W, Scocco P, Lie D, Bille-Brahe U, Arensman E, Hjelmeland H, Crepet P, Haring C, Hawton K, Lonnqvist J, Michel K, Pommereau X, Querejeta I, Phillipe J, Salander-Renberg E, Schmidtke A, Fricke S, Weinacker B, Tamesvary B, Wasserman D, FariaS. Attempted and completed suicide in older subjects: results from the WHO/EURO Multicentre study of suicidal behaviour. *Int J Geriatr Psychiatry* 2001; 16: 300-310.
27. Conwell Y. Discrimination and Risk for Suicide in Later Life. *Am J Geriatr Psychiatry* 2018; 26(1):52-53.
28. Alexopoulos G, Reynolds C, Bruce M, Katz I, Raue P, Mulsant B, Oslin D, Ten Have T. Reducing suicidal ideation and depression in older primary care patients: 24-month outcomes of the PROSPECT study. *Am J Psychiatry* 2009; 166:882–890.
29. Bruce M, Ten Have T, Reynolds C, Katz I, Schulberg H, Mulsant B, Brown G, McAvay G, Pearson J, Alexopoulos G. Reducing suicidal ideation and depressive symptoms in depressed older primary care patients. A randomized controlled trial. *JAMA* 2004; 291:1081–10.
30. Qin P, Agerbo E, Westengard-Nielsen N, Eriksson T, Bo Mortensen P. Gender differences in risk factors for suicide in Denmark. *Br J Psychiatry* 2000; 177:546–550.