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Suicide in late life: A viewpoint

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ABSTRACT

Suicide in old age represents a sad public health concern. Despite the global decline in rates of suicide and the general amelioration of quality of life and access to health care for older adults, their rates of suicide remain the highest virtually in every part of the world. With the aging of the world population and the growing number of mononuclear families, the risk of an increase in isolation, loneliness and dependency does not appear ungrounded. The Covid-19 pandemic is claiming the life of many older persons and creating unprecedented conditions of distress, particularly for this segment of the population. This article briefly examines the main characteristics of suicidal behavior in late life, including observations deriving from the spread of the Sars-2 coronavirus and possible strategies for prevention.

Globally, from 1990 to 2016, suicide mortality rates have decreased (Naghavi et al., 2019); however, late life suicide continues to show highest rates virtually everywhere in the world (Naghavi et al., 2019). This phenomenon should draw the attention of researchers and mental health professionals to try to stem the alarming projections coming from the epidemiological data, which foresee nearly doubling of older adults population in <30 years (OECD, 2021).

This article is devoted to the analysis of individual, relational and social risk and protective factors specific to late life suicidal behavior. Main preventive approaches are also presented and commented.

1. Some considerations on the phenomenon of aging

The aging process and death by suicide are two psychosocial phenomena that share a multidimensional and multi-factorial nature. In these terms, the analysis of suicidal behavior in old age requires some preliminary reflections apt to delineating its fluctuations and peculiarities.

Old age is usually associated with the decline of physical and mental functions, but it could be better defined as a social construct rather than a true biological stage (Kent, 2007). In fact, it is difficult to establish a precise chronological threshold with universal validity, since the age of a person does not always correspond to her/his functional abilities. Furthermore, especially in developing countries, rather than being linked to a certain age, old age appears to begin when active contribution to society ceases (WHO, 2001). This perspective implies extremely variable biological, psychological and social factors (Phillips et al., 2010), to which evolutionary aspects (Cutter, 2007) as well as specific historical and cultural connotations (Kent, 2007) could be added.

Socio-demographic characteristics, level of economic development and quality of life of the reference area may also explain individual variability (APA, 2009). Today, in most developed countries, people between 60 and 70 years of age enjoy an active life and good psycho-physical health (Berk, 2009); thus, their belonging to an advanced age class does not imply a decline in wellbeing levels.

The World Health Organization (WHO) has identified the completion of the 65th year of age as the entry threshold for old age, possible retirement, eligibility for dedicated social programs, and medical and health benefits (WHO, 2016, 2020). However, already some while ago, the same agency noticed that for some disadvantaged geographic areas the old age threshold could be 60 years, due to the low life expectancy at birth (WHO, 2002).

Globally, in 2008, life expectancy at birth was 68 years, ranging from 80 years in high-income countries to 57 years in low-income countries, with a ratio of 1.4 between the two income groups in terms of average life span (WHO, 2020). Considering that in low and middle-income countries do happen about three quarters of all suicide cases, and that registration rate of deaths from suicide is much lower in low and middle-income countries than in high-income countries (WHO, 2019), these

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peculiarities need to be kept in mind when we try to examine suicide phenomena in a worldwide perspective.

In addition, it is reasonable to assume that WHO will tend to raise the old age threshold based on forecasts of growth in global life expectancy. In 2020, data show that the number of people aged 60 years and over has exceeded that of children under the age of 5 years and that, by 2050, that population would double, from 12% to 22% (WHO, 2018a), with the fastest aging of the general population ever recorded. This could be matter of concern also in terms of suicide prevention, if we consider that about 80% of the world population will live in low- and middle-income countries, where numerous risk factors for suicide often concentrate (see further down).

2. Epidemiological data: global and regional trend

Data from the Global Burden of Disease (GBD) study show that despite age-standardized suicide mortality rates globally decreased by 32.7% from 1990 to 2016 (Naghavi et al., 2019), particularly among older adults, but suicide rates among individuals aged 65 and over are still the highest among men and women in almost all regions of the world (GBD, 2018; Lapierre et al., 2011; Mezuk et al., 2008; Naghavi, 2019; WHO, 2014). In general, suicide rates tend to increase with advancing age (Shah et al., 2016; WHO, 2018c), and often continue this trend even among centenarians (Shah et al., 2014). Globally, suicide in old age affects 27.45 individuals per 100,000 inhabitants in the 70+ group, and 16.17 individuals per 100,000 inhabitants in the 50–69 year-old group (GBD, 2018). From 1990 to 2017, in older adults of the United States suicide rates reached the level of 48.7 individuals per 100,000 inhabitants (about four times the rate of the general population) and 140 individuals per 100,000 inhabitants in rural China (GBD, 2018).

In 2019, in the United States old age population contributed to 19% of all deaths from suicide (ACL, 2020): an alarming statistic, considering that older persons constitute 16% of Americans, and that they appear to be the fastest growing segment of the population (CDC, 2020a).

In particular, in 2018 the suicide rate among women was highest for people aged 45–64 (9.8 per 100,000), while among males it was higher for those aged 75 years and over (39.9 per 100,000). Overall adults over 75, regardless of sex, were the age group most exposed to death by suicide (National Institute of Mental Health, 2021).

In the 37 OECD countries, persons aged 70 years and older are more likely to die by suicide (20 people per 100,000) than any other age groups, especially in countries such as Austria, France, Germany, Hungary and Korea, where suicide death rates are almost 15 times higher than that of the youth population (OECD, 2016). In these countries the tendency to fatal suicidal behavior prevails in men over 75, with rates 6 times higher than in women (OECD, 2016). Australia, New Zealand and Canada have similar rates, with a suicide mortality rate of 12–13 people per 100,000 inhabitants (Ngamini Ngui et al., 2015; RANZCP, 2020), with a slight decline in the last 30 years for the two countries of the Oceanic continent. In China, despite the limited information on suicide in late life and the lack of official national data, it appears that suicidal mortality in this age group is among the highest in the world, with suicide cases in old age accounting for 38.2% of total suicide deaths (Zhong et al., 2016).

An Australian study found that suicide rates in women tend to remain stable all along old age, while men are more vulnerable to suicide in the “oldest-old” group (85 years and over) (Koo et al., 2017). These differences among sexes could possibly be explained by the greater female propensity to seek help, to obtain health care and to use less violent suicide methods (Karch, 2011; Schriivers et al., 2012). However, it must be borne in mind that these evidences could be limited to high-income countries where the quality of records is generally more accurate than in disadvantaged countries, where the majority of suicides do actually happen (Naghavi et al., 2019).

3. Validity of data

A factor of concern is the possible underestimation of suicidal mortality rates, the extent of which could be by no means trivial (Osgood, 1992; Williams et al., 2010). According to the WHO (2014), deaths from suicide often incur a misclassification. In fact, suicide is subject to stigma and shame; in some countries it is still criminalized, and can take on different cultural (Campbell and Guiao, 2004; Kumar, 2003) and religious (Milner and De Leo, 2010) meanings. Furthermore, there are situations in which the intentionality of suicidal behavior is really equivocal or there was a desire to disguise the suicidal nature of the act, for example for insurance reasons. In many cases, it can be difficult to ascertain if death was due to a deliberate act (such as not taking life-saving medication or overdosing on them; an accident or a voluntary fall, etc.) (De Leo, 2015). The poor regulation existing in many Western countries with respect to the prescription of opioids (used to reduce somatic pain) might provide older adults a suicide method that is both quite easily accessible and effective in disguising their suicide intention (De Leo and Arnautovska, 2016). Suicide deaths involving older adults are particularly prone to this statistical under-reporting (De Leo and Arnautovska, 2016); notoriously, the advanced age of the deceased may imply less investigative interest than a death in childhood or from medical complications (Walter et al., 2012). ‘Silent suicide’ cases, such as due to self-starvation or self-dehydration would never be counted.

4. Suicide attempts and suicide methods

Numerous studies have shown that suicide attempts tend to decrease significantly over the course of life (De Leo et al., 2001; Koo et al., 2017; McIntosh et al., 1994). A study conducted in Oxford, using data from the National Bureau of Statistics of England and Wales, analyzed a sample of 4705 people hospitalized from 1995 to 2004 for attempting suicide, for a total of 6890 episodes. The researchers compared the average annual rates of suicide attempts and those of suicide mortality: considering both sexes, the ratio decreased from >200 to 1 in adolescents to <10 to 1 in people over 60 (Hawton and Harriss, 2008). Furthermore, if each adult was counted only once during the study period, the average annual rate ratio decreased to 1.9–1 (Hawton and Harriss, 2008). These data suggest the idea that suicide attempts in old age generally involve high suicide intentionality (Hawton and Harriss, 2006; Salib et al., 2001). Also the Centers for Disease Control and Prevention (CDC, 2020a) underline that suicide attempts in late life tend to frequently have a fatal outcome, since older people plan carefully their act and arrange procedures that are less likely to be interrupted and let them being rescued.

At a global level, older adults tend to choose the most lethal methods, especially hanging (Ajdacic-Gross et al., 2008; WHO, 2014). This trend is common across Anglo-Saxon countries such as Australia (Koo et al., 2019), and England and Wales (Shah and Buckley, 2011), but not by the United States, where firearms were the most common method used in 2018 in all age groups, accounting for about half (n = 24,432) of all deaths due to suicide (CDC, 2020b).

If men appear to be using violent methods such as firearms and hanging, women often die from overdosing with medications or poisoning. While older men tend to die by suicide more often, women are more likely to attempt suicide (Hawton and Harriss, 2008; Slade et al., 2009), with the prevalence of this behavior appearing to remain constant over lifetime (Shah and De, 1998).

5. Risk factors

Given the multifactorial nature of suicide, the World Health Organization has developed an ecological model that outlines several broad areas of risk factors (individual, relationships and community, society and health system), to which to address one or more interventions of different prevention strategies (WHO, 2014). Although understanding of these factors is limited with regard to the effective predictive capacity

and impact of different combinations (Conwell, 2014), it is possible to identify specific characteristics in older people that differentiate them from the general population.

5.1. Individual factors

Also for older people, the most important risk factor is having previously made one or more suicide attempts (Yoshimasu et al., 2008). However, suicide attempts are less and less frequent with advancing age and, as mentioned, in old age they closely approach the number of suicides.

Psychiatric illnesses are often associated with suicide, even in old age (Vasiliadis et al., 2014; Waern et al., 2002; Cavanagh et al., 2003; Radhakrishnan and Andrade, 2012; Phillips et al., 2002), with a specific relevance for affective disorders (Conwell and Thompson, 2008; Troya et al., 2019). Within this group of conditions, major depression constitutes the strongest risk factor in old age (Reynolds III and Kupfer, 1999; Conwell et al., 1996), followed by minor depressive disorders and dysthymia (Waern et al., 2002).

The presence of a depressive episode may be able to trigger the chain reaction that brings to a suicidal outcome (Blazer, 2003). The concept of "loss", central to depression, seems to catalyze with great ease the feelings of fragility typical of old people, exacerbating feelings of despair, loss of interest and loneliness, somatic disorders and cognitive deficits. This emotional experience leads the person to a "tunnel vision" such that suicide seems to be the only alternative. Especially in old age, recurrent thoughts of death and suicide can derive from the belief that life has lost its meaning and is no longer worth living (Wand et al., 2018). Suicidal ideation, in particular, appears to play a pivotal role in bringing ahead the suicide act in old age (Waern et al., 1999; Chiu et al., 2004). In light of this, screening for depression and assessment of suicidal ideation play a crucial role in saving an older person from suicide. Often, difficulties lie in discerning pathological thoughts from rational reflections about death (Scocco et al., 2001). In addition, older people with mental disorders hardly turn to specialist services, finding instead in their general practitioner a more accessible reference figure with whom to discuss health problems (Skultety and Rodriguez, 2008).

Particular attention should be put on ageist models of aging. With the term "ageism" the WHO indicates the set of stereotypes, prejudices and discrimination to which the aging process is subject (WHO, 2018b). Often, the social representation of old age is associated with the psychophysical decline of the individual and a condition of helplessness and fragility. Such negative representations of aging and nihilistic attitudes towards age can influence possibilities of care for older people. The internalization of negative stereotypes can translate into the legitimation of self-evident truths about one's precarious life condition, as well as the very threat of the stereotype which, with advancing age, seems to conform the individual to a particular disadvantaged subgroup (Swift et al., 2017). To these psychosocial processes, we add age discrimination, supported by language, the press and social media (Levy et al., 2014; Zebrowitz and Montepare, 2000).

In this sense, ageist models tend to perpetrate a lax approach with respect to the possibilities of care for older people: from considering depression as a 'normal' change in mood in this population to a general reluctance to clinical interventions, given the frailty of patients of that age and feared interactions with drugs for somatic conditions (Rabheru, 2004; De Leo, 2017). This attitude and misconceptions can lead to underestimating the real extent of the depressive disorder and at the same time minimizes the complexity of the problems of the old person, flattening the perspectives of understanding (De Leo, 2019).

With regards to other types of psychiatric conditions, deaths by suicide associated with alcohol and substance abuse appear to be less frequent among older people than among young people (Krysinska et al., 2006; De Leo et al., 2013).

The presence of schizophrenia (Chiu et al., 2004), mental retardation and personality disorders (Henriksson et al., 1993; Harwood et al., 2001) can also influence suicidal behavior. The study of personality traits and suicide is still poorly explored in old age groups, while the association is more evident among young people (Draper and Low, 2004; Neulinger and De Leo, 2001). It is possible to hypothesize that individuals with anancastic or anxious traits, once exposed to stressful factors, may tend to exhaust their coping strategies quite easily, exposing themselves to the risk of suicide (Conwell, 2014).

In adults with dementia, although exposure to suicide seems to be lower (Schneider et al., 2001), the risk may vary based on several factors, with a greater probability within 1 year from diagnosis (Erlangsen et al., 2008). In people with still good cognitive functions, the anticipation of cognitive decline and autonomy loss with consequent burdensomeness on others could be at the basis of suicidal behavior in early stages of dementia (Seyfried et al., 2011).

Mental disorders, especially depression, have high co-morbidity with numerous physical conditions (Montano, 1999), which in themselves constitute another important risk category for this population group, if not the most important at very advanced age (Koo et al., 2017). Physical disability (Conwell et al., 2002), functional impairments (Clark et al., 2011; Szanto et al., 2012), visual disturbances and malignant cancerous diseases (Waern et al., 2002), and chronic pain can significantly increase the frequency of suicidal behavior (Tang and Crane, 2006).

In addition, the general deterioration of the state of health can easily induce negative thoughts such as lack of hope and motivation, which are in themselves important predictors for suicide (O'Connor and Nock, 2014). Numerous studies show that, due to the greater vulnerability to one's psycho-physical condition, a previous hospitalization reported in the history of older people appears to be a risk factor of such relevance that can be compared to a previous suicide attempt (Meehan et al., 2006; Powell et al., 2000; Ngamini Ngui et al., 2015).

Numerous homicide-suicide cases involve older individuals (McPhedran et al., 2018). Most often, older adults of male sex are the initiator of this type of behavior: they have been engaged in caring for their spouse with a long-term disability or illness for long time (Malphurs and Cohen, 2005).

5.2. Relations and communities

According to data from the World Population Prospects 2017, the number of adults aged 60 and over is expected to more than double by 2050 and triple by 2100, rising from 962 million in 2017 to 2.1 billion in 2050 and 3.1 billion in 2100 (UN, 2017). If we add to this the rapid growth in the percentage of single-person households (OECD, 2018), it is clear that the number of old age living (and possibly feeling) alone people will increase considerably. Numerous studies have proven that the lack of social interactions, isolation and loneliness are important risk factors for this age group (Casiano et al., 2013; Draper, 2014; Bonnewyn et al., 2014; Martin et al., 2013; OECD, 2016; Wand et al., 2018).

The loss of a spouse or a significant relationship, and a conflicting relationship (Kposowa, 2003) can also increase the risk of suicide, especially among older men (Turvey et al., 2002; Erlangsen et al., 2004). Two studies, conducted in the Department of Psychiatry of the University of Parma, compared the history of suicide decedents with outpatient psychiatric patients who had not manifested suicidal behavior after one (Innamorati et al., 2014) and 2 years (Innamorati et al., 2008) from a previous suicide attempt. In both studies, individuals who had decided to end their lives reported greater likelihood of being widowed or unmarried, living alone, experiencing recent stressful life events and hospitalization (Innamorati et al., 2008, 2014). In particular, those risk factors seemed to worsen with advancing age (Innamorati et al., 2014).

Although no studies are yet available to attest the impact of the COVID-19 epidemic on suicide mortality rates in old age, it is possible to hypothesize that the negative effects of the pandemic may significantly affect this phenomenon (Wand et al., 2020). Social distancing, quarantine, personal protective equipment, and inability to get close to the loved ones (even for the last goodbye), all these factors tend to

exacerbate feelings of anxiety and depression, and could increase the onset of post-traumatic stress symptoms that often lead to episodes of self-harm and suicide (De Leo and Trabucchi, 2020a; Hawryluck et al., 2004; Santini et al., 2020).

Especially for older people living in nursing homes, the pandemic is likely to have a particularly harmful effect (Trabucchi and De Leo, 2020); it is known, in fact, that some subgroups of the population – for example, those living in institutionalized contexts or socially 'fragile' - are more exposed to suicidal risk factors (Brunstein Klomek et al., 2010; Fazel et al., 2011; Haas et al., 2011). These particular conditions, related to the current health emergency, affect the social fragmentation index, which highlights how close connection between social ties, social integration and suicide impact on suicidal risk (Collings et al., 2009; Evans et al., 2004).

Another element that closely affects older people concerns the transition from working life to retirement, which often has a negative effect especially in men, in the first 2–3 years after the beginning of the pension (De Leo and Diekstra, 1990). A recent Australian study, based on a cohort of more than 250,000 participants aged 45 and over, showed that suicide and attempted suicide were significantly associated with exclusion from work due to illness, disability or household commitments, or to the state of 'forced' retirement (Page et al., 2020).

5.3. Society and health system

Economic crises and unemployment have a significant impact on trends of suicide mortality (Chen et al., 2010; De Vogli and Gimeno, 2009; Eurostat, 2020; Frasquilho et al., 2016). In older people, low income and financial insecurity have amply demonstrated a significant impact on suicidal behavior (Légaré et al., 2013). Not possessing a house or apartment can add to feelings of dependency and insecurity (Law et al., 2016; Navarro et al., 2010). Being forced to relocate (Torresani et al., 2014) or to enter a nursing home or the anticipation of such an event (Loebel et al., 1991; Mezuk et al., 2019) is also a precipitating factor for suicidal behavior among older adults. In 2050, 80% of the world population will live in low and middle-income countries (LMICs), of which a considerable portion will be over 65 years of age (WHO, 2018b); as already said, around three quarters of all suicides occur in these countries (WHO, 2019). Correcting social inequalities and progressing the growth of LMIC countries would be imperative also from the point of view of suicide prevention.

Another relevant factor concerns the type of communication provided by the media on events involving suicide cases. Despite the impact of media has not been specifically studied on suicidal behavior of older adults, it is known that sensationalism and glamorization in the description of the event, and 'normalization' and inappropriate conceptions of suicide provided by the web, the printed media and the social media can encourage suicidal behavior, especially in most vulnerable persons (Daine et al., 2013; Niederkrotenthaler et al., 2012; Sisask et al., 2008). In particular, older adults have also to confront the often-inadequate representations of aging conveyed by the media. A striking example concerns the communications provided by the media regarding the COVID-19 pandemic: feeling a burden for society or their families, as well as the awareness of being deemed less worthy of care or that the latter can be denied (De Leo and Trabucchi, 2020b; ; Wenger and Schapiro, 2020), all these aspects amplify the feelings of loss of value and productivity and undermine one's sense of independence (Crocker et al., 2006; Wand et al., 2018). Added to this is the stigma that people seeking help often feel subject to, especially for suicidal behaviors, mental disorders and substance abuse.

A final category of risk is constituted by the difficulty of having access to health care, especially in low and middle-income countries (Cho et al., 2013). For older people, who are more likely to need such support, the lack of active, adequate and ongoing help over time can have a highly negative impact (Heinsch et al., 2020). This problem tends to worsen in emergency situations, such as in the current pandemic. Among the many elements, the reduction of psychiatric care (Yao et al., 2020), lack of staff and inadequate resources for people residing in nursing homes (Thomas, 2020), cancellation of visits, home service and public transportations, as well as long waiting times (Reger et al., 2020; Uibu, 2020), could all increase mental distress and suffering with a direct impact on increasing suicide risk (Yang et al., 2020).

6. Protective factors

The possibility of accessing care, as a protective factor against suicide, is closely linked to the individual's ability to ask for help, thus establishing a relationship with others. In this regard, knowing how to communicate one's state and receive emotional support seems to contribute to the lower vulnerability of the female population to the risk of suicide (De Leo and Arnautovska, 2016).

In general, strong social connections and good family relationships tend to increase social integration and the sense of solidarity, reducing the risk of suicide (Mignone and O'Neil, 2005; Singh and Siahpush, 2002). Proof of this is the fact that older people can particularly benefit from social support, able to improve their condition of loneliness even in the absence of pharmacological or psychotherapeutic measures (Salsi, 2007). Furthermore, being married (Harwood et al., 2000; Kolves et al., 2015; Page et al., 2020) or living in areas with a higher concentration of single-parent families (Ngamini Ngui et al., 2015), having a good educational level and a solid economic situation, as well as being involved in social and religious activities (Fiske et al., 2009; Krause, 2006), all constitute additional elements of protection.

Tables 1 and 2 summarize main characteristics of suicide in old age and risk and protective factors.

7. Prevention

The prevention of suicide in old age requires multi-level strategies that, through a systemic approach (Krysinska et al., 2015), should be able to incorporate social, economic and health organizations, making them interact with the care and intervention services (RANZCP, 2020). Guidelines have been issued by the World Health Organization through the 2013–2020 Global Health Action Plan (WHO, 2013), the report, *Suicide Prevention: A Global Imperative* (WHO, 2014) and, more recently, the overview on national strategies for suicide prevention (WHO, 2018d).

The improvement of health care (De Leo et al., 2020), as well as the reduction of unemployment, poverty and low schooling, is one of the primary objectives at the universal prevention level. Furthermore, accessibility to care - favored by awareness campaigns -, implementation of screening for possible suicide risk factors, and follow-up controls after admission to health services seem to have a positive impact on raising suicide risk threshold (Ngamini Ngui et al., 2015). Preventive efforts should be facilitated by the media through clear and effective communication on suicide-related phenomena, risk factors and the possibility of obtaining assistance via helplines and home care services. For example, providing practical information and advice on how to deal with anxiety and stress during the COVID-19 pandemic, as well as consistent explanations on the need for restrictions and social distancing measures, would decrease the risk of psychological distress in the general

Table 1
Suicide in late life: main aspects.

Higher rates than general population
Highest rates for males
Highest rate ratio males: Females
Trend increasing with advancing age
Lowest ratio non-fatal/fatal suicidal behavior
High level of determination to die
Use of lethal methods
Poor rescue opportunities

Table 2
Suicide in late life: risk and protective factors.

Risk factors	Protective factors
Psychiatric disorders	Social connection
Physical illness	Stable family relationships
Hopelessness	Resilience
Isolation/loneliness	Being married
Previous hospitalization	Hobbies/religious activities
Negative life events/transitions	Advantageous economic condition
Social invisibility	Good level of education
Ageist models of aging	Access to health care

population (Brooks et al., 2020).

Efforts to reduce age-related prejudice also fit into this level. Indeed, numerous studies have shown that positive aging implies faster rehabilitation pathways from disability (Levy et al., 2012), a higher life expectancy (Levy et al., 2002) and greater social inclusion (Vitman et al., 2014). Preventive strategies to combat ageism must be implemented globally and coordinated by public and private bodies. The main objective is to raise awareness of aging by analyzing the prevalence, causes and consequences of ageism, as well as identifying effective strategies to address aging and disseminate a broad understanding of the phenomenon (WHO, 2018a).

Selective prevention interventions are particularly suitable for older people, since they are aimed at reaching those particular segments of the population at greatest risk of suicide; in particular, those older adults who undergo distressing life transitions such as a move, the loss of a partner, or the diagnosis of a chronic painful disease (RANZCP, 2020). In these cases, the main objectives focus on encouraging the autonomy and independence of the older individual, reducing isolation and the lack of social support through the use of social services and the resources available in the area, while encouraging community members to providing support for lonely older persons (Ngamini Ngui et al., 2015).

Furthermore, it would be useful to implement prevention programs that emphasize the importance of healthy aging (e.g., importance of physical exercise, healthy eating, etc.) and that focus on protective factors related to social integration. For example, it has been shown that services designed to facilitate the transition from working life to retirement, with particular attention to the emotional, social and financial aspects of this change, can prevent suicidal behavior in old age (Page et al., 2020). Additional protective factors such as problem solving and a good perception of autonomy and control (Donald et al., 2006) may inspire prevention programs based on promoting self-help and positive coping (Wand et al., 2020). These programs should not be aimed exclusively at older adults but also at professionals who perform the role of gatekeeper, having the task of identifying and assessing the level of risk (Matthieu and Hensley, 2013). An Australian study conducted by Almeida et al. (2012) demonstrated that an educational intervention aimed at primary care physicians reduced the 2-year prevalence of depression and self-injurious behavior by 10%, compared with a control group of physicians not receiving the intervention. It is important that health professionals are aware of the impact of certain life events in older people: for example, retirement, loss of the driving license, impairments in bodily functions, or the presence of a psychiatric diagnosis (Krysinska et al., 2015; Zalsman et al., 2016). Furthermore, it is necessary to make available systematic screening tools for staff in medical and non-medical settings, and to train staff on the assessment of suicide risk in old age (De Leo and Arnautovska, 2016).

Indicated prevention plans aim to prevent suicide among those older adults who have survived a suicide attempt or are at risk of dying by suicide. Due to the close association between depression and suicide, the identification and effective treatment of depression is a key element. In the planning of prevention services, the Royal Australian and New Zealand College of Psychiatrists (RANZCP) recommends, qualified psychiatric counselling, personalized post-attempt care measures, ability to recognize the traumatic experiences of the individual, continued training on suicide prevention by the healthcare professionals and the possibility for patients to easily access care all along the week, 24 h a day (RANZCP, 2020).

For this reason, indicated prevention plans for older adults preferentially use collaborative assistance approaches, based on the involvement of different professional figures, to create a formal and informal network of links between the older person, primary care providers and mental health specialists (Heisel, 2006; De Leo and Arnautovska, 2016).

Several researches have shown that psychosocial interventions, based on the enhancement of life skills and cognitive resources, have been found to be effective in reducing depressive symptoms and suicidal ideation. In particular, For this reason, indicated prevention plans for the elderly preferentially use collaborative assistance approaches, based on the involvement of different professional figures, to create a formal and informal network of links between the elderly, primary care providers and mental health specialists (Heisel, 2006; De Leo and Arnautovska, 2016).

Several researches have shown that psychosocial interventions, based on the enhancement of life skills and cognitive resources, have been found to be effective in reducing depressive symptoms and suicidal ideation. In particular, studies like IMPACT (Unützer et al., 2002; Unützer et al., 2006) and PROSPECT (Alexopoulos et al., 2009; Bruce et al., 2004) have shown that a good therapeutic alliance, a treatment plan individualized and agreed with the patient, as well as a continuous monitoring and follow-up are of great benefit to the older person at risk of suicide. Other interventions of this type have reported that the possibility of accessing care (Sirey et al., 2016), the development of coping strategies in the event of a crisis (Stanley and Brown, 2012) and the strengthening of protective factors such as resilience (Lapierre et al., 2007), were found to be effective elements in increasing the perception of control and self-confidence and hope for life.

Other clinical interventions targeting older people at risk use various forms of psychotherapy to reduce suicidal ideation and depressive symptoms. Although there is insufficient evidence in the literature to validate the efficacy of this type of interventions (Heisel and Duberstein, 2006), numerous studies have reported promising results. Interpersonal psychotherapy, focused on pain, stressful life events and interpersonal deficits, has been found to be a useful approach to reduce depression and suicidal ideas (Szanto et al., 2003), and to increase the perception of social support and satisfaction of unmet needs (Heisel et al., 2009, 2015). Other psychotherapeutic approaches, specific for this segment of the population, are represented by Reminiscence Therapy (Haight et al., 1998), centered on enhancing memory skills to reinforce self-esteem and internal coherence of one's narrative; Problem Adaptation Therapy (PATH), based on the enhancement of problem solving skills (Kiosses et al., 2015); Supportive Therapy for Cognitively Impaired Older Adults (ST-CI), which draws on the Rogerian method of empathic listening. Gustavson et al. (2016) demonstrated that Problem Solving Therapy (PST) has achieved encouraging results for the treatment of older adults with major depression and executive dysfunction, aiding in the identification and resolution of problems and the management of depressive symptoms.

It is necessary to reassure the depressed or hopeless older person that their existence is meaningful and valued, and that their well-being is important. Practical examples may include home visits, regular postcards or phone calls, and connection to an alarm center for immediate help, while also encouraging the use and integration of telemedicine within traditional health care (Wand et al., 2020). In this regard, the TeleHelp/TeleCheck system from Italy has been pioneering this type of assistance (De Leo et al., 2002).

All the above are proactive connection models that, to a certain extent, can replace or buffer the absence of home service for older people at risk of suicide (also in relation to Covid-19). For example, during the current pandemic it has been demonstrated how a sense of connection, support and belonging can also be conveyed through the use of video calls, phone calls and messages with friends and relatives

(Armitage and Nellums, 2020).

8. Conclusions

Globally, suicide is a serious public health problem: in 2016 it was the number one cause of death in high-income countries in Asia Pacific and among the top 10 causes of death across Europe, Central Asia, Australasia, South Latin America, and North American high-income countries (Naghavi et al., 2019). Suicide mortality is such a significant phenomenon that it is included among the indicators for premature mortality associated with non-communicable diseases in the United Nations *Sustainable Development Goals* (SDGs) report for 2030 (UN, 2015). Data are even more alarming when referred specifically to suicide in old age. The rapid aging of the population and its demographic distribution in low-middle-income countries lead us to fear a severe worsening of the epidemiological picture relating to this phenomenon.

Older people are more vulnerable to disadvantageous socio-economic conditions, unemployment, and inaccessibility to health care, and report greater risk of suicide in areas with high population density (Ngamini Ngui et al., 2015). Generally speaking, suicide in old age often seems to be the result of a well thought-out decision: the lower frequency of suicide attempts and the choice of lethal methods makes this phenomenon more fatal and less predictable. This seems particularly evident for men, who appear less able to adapt to the difficulties of advanced aging and more prone to the aggregation of risk factors, especially if they live alone and have severe physical illness or a mental disorder (De Leo et al., 2020).

Isolation and loneliness are among the main risk factors; given their both individual and social nature, they would require multi-area intervention strategies, able to bring out the significant variations between different risk classes (Ngamini Ngui et al., 2015). The available literature indicates a growing effort in understanding the many facets of the suicide phenomenon, from the debate on the concept of aging to the exploration of new research areas such as that on protective factors, to the commitment to involve government authorities in an increasingly active way. Population growth, economic crises and catastrophic events such as the current pandemic present health planners and practitioners with numerous challenges, which need to be addressed with adequate preparation in order to safeguard the health of our parents and grandparents, and their precious presence in the world.

Credit author statement

- The corresponding author is responsible for ensuring that the descriptions are accurate. In any case, they are agreed by both authors.
- DDL and AVG contributed equally to the paper. DDL revised the paper for intellectual content. AVG was wrote the original draft. DDL reviewed and edited the original draft.
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Declaration of competing interest

None.

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