

The risk of abuse of legal firearms by old and young individuals with acquired cognitive impairments: a review of the literature

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Abstract

Background: Risk assessment in relation to firearms and cognitive impairments is complex, and no guidelines exist regarding the appropriate management of people with dementia who may own or have access to a firearm. In Italy, approximately 4.8 million people either own a firearm or use one for recreational, sporting or professional reasons. Recent studies report that firearms were used in 35.7% of suicides committed by people over 65 years old and that 5% of all suicides were committed by over 65-year-olds using firearms. As for the figures related to homicides committed with firearms by people over 65, these represented 31.8% of all homicides committed with firearms.

Results: The aim of the present study was to conduct a critical review of the procedures currently used in relation to the use of firearms by elderly people. We conducted a review of the international scientific literature published over the last 20 years on the phenomenon of firearms abuse by elderly people and its prevention, drawn from the Medline and PsychINFO online databases. We considered all studies published in journals and books from 1990 to 2010 using the following keywords: violence, firearms, suicide, homicide, dementia and cognitive impairments, and searching for quantitative studies, case reports and literature reviews.

Conclusions: Family physicians and specialists (geriatricians, neuropsychiatrists, clinical psychologists) can act as an indispensable observatory of the related risks in people who own firearms, but their role should be supported by suitable training on the procedures used to assess and report on any such risks.

Key words: firearms, suicide, homicide, dementia, older adults

Introduction

In Italy, approximately 4.8 million people either own a firearm or use one for recreational, sporting or professional reasons [1]. Considering the intrinsic hazard of all firearms, the community and individuals need to be safeguarded by ensuring that people who handle firearms meet the necessary psychophysical health requirements. In particular, the onset of any mental deterioration, such as dementia, constitutes a condition of potential risk of abuse of firearms. Studies of Conwell and coworkers [2] have pointed to the need to consider the availability of firearms more carefully, as a part of other measures undertaken to guarantee the safety of individuals with cognitive impairments and the population at large [2]. This work analyses the available data on the phenomenon in Italy and abroad, and proposes several preventive procedures based on findings drawn from the scientific literature.

The phenomenon in Italy

At the time of the latest Italian population census, which dates back to 2001, the elderly population (over 65 years old) amounted to 10,801,239, out of a total population of 57,110,144 [3]. Among these elderly people, 4,841,767 were more than 75 years old and 1,265,093 were over 85 [3]. The most recent data, drawn from the regional public health indicators suggest that, as of the 1st January 2010, the resident population amounted to 60,353,163 and included 12,206,470 over 65-year-olds [4]. The Italian sources of public health statistics [5-15], for the decade 1993-2002, reported that firearms were used in 35.7% of suicides committed by people over 65 years old (2,222 out of 6,224 cases) and that 5% of all suicides were committed by over 65-year-olds using firearms (2,222 out of 44,011 cases). As for the figures for homicides committed with firearms by people over 65, these represented



31.8% of all homicides committed with firearms (277 out of 871) [5-15], but no information is available on whether the firearms involved were legally owned or illegally held (Table 1, Figure 1). The number of murders committed by people over 65 in the last 10 years is higher for this age group than in the general population.

Specific risks: dementia, aggressiveness and violence

Impairment of cognitive functioning, which is a key feature of dementia, could play the role of a risk factor for hazardous and violent behavior. Affected cognitive and neuropsychological features often include problems or impairments

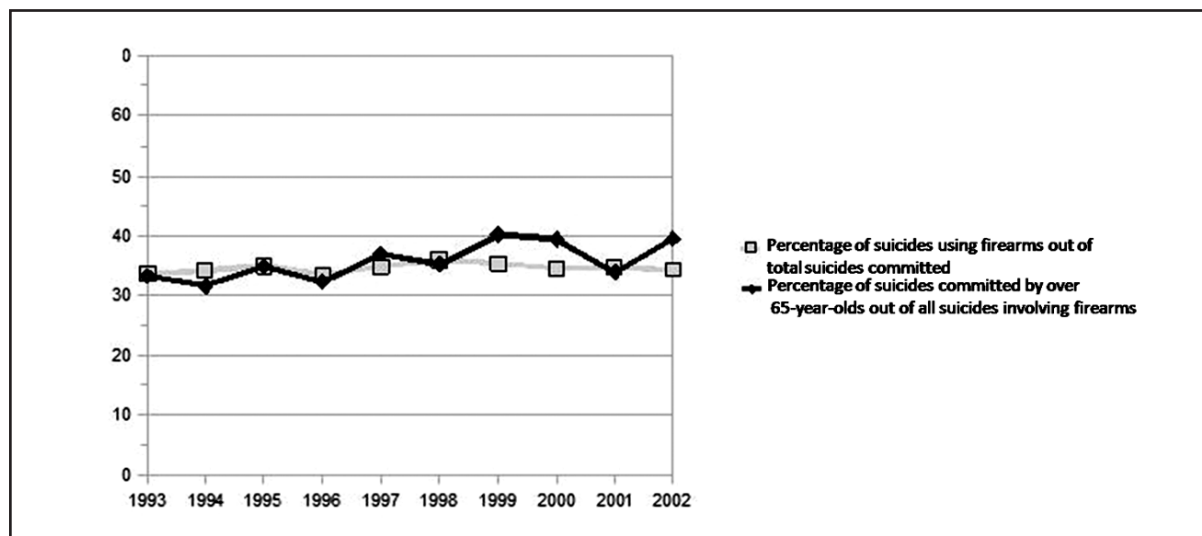
related to: executive functioning, memory, orientation, praxis, attention, volition, loss of inhibition of automatic behavior and impulses [16]. Behavioral and psychological symptoms commonly occur in Alzheimer's disease and in other dementias [17]. Moreover, patients with cognitive impairment may suffer - to a variable degree, depending partly on the stage of their disease - from psychopathological symptoms such as psychosis, mood disorders, psychomotor activity disorders, agitation (verbal or physical aggressiveness), personality disorders, and neurovegetative symptoms. Both cognitive decline and behavioral changes may adversely affect their capacity to handle a firearm safely. The

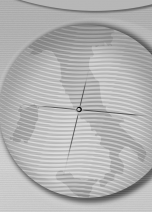
Table 1. A decade of Suicides in Italy, 1993-2002 [5-14].

YEAR	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
<i>Suicide or self-inflicted harm (*)</i>	4.7	4.54	4.57	4.69	4.69	4.50	4.12	4.11	4.03	4.07	44.01
<i>Suicides in >65 year-olds (**)</i>	708	648	636	585	626	648	614	614	542	603	6.22
<i>With arms and explosives (*)</i>	1.58	1.55	1.60	1.57	1.64	1.62	1.45	1.42	1.40	1.40	15.22
<i>With arms and explosives in >65 year-olds (**)</i>	236	205	222	189	231	228	247	242	184	238	2.222

Values are expressed as follows: * the number of suicides in Italy for 100,000 people, ** the number of suicides in Italy for year.

Figure 1. A decade of suicides in Italy, 1993-2002.





prevalence of aggressive behavior among people suffering from dementia is estimated at around 30-50%, and the treatments traditionally adopted to deal with this phenomenon have little effect and carry considerable risks to the patient's health [18]. Aggressiveness may be verbal or physical, directed against objects or people, and it is generally an expression of rage, frustration or fear. Aggressive behavior reportedly increases in the more advanced stages of dementia, and episodes are estimated to occur in 13% of patients with mild dementia, 24% of those with moderate dementia and 29% of patients in the more advanced stages of the disease [19]. The increasing incidence of aggressive behaviors, with more severe scenarios of dementia, are associated with states of mild-moderate depression and are more frequent among males [20]. Environmental stressors, such as conflicts with others and abrupt changes in surroundings, can facilitate such aggressive episodes. In some cases, this behavior can develop into actions that are hazardous for other people. Studies have demonstrated that dementia facilitates the disinhibition of violent impulses, particularly in cases with frontotemporal dementia and Alzheimer's disease [21, 22]. In a retrospective study on 52 patients with dementia who needed to be hospitalized for psychiatric problems, it emerged that 44% had physically attacked someone two weeks before their admission to hospital, and that this behavior also persisted after their admission in 29% of cases [23]. Although dementia is not the only explanation for violence, the disease is certainly an important factor. In the natural course of dementia, cognitive deficiencies progressively become worse and behavioral symptoms usually develop (though not always). Both the cognitive impairment and the behavioral disorders can have a negative impact on an individual's capacity to use firearms safely.

The combined effects of behavioral and psychological symptoms, such as depression, psychoses and aggressiveness, can constitute a risk factor. Moreover, the cognitive impairments caused by dementia, such as loss of memory and visuospatial problems, naturally interfere with the safe use and storage of firearms. Other common cognitive impairments, such as an impaired judgment and altered executive functions, may be very difficult to assess and quantify. For instance, patients with frontal dementia may perform normally in standard neuropsychological assessments, but reveal behavioral deficiencies in activities of daily living. The risk posed by individuals suffering from dementia who have access to firearms consequently needs to be

accurately assessed. The aim of this study was to conduct a critical review of current assessment procedures on the matter of firearms possession by elderly people, in the light of evidence coming from the scientific literature on the issue.

Literature review

A review of the international scientific literature over the last 20 years on the phenomenon of firearms abuse by elderly people and its prevention was conducted, drawn from the Medline and PsychINFO online databases [24, 25]. We considered all studies published in journals and books since 1990 using the following keywords: violence, firearms, suicide, homicide, dementia and cognitive impairments, and searching for quantitative studies, case reports and literature reviews (Figure 2). Only a limited amount of research has been conducted on the risk of patients with dementia possessing firearms, usually in the form of case reports [26] or investigating the issue using epidemiological studies. One study reported a high prevalence of loaded firearms in the homes of families that included somebody suffering from dementia [27]. The sample consisted of outpatients seen at a university clinic for memory disorders and the authors found that there were firearms in the homes of 60.4% of these patients. The firearm was reportedly loaded in 44.6% of these cases, in 38% of cases the other members of the family did not know whether it was loaded or not, while the firearm was stored unloaded in only 16.9% of cases. The authors recommended that clinicians question the family members of their dementia patients about any presence of firearms and urged them to have these weapons removed.

A report from the Department of Veterans' Affairs [28] in the United States examined the relationship between dementia in the more elderly veterans and their behavior with firearms. The study included veterans from 21 states in the USA who had previously been diagnosed with mild or moderate dementia and whose cognitive test results had revealed severe dementia: 40% of these individuals lived in homes containing firearms and it emerged that these individuals could have access to the firearms irrespective of their mental state.

A recent study on the relationship between dementia and firearms emphasized the shortage of behavioral guidelines for dealing with people suffering from dementia who own or may have access to firearms, and the literature on the topic proved very scarce [17]. This study illustrates the legislative situation in England, Ireland and Canada, and provides some information on the

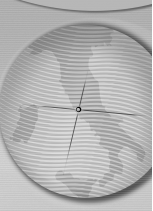
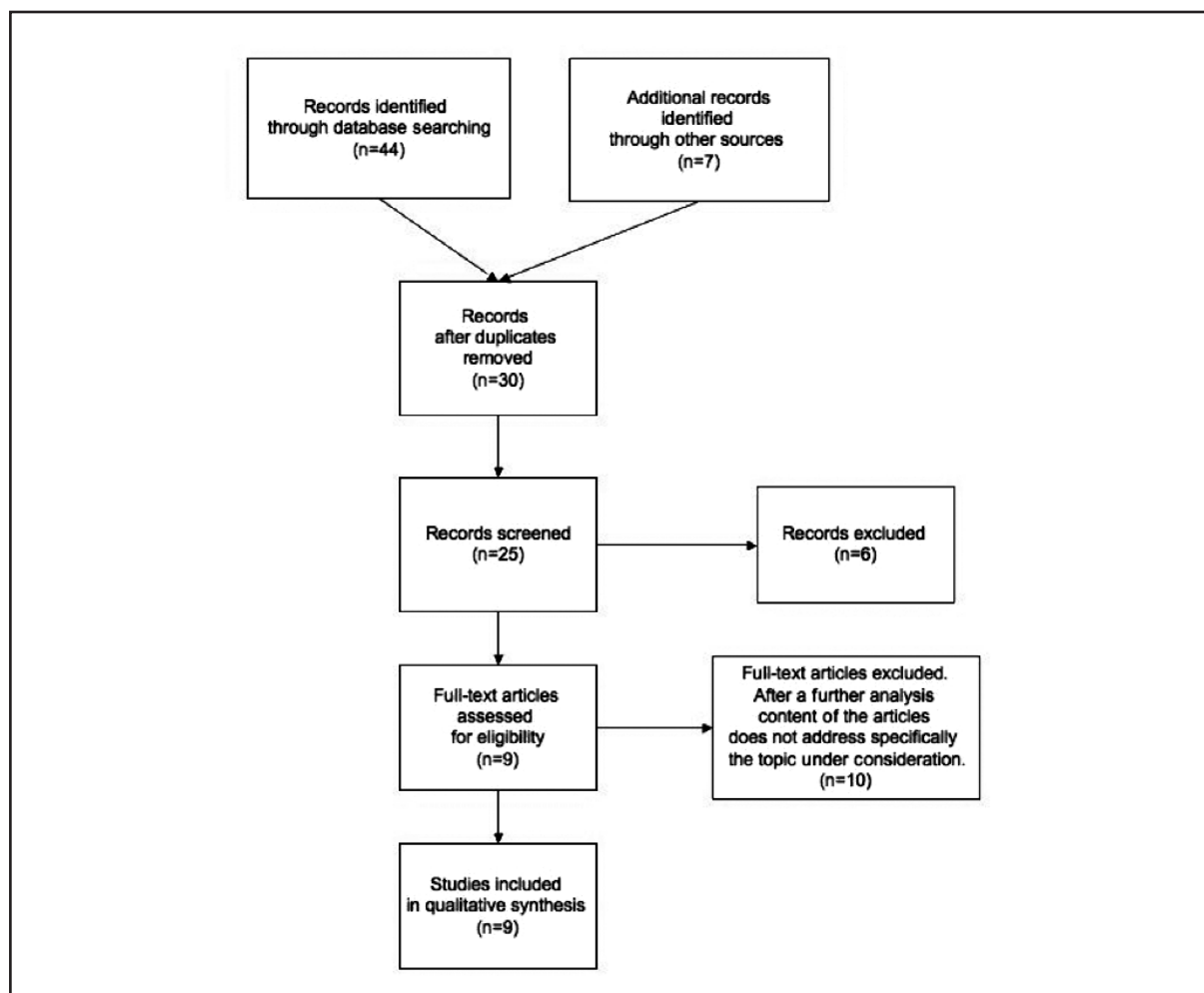


Figure 2. Phases of the review.



possession of firearms and related accidents. The paper reports that in Ireland, between 1997 and 2001, firearms were used in 7.8% of all suicides and 8.2% of the people involved were over 65 years old, although less than 1% of the population over 65 owned a firearm. In England and Wales, firearms were used in 2.5% of all suicides recorded between 2004 and 2005, and by 4.1% of the over 65-year-olds involved.

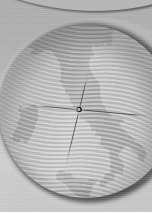
A recent review [19] on the risks associated with the possession of firearms by elderly people suggests adopting the same rules as are applied when renewing driving licenses. It was reported in this review that the numbers of people in the United States who own firearms is on the increase, and more so among the elderly population than in other age groups.

An American epidemiological review on the availability of firearms and related safety practices [29] investigated the correlation between elderly patients having access to firearms and their state of mental health. The results of this study demonstrate that a large proportion of elderly

people have ready access to firearms, and pistols in particular, and that the majority of their families have ammunition available for these firearms. No significant differences emerged in terms of access to firearms between people with and without symptoms of depression or suicidal ideation.

A study on suicides conducted in the city of New York between 1990 and 2005 [30] reports that firearms were the method most often used by elderly people for committing suicide, but that they were never used inside long-term healthcare institutions, where the prevailing method for committing suicide was hanging or falling from a height. This finding was compared with the situation among community-dwelling individuals: although falling from a height was the main method of suicide, firearms were used in 16.6% of suicide cases in elderly people.

Another study [31] on the Italian population analyzed suicides in Italy between 1987 and 1993, comparing the phenomenon between young people and the elderly. The authors emphasized that the risk of suicide increases with age. In



Italy, one third of all suicides committed between 1972 and 1981 involved people over 65 years old, although they represented only 14% of the population. In 1988, the suicide rate among over 65-year-olds (i.e. 20.8 per 100,000 population) was approximately three times the rate of the general population, and approximately 13 times higher than among people under 24 years old. Although the use of firearms came in fourth place among the methods used by elderly people to commit suicide (and in second place for young people), the report describes a marked increase in the use of firearms by individuals young and old as a means for committing suicide.

Several studies show marked differences in suicide rates between various states, but comparative data analyses are a problem for many reasons, including the different definition of firearm in each country's legislation and records of occurrences, because of the families' reserves about a relative's suicide and the stress the word "suicide" provokes when pronounced and, finally, because of the complexity of statistical survey procedures in Italy. Moreover, the legal availability of firearms depends on specific national laws, which vary considerably and make comparative analyses more difficult.

In Europe there are many different national legislations, with laws that vary from a ban on all civilian gun ownership (as in Luxembourg and Great Britain) to a law allowing citizens to own firearms providing they have a firearms license (as in Italy, France, Belgium and Germany) but with restrictions on the type of firearms.

Some studies point out the link between how easy it is to gain access to deadly weapons, including firearms, and how many violent episodes occur [32, 33], while other authors have emphasized the paucity of the evidence linking easy access to firearms with violent deaths [34, 35] (Table 2).

Italian legislation

The European Council directive of 18th June 1991, n. 91/477/CEE, published in the Official Journal of the European Commission (OJEC) on the 13th September 1991, n. L 256, transposed into the Italian law of the 30th December 1992, n. 527 and modified by directive 2008/51/CE of the European Parliament and Council of 21st May 2008, specifies in article 5 that the purchase and possession of firearms is permitted only to persons who "*are not likely to be a danger to themselves, to public order or to public safety*".

In Italy, the procedure for assessing whether an individual meets the minimum psychophysical requirements to be considered suitable for the

issue of a firearms license is organized in two stages. The first stage involves interested parties submitting to the above-mentioned assessment: for this purpose, they must present "a certificate of their clinical history prepared by their family physician as stated in article 25 of the law of 23rd December 1978, n. 833, dated no more than three months earlier". The second stage involves a public health official at the local public health unit, or a physician from the Armed Forces or the State Police verifying the individual's psychophysical requirements.

The legislation currently applicable in Italy states (Legislative Decree of 28 April 1998) "*Minimum psychophysical requirements for the issue and renewal of licenses to carry firearms for hunting and for self defense*" where one establishes that an individual's psychic fitness to carry firearms is characterized by "*the absence of any mental, personality or behavioral disorders*", and in particular the person must have no neurological impairments that might interfere with their state of vigilance or have any invalidating motor, static and/or dynamic symptoms. It must also be established that individuals do not have mental, personality or behavioral disorders. In particular, there must be no evidence of any dependence on narcotics, psychotropic medication or alcohol. According to this legislation, even the occasional use of narcotics, abuse of alcohol and/or psychoactive medication make an applicant unsuitable. The clinical history certificate prepared by the applicant's general practitioner is particularly important because it is used to orient any subsequent assessments [24], which are entrusted to the competent authorities and prescribed by the "certifying physician" at the medico-legal offices or other bodies previously mentioned. In practice, therefore, no specific assessments are conducted on the interested parties' cognitive functions. Another problem stems from the lack of any routine tests on the psychophysical fitness of people who possess a firearm for which they have simply given an official statement of ownership, but who do not have a license to carry firearms: such people are not liable to routine assessments of their state of psychophysical health. In this setting, the European standards demand a routine assessment of an individual's fitness to own a firearm, but they defer to the Member States' national legislation to establish the frequency of these tests. The problem becomes particularly important in the case of diseases that make people unfit to handle firearms, such as the onset of cognitive impairments or dementia.

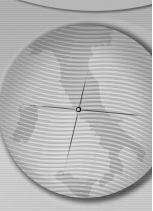


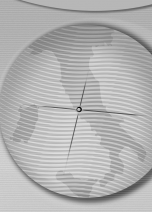
Table 2. Summary table of the main studies.

<i>AUTHOR</i>	<i>YEAR</i>	<i>TYPE OF STUDY</i>	<i>MAIN PURPOSE</i>
Greene E [19]	2007	Review	The article explores possible risks associated with gun ownership by older adults, drawing parallels to driving.
Clerici CA [24]	2006	Review	The article explores the risk factors of violence associated with legally obtainable guns.
Mendez MF [26]	1996	Case report	Case report of accidental suicide by 82-year old man.
Spangenberg KB [27]	1999	Research article	Study of prevalence of firearms in households of 106 outpatients with dementia.
Office of the Medical Inspector [28]	2004	Research article	Shows the relationship between dementia in the more elderly veterans and their behavior with firearms.
Lynch CA [17]	2008	Editorial	The article contains recommendations about risk assessment in the evaluation of dementia, particularly in relation to firearms.
Oslin DW [29]	2004	Review	Epidemiological review on the availability of firearms in USA to elderly patients.
Mezuk B [30]	2008	Epidemiological study	Study on suicide in New York between 1990-2005.
De Leo D [31]	1997	Epidemiological study	Analyzes a century of suicides in Italy, with a comparison between young people and elderly, reporting an increase in the number of suicide with firearms.

Proposals for action and assessment

In the event of a person's intellectual faculties deteriorating, firearms are just one of the risks against which such a person must be protected to prevent them harming themselves or others. Designing preventive procedures, also in the light of the data in the literature on the topic [19, 17], might facilitate the handling of such situations. Of course, other commonly-used objects, such as motor vehicles, but also cookers, knives and other potentially harmful tools commonly available in homes, can all constitute a source of risk. One of

the difficulties in this setting derives from the fact that carers and caregivers may only progressively become aware of an individual's dementia, partly because of the fluctuating trend of the disease. Implementing measures to reduce the hazards, that would also restrict the patient's freedom of action, may prove complicated, but when the decline in cognitive function is self-evident, such action must be taken even if the patient is uncooperative. It is essential that clinicians assisting elderly people suspected of having a cognitive deficiency conduct an assessment and inform members of



their families about the advisability of checking and reconsidering these people's access to firearms. Clinicians can also advise the other members of the family on how to manage the problem if the patient shows signs of resistance. The onset of dementia automatically makes an individual unfit to possess a firearm and this situation may need to be reported to the authorities.

The procedures for assessing an individual's fitness to possess firearms include at least generically assessing their mental functions to check for any signs of dementia or other cognitive impairments (see Appendix 1). An assessment of their autonomy and ability to carry out daily living activities should be part of the routine medical assessment. In the event of any medical conditions that might interfere with the individual's cognitive state, a standard neuropsychological assessment (using paper and pencil tests) should also be completed to evaluate their global cognitive functioning. These tests should specifically assess attention and memory, logical-deductive reasoning, visual-spatial functions and visual discrimination. Depending on the type of disorder identified in the patient, it may also be necessary to assess their frontal lobe capacities, investigating not only their abstraction and planning functions, but also their social and emotional behavior.

The use of appropriate clinical tools in the field of prevention can also help to better understand the link between mental functioning dimensions and the risk of firearms abuse. Some clinically relevant empirical tools, such as the QMF (Questionnaire on Mental Functioning), are currently being developed to facilitate diagnoses of mental functioning. The QFM-27 is a clinician-report questionnaire consisting of twenty-seven items which aims to facilitate the assessment of the patient and to formulate hypotheses about the clinical levels of personality organization.

Generally speaking, given the progressive nature of dementia and the associated cognitive impairment, people with a diagnosis of dementia should have no access to firearms without supervision and should not be able to obtain firearms licenses. Individuals with modest cognitive impairments should undergo more in-depth assessments, and access to firearms should be forbidden in the case of behavioral symptoms, impaired judgment or altered executive functions. Signs of mild cognitive impairment or executive dysfunctions may not fulfill the criteria for a diagnosis of dementia, but may still interfere with an individual's safe use of firearms. Since people with mild cognitive impairments develop dementia at a rate of approximately 10-12% a

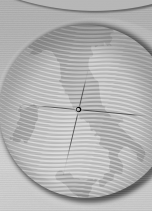
year [36], the related risks should be routinely reassessed. Some authors [17] suggest routine checks on the cognitive functions of elderly people who own firearms.

Shared procedures and specific legislation may be helpful in preventing risk situations along the lines of what is already carried out when assessing people's fitness to drive motor vehicles. In Italy, drivers have to submit to a medical check-up in order to renew their driving licenses, and this is done every 5 years for people over the age of 50, and every 3 years for those over 70 years old. It is difficult to balance risk prevention against an individual's rights to freedom and confidentiality, however, and this issue should be the object of further analysis on the legal plane.

The professional associations of physicians and mental health specialists should take action to improve training schemes on the problem of managing patients at risk of violent behavior in general, and of firearms abuse in particular. Clinicians should be aware of the regulations governing the legal possession of firearms and of the criteria that constitute the fitness to own firearms. Investigating whether a patient possesses any firearms should be part of the routine clinical data collection in all cases of suspected cognitive decline, just as information should also be collected on any other situations potentially hazardous to the patient or other people. It is useful to bear in mind that the abuse of legal firearms is the outcome of an interaction between various factors that are not only psychopathological, but also situational and environmental [24].

To consider homicide or suicide involving legal firearms as a phenomenon relating exclusively to a situation of disease would be an oversimplification, and it is a good idea to emphasize the need to avoid restricting the interpretation of such phenomena to the exclusively medical or psychiatric realms. Violence with firearms is a complex phenomenon that derives from interactions between intra-psychic and situational aspects [24]. An assessment that fails to consider the multiple dimensions involved risks being inaccurate and scarcely predictive.

The clinical assessment of psychic fitness to handle firearms should therefore be based on collecting descriptive information and a clinical history that enables an understanding of the physical conditions capable of influencing a person's psychic status and functioning, any psychopathological conditions, the context in which they live or grew up, their individual subjective perception of situations in which they feel threatened, any suicide risk, prior episodes of



self-inflicted violence or aggressiveness towards others, and any worries expressed by members of the family and friends.

The abuse of legal firearms warrants further study in the operative setting, particularly to test the efficacy of current procedures and thereby develop more efficient methods. The development of any new assessment procedures demands a joint effort, including legislative and clinical analysis of the problem in order to come up with reference material (recommendations, support, guidelines) for a proper management of this issue. These different efforts can only be pooled effectively if a clinical-diagnostic construct is available, such as weapons abuse risk assessment (WARa), currently being developed as part of a cooperation between scholars of psychiatric, psychological and criminological disciplines [25].

The clinical-diagnostic concept of WARa could prove useful. WARa should not be seen as a syndrome per se (a disease in the nosographic sense) and its prevention should have different dimensions. Some clinically important, but not nosologically sensitive, aspects to consider might include the influence of intimately persecutory rules and moral standards in regulating the individual's behavior; the capacity for abstract reasoning and symbolic thought at the service of interpersonal relationships (the so-called capacity for mentalization) that enables individuals to identify themselves and understand their own and other peoples' minds (intentions, affects, wishes, thoughts, etc.). If all these abilities are not well developed (and some valid scales are available for measuring such deficiencies), individuals may be incapable of fully understanding the potential effects of their behavior, both on themselves and on other people (even in terms of pain, joy and, in the most severe cases, life and death), affecting their ability to mentally integrate and distinguish between fantasy and reality, past, present and future, their wishes and time, their ability to govern their own impulses, and so on. We need to develop models that ascertain how an individual's mental functioning becomes organized up to the point where any unbalance in their psychic organization might prompt weapons

abuse. Today, we can rely on some valuable diagnostic tools, such as the PDM (Psychodynamic Diagnostic Manual) [37], which recommends that we consider and evaluate certain dimensions similar to those mentioned above.

The processing of the WARa construct must include defining its theoretical characteristics (developing a model) and expanding the foundations of empirical research to which it refers. There has been debate for some time now on the clinical efficacy of systems for classifying diagnostic categories, such as the DSM-IV [16]. It may be that other recently proposed types of classification, such as the dimensional system of the Psychodynamic Diagnostic Manual (PDM) [37], can contribute to our understanding and better describe the various dimensions contributing to the problem (i.e. personality, mental functioning and symptoms, in the PDM).

The diagnostic assessment of WARa is not a simple process of including a person in a psychiatric category but a process of ascertaining the person's subjectivity; something that clinicians can do with the aid of specific assessment tools.

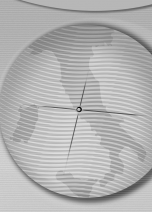
Conclusions

The topic of firearms often prompts contrasting attitudes and this has probably not facilitated our scientific understanding of their abuse nor facilitated the identification of possible ways to prevent abuse from occurring. In Italy, research has also been hindered by the lack of fundamental information concerning the number of firearms legally owned by its citizens over the years. Family physicians and specialists (geriatricians, neuropsychiatrists, clinical psychologists) can serve as an indispensable observatory of the related risks in people who own firearms, but their role should be supported by suitable training on the procedures needed to assess and report on any such risks. Alongside such clinical training measures, dedicated legal tools will be needed, for instance to enable us to establish whether a patient with a mental impairment such as dementia owns a firearm, and to informally report any suspicion of psychic or behavioral disorders to the police.

References

- 1) Eures. L'omicidio volontario in Italia, Rapporto Eures [Voluntary manslaughter in Italy]. Roma: ANSA, 2007.
- 2) Conwell Y, Duberstein PR, Connor K et al. Access to

- firearms and risk for suicide in middle-aged and older adults. *Am J Geriatr Psychiatry* 2002;10:407 - 16.
- 3) Istituto Nazionale di Statistica. 14° Censimento generale



della popolazione e delle abitazioni (anno 2001) [Population and housing census, 2001]. Roma: ISTAT, 2005.

4) Istituto Nazionale di Statistica. Popolazione residente (anno 2010) [Resident population, 2010]. Roma: ISTAT.

5) Istituto Nazionale di Statistica. Cause di morte (anno 1993). [Causes of death, 1993]. Roma: ISTAT, 1995.

6) Istituto Nazionale di Statistica. Cause di morte (anno 1994). [Causes of death, 1994]. Roma: ISTAT, 1996.

7) Istituto Nazionale di Statistica. Cause di morte (anno 1995). [Causes of death, 1995]. Roma: ISTAT, 1997.

8) Istituto Nazionale di Statistica. Cause di morte (anno 1996). [Causes of death, 1996]. Roma: ISTAT, 1998.

9) Istituto Nazionale di Statistica. Cause di morte (anno 1997). [Causes of death, 1997]. Roma: ISTAT, 1999.

10) Istituto Nazionale di Statistica. Cause di morte (anno 1998). [Causes of death, 1998]. Roma: ISTAT, 2000.

11) Istituto Nazionale di Statistica. Cause di morte (anno 1999). [Causes of death, 1999]. Roma: ISTAT, 2001.

12) Istituto Nazionale di Statistica. Cause di morte (anno 2000). [Causes of death, 2000]. Roma: ISTAT, 2002.

13) Istituto Nazionale di Statistica. Cause di morte (anno 2001). [Causes of death, 2001]. Roma: ISTAT, 2003.

14) Istituto Nazionale di Statistica. Cause di morte (anno 2002). [Causes of death, 2002]. Roma: ISTAT, 2004.

15) Istituto Nazionale di Statistica. Cause di morte (anno 2003). [Causes of death, 2003]. Roma: ISTAT, 2005.

16) APA (American Psychiatric Association). Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; 1994). Italian translation: Manuale diagnostico e statistico dei disturbi mentali. Milano: Masson, 1996.

17) Lynch CA, Moran M, Lawlor BA. Firearms and dementia: a smoking gun? *Int J Geriatr Psychiatry* 2008;23:1-6.

18) Nguyen VT, Love AR, Kunik ME. Preventing aggression in persons with dementia. *Geriatrics* 2008;63:21-6.

19) Greene E, Bornstein BH, Dietrich H. Granny, (don't) get your gun: competency issues in gun ownership by older adults. *Behav Sci Law* 2007;25:405-23.

20) Swearer JM, Drachman DA, O'Donnell BF et al. Troublesome and disruptive behaviors in dementia. Relationships to diagnosis and disease severity. *J Am Geriatr Soc* 1998;36:784-90.

21) Miller BL, Darby A, Benson DF et al. Aggressive, socially disruptive and antisocial behaviour associated with fronto-temporal dementia. *Br J Psychiatry* 1997;170:150-4.

22) Neary D, Snowden JS, Northen B et al. Dementia of frontal lobe type. *J Neurol, Neurosurg Psychiatry* 1988;51:353-61.

23) Haller E, Binder RL, McNeil DE. Violence in geriatric

patients with dementia. *Bull of the Am Acad of Psychiatry Law* 1989;17:183-8.

24) Clerici CA, Veneroni L, Invernizzi R. La valutazione dell'idoneità psichica e dei fattori di rischio nella detenzione e il porto d'armi da fuoco; una revisione della letteratura e osservazioni sull'attuale situazione italiana. *Psichiatria e Psicoter* 2006;25:226-39.

25) Clerici CA, de' Micheli A, Veneroni L et al. Rischio di abuso di armi da fuoco: rassegna della letteratura e proposte di procedure mediche di prevenzione. *Recenti Prog Med* 2008;99:475-84.

26) Mendez MF. Dementia and guns. *J Am Geriatr Soc* 1996;44:409-10.

27) Spangenberg KB, Wagner MT, Hendrix S et al. Firearm presence in households of patients with Alzheimer's disease and related dementias. *J Am Geriatr Soc* 1999;47:1183-6.

28) Final Report, Office of the Medical Inspector. Firearm access and automobile driving among veterans with dementia, 2004. Available from: http://www.visn8.va.gov/VISN8/PatientSafetyCenter/wandering/EvaluatingHomeSafetyProgram_Horvath.pdf [Accessed on december 2011].

29) Oslin DW, Zubritsky C, Brown G. Managing suicide risk in late life: access to firearms as a public health risk. *Am J Geriatr Psychiatry* 2004;12:30-6.

30) Mezuk B, Prescott MR, Tardiff K et al. Suicide in older adults in long-term care: 1990 to 2005. *J Am Geriatr Soc* 2008;56:2107-11.

31) De Leo D, Conforti D, Carollo G. A century of suicide in Italy: a comparison between the old and the young. *Suicide and life-threatening behav* 1997;27:239-49.

32) Kellerman AL, Lee RK, Mercey JA, Banton J. The epidemiologic basis for the prevention of firearms injuries. *Ann Rev Public Health* 1991;12:17-40.

33) Gabor T. The impact of the availability of firearms on violent crime, suicide and accidental death. Ottawa: Department of Justice Canada, 1994.

34) Mauser G. Are firearms a threat to public health? The misuse of science in medical research. Presented to the Canadian Law Society Association, Brock University, 1996;6:1-4.

35) Kleck G. Point Blank, guns and violence in America. Hawthorne, New York: Aldine de Gruyter, 1991.

36) Petersen RC, Smith GE, Waring SC. Mild cognitive impairment: clinical characterization and outcome. *Arch Neurol* 1999;56:303-8.

37) PDM Task Force. Psychodynamic diagnostic manual, Silver Spring, MD: Alliance of Psychoanalytic Organizations, 2006. Italian translation: PDM - Manuale Diagnostico Psicodinamico. Milano: Raffaello Cortina, 2008.



Appendix 1. Facsimile of the Certificates Currently Used for the Issue of the Suitability to the Possession and Carrying of Firearms.

<input type="checkbox"/> Infective diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Respiratory diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Gastro-intestinal diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Cardiovascular diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Diabetes (If yes, specify if insuline treatment)	Yes	No
<input type="checkbox"/> Endocrine diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Neurological diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Epilepsy or epileptic seizures (If yes, specify.....)	Yes	No
<input type="checkbox"/> Psychic diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Urogenital diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Neoplastic diseases (If yes, specify.....)	Yes	No
<input type="checkbox"/> Other (If yes, specify.....)	Yes	No
<input type="checkbox"/> Surgical operations (If yes, specify.....)	Yes	No
<input type="checkbox"/> Use of psychotropic medications (hypnotics, tranquillizers, antidepressants, etc.) / Alcoholic abuse / Drugs (If yes, specify.....)	Yes	No
<input type="checkbox"/> Pharmacological treatments (If yes, specify.....)	Yes	No
<input type="checkbox"/> Invalidity: Civil (.....%), <input type="checkbox"/> War , <input checked="" type="checkbox"/> Work , <input type="checkbox"/> Service Deaf-mute, Handicap (If yes, specify.....)		
<input type="checkbox"/> Sensitive deficits : (uditive, olfactory, ,ecc.) if yes specify : (.....)		