



Brief report

Suicide risk in the elderly: Data from Brazilian public health care program



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ABSTRACT

Objective: Examine prevalence and level of suicide risk, and its associations with sociodemographic factors and mood disorders.

Methods: A cross-sectional study with a random sample of 530 individuals aged 60 years or more from Family Health Strategy of Porto Alegre, Brazil. Diagnosis was made by psychiatrists using the Mini International Neuropsychiatric Interview plus (MINIplus).

Results: Suicide risk was found in 15.7% of the sample. Female gender, elderly with no income or with no paid activity and those who have lost one or more of his sons presented association with suicide risk. Bipolar disorder shows association with suicide risk for those with or without current episode. For unipolar depression only elderly with a current episode shows association with suicide risk.

Limitations: The cross-sectional design limits the examination of causative relationships. The MINIplus questions are not broad enough to assess other important self-destructive behaviors.

Conclusions: A high rate of suicide risk was found. As expected an increased rate of mood disorders were related to the risk of suicide. The loss of sons may partly explain a subtype of late-life risk of suicide or mood disorders especially in the oldest-old. These findings can be a useful to generate other research hypothesis and for health professionals who care older persons. Detecting characteristics linked to suicide, therefore opening up the possibility of preventing tragic outcomes providing a proper treatment.

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1. Introduction

Traditionally mood disorders have been researched more consistently in young adults. The examination of important characteristics of unipolar and bipolar disorders as the risk of suicide in late adulthood has received little scientific investment.

The depression is the most common mental disorder in the elderly and is increasing in prevalence throughout the world, especially in developing countries (Bottino et al., 2012). Along

with depression, suicide rates in Brazil have presented slight but consistent growth, mainly in the population over 60 years and being greater among men. Figures have increased from 12 suicides to 15.8/100,000 inhabitants between 1980 and 2006, according to 2012 up dated information from the WHO (2012). The southernmost state of Brazil (state of Rio Grande do Sul) has the highest national rates of suicide mortality, reaching 11/100,000 inhabitants for this state (D'Oliveira, 2005), with the highest mortality rates according to age group occurring in the elderly population over 70 years (Meneghel et al., 2004).

It is important to highlight that the elderly have higher rates of suicide in the majority of countries (Hawton and Van Heeringen, 2009), reaching 20/100,000 at age 85 years in the USA, with older men presenting the highest suicide rates for all sectors of the US population (Pearson, 2002). The rates in France are particularly high, reaching 148/100,000 for men and 24/100,000 for women above 85 years old (Ritchie et al., 2004). Studies in China also follow this

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pattern, showing that the elderly over 65 years have the highest suicide rate, which is four to five times more than for the general population (Li et al., 2009).

Suicide in old age is a complex and multidetermined behavior that has yet to be adequately investigated. Aging is a predictor of suicide (Chan et al., 2007). Studies show that the number of suicides will continue to grow over the next decade, as will the elderly population (Wiktorsson et al., 2010). However few researches—either nationally or internationally—have focus it works at the elderly in relation to suicide or attempted suicide proving that suicide is an understudied phenomenon among older individuals (Aizenberg et al., 2006), resulting in a scarcity of data on this subject and therefore, hindering its understanding (Abreu and Cataldo, 2003).

For present work a systematic review searching all papers published between 1966 and 2012 in all languages at MEDLINE, LILACS databases, and manual searching in the paper reference lists encountered seven Brazilian studies. Only two of seven were original papers, one of them examined suicidal ideation in a small consecutive sample of persons with Parkinson's Disease (Kummer et al., 2009) and the other one (Miranda and Bós, 2004) research a historical mortality database registry of the Brazilian public health system.

To better elucidate this under-studied theme the present study aim to estimate the prevalence of ideation, attempts and risk of suicide and examine its associations with socio-demographic data and mood disorders in a population-based random sample of elderly.

2. Methods

The present study is a preliminary report of the “Multidimensional Study of Elderly of Porto Alegre Family Health Strategy, Brazil” (EMI-SUS/POA), a cross-sectional survey with a planned sample of 1080 randomly selected persons with 60 years or more that focused to reveals the “diagnostic of Porto Alegre elder's Health”(Gomes et al., in press). The survey is composed by two phases.

In phase 1 data collection was made by Community Health Workers (CHWs) that prioritized sociodemographic characteristics and validated screening evaluations for alcohol misuse, depression and cognitive impairment. They received specific training for this purpose. The phase 2 was characterized by specialized assessments and diagnostic with blinding to the previous phase. Various specific health measures at Hospital São Lucas of the Pontifical University of Rio Grande do Sul (PUCRS) that include the Brazilian version of Mini International Neuropsychiatric Interview 5.0.0 Plus (MINI Plus) that assess current and lifetime diagnostic of psychiatric disorders and suicide risk. All professionals were experienced in assisting elderly patients with neuropsychiatric disorders in the Brain Aging Out-patient Clinic of PUCRS (AMBEC). The mental health study protocol is fully described elsewhere (Nogueira et al., in press).

For all individuals that was not found by the CHWs or who were unable to go to the PUCRS a brief version of the previous evaluations in the individuals on their own home will begin in early 2013.

Thus, the present study work with a partial sample of 549 randomly selected seniors who completed both phases until December 2013. Of this partial sample 19 records were excluded because of missing MINplus data remaining 530 adequate protocols coming from 27 different family health units (FHU) for the analysis.

Percentages were used to estimate dependent variable prevalence and describe the sample. Pearson's chi-square was used to examine associations. The predetermined level of significance considered was 0.05. The statistical analysis was performed using the software SPSS 17.

The research protocol was fully approved by both research ethics committees of PUCRS (Registry: 10/04967) and Public Health Secretariat of Porto Alegre City (SMS-POA Registry: 499;

Table 1

Prevalence of ideation, attempts and suicide risk measured by the MINplus.

Variables	N (%)
Last month	
Desire to be dead	61 (11.3)
Desire to self-harm	21 (3.9)
Thought of suicide	30 (5.6)
Thought of ways to commit suicide	23 (4.3)
Attempted suicide	7 (1.3)
Lifetime attempted suicide	37 (6.9)
Levels of suicide risk	
Low	53 (10.0)
Moderate	4 (0.8)
High	26 (4.9)
Total	83 (15.7)

* N=530.

Process: 001.021434.10.7). All participants or their legal representatives signed a consent form.

3. Results

The sample was characterized by having a majority of women (62.8%, $n=333$), younger aged (63.2% in the 60–69 year group, $n=335$) and with low education level (62.0% less than elementary school, $n=329$) and low income (64.0% one minimum salary or less, $n=316$).

With regards suicide risk in the last month it was found that 11.3% ($n=61$) of the elderly patients expressed a desire to be dead; 3.9% ($n=21$) wanted to harm themselves; 5.6% ($n=30$) thought of suicide; 4.3% ($n=23$) thought of ways to commit suicide; and 1.3% ($n=7$) attempted suicide. A total of 6.9% ($n=37$) report attempted suicide during their lifetime.

In relation to the severity of suicide risk, 4.9% presented high risk, 0.8% moderate risk and 10% low risk, which equates to 15.7% ($n=83$) of the elderly from the sample having a risk of suicide.

Table 1 shows the descriptive statistics and the associations between suicide risk and socio-demographic using the chi-square test.

The relationships with suicide risk and mood were presented in the Table 2.

4. Discussion

It was observed that 11.3% of individuals had suicide ideation and 6.9% attempted suicide at some point during their lives. This data is higher than a French study performed in the region of Languedoc Roussillon (Ritchie et al., 2004) that found 9.8% of suicide ideation and 3.7% of lifetime-attempted suicide. It is worth noting in this French study that the suicide ideation rates increased to 11.3% in men and 21.4% in women for people over 80 years of age. Estimates of suicide ideation in the United States of America ranged from 0.7% to 1.2% (Callahan et al., 1996). Skoog et al., (1996) observed an increase in suicide ideation in people over 85 years old (9.6% in men and 18.7% in women) in Sweden. In Brazil, a survey conducted in Campinas city found in a partial sample of 93 elderly people (aged 60 years or more) prevalence of 10.4% of suicide ideation, 3% of planned suicide and 0.8% attempted suicide (Botega et al., 2009).

With regards gender differences, 19.5% of women presented a risk of suicide compared to 9.1% of men ($p < 0.001$). Similar results were also found by Ritchie et al. (2004), in which the suicide rate

Table 2
Suicide risk frequencies distributions for socio-demographic data and mood.

Variables	Total sample n (%)	Suicide risk %	P
Gender			< 0.001
Male	197 (37.2)	9.1	
Female	333 (62.8)	19.5	
Age			0.800
≥60 < 70	335 (63.2)	16.4	
≥70 < 80	157 (29.6)	14.6	
80+	38 (7.2)	13.2	
Years of schooling			0.510
< 4 years	115 (21.8)	16.5	
4–7 years	212 (40.2)	15.6	
≥8	83 (15.7)	10.8	
Income (minimum salaries)^a			0.022
No income	41 (8.3)	34.1	
Upto 1 salary	275 (55.7)	17.1	
Upto 2 salaries	144 (29.1)	13.2	
Upto 4 salaries	25 (5.1)	4.0	
Upto 6 salaries	8 (1.6)	12.5	
Upto 10 salaries	1 (0.2)	0.0	
Retired			0.028
Yes	333 (66.2)	13.2	
No	170 (33.8)	21.2	
Race/ethnicity			0.038
White	336 (65.1)	15.2	
Afro-Brazilian	70 (13.6)	18.6	
Multiracial (brown)	95 (18.4)	11.6	
Others (Indigenous and oriental)	15 (2.9)	40.0	
Marital Status			0.563
Married	198 (38.2)	14.6	
Separated	84 (16.2)	16.7	
Single	88 (17.0)	12.5	
Widowed	148 (28.6)	18.9	
Live alone			0.851
Yes	102 (19.7)	16.7	
No	415 (80.3)	15.9	
Paid activity			0.038
No	404 (79.2)	17.8	
Yes	106 (20.8)	9.4	
Loss of sons			0.007
No	296 (57.5)	11.8	
Never had children	24 (4.7)	16.7	
Lost of one or more sons	195 (37.9)	22.6	
Mood disorder (MD)			< 0.001
No MD	300 (56.6)	2.3 ^{–9.6}	
Unipolar depression (current)	76 (14.3)	59.2 ^{11.3}	
Unipolar depression (past)	108 (20.4)	14.8	
Bipolar disorder (current)	8 (1.5)	62.5 ^{3.7}	
Bipolar disorder (past)	24 (4.5)	33.3 ^{2.4}	
Current secondary MD	4 (0.8)	25.0	
Past secondary MD	10 (1.9)	10.0	
Total	n = 530		

Notes: The *p* value based on Pearson's chi-square test. To improve analysis adjusted residuals ≥1.96 and ≤–1.96 were described in superscript just after frequencies of "mood disorder" variable.

^a Minimum salary is the lowest legal monthly income for an employee in Brazil. The amount is set by the government and was approximately \$ 300 (US dollars).

in women was 2.8% more frequent, although this difference may be explained by the survival effect as the suicide attempts by men tend to be more serious, and therefore more lethal (Ritchie et al., 2004). However suicide is associated with men in the majority of countries. China is the only country in which the numbers of female suicides surpass that of the men (Pearson, 2002).

Older people without income and with no paid activity were found to have an increased suicide risk. Economic problems are seen as one of the main risk factors for suicide in the elderly (Bottino et al., 2012). The effects of unemployment are likely to be mediated by factors such as poverty, a reduction in social status, domestic problems and feelings of hopelessness. (WHO, 2012). With respect income the increase in minimum wages is related to lower risk of suicide, suggesting that economic level may play a role as potential protective factor against suicide in elders.

Another important finding of this study relates to the loss of sons. Individuals who have experienced the pain caused by the death of one or more of their sons presented a high potential suicide risk. It is known that bereavement increases suicide risk, and according to Perez Barrero and Matusevich (2009), the loss of children appears to alter the "natural law of life". Thus loss of sons more frequent in the oldest elders may partly explain a subtype of late-life suicide risk or even late onset depression without relationship with degenerative brain diseases. However this theme needs to be better understood.

With regards self reported ethnic origin/race we found that Brazilian indigenous had an increased risk of suicide compared to whites, blacks, and multiracial (brown) people. There is no specific data in the literature classifying suicide rates according to ethnicity. White people are four times more likely to commit suicide than blacks in the USA (Sudbrack and Cataldo, 2009).

It was observed an association between the fact of not being retired and suicide risk, although our sample was higher in women, a factor that could influence this finding. Individuals who stop working may fall into depression due to decreasing their purchasing power, their interpersonal relationships sustained in the work environment, and their prestige or status. Some elderly people believe that they may become a burden to their families upon retirement (Barrero and Matusevich, 2009).

Our study found that a high percentage of the elderly with unipolar depression (59.2%) presented with a suicide risk, as was also the case for those older people with a current and past history of bipolar disorder (62.5% and 33.3% respectively). Literature shows that approximately 90% of people who commit suicide have a diagnosed mental disorder at the moment of death (Barrero and Matusevich, 2009). There is a strong relationship between psychiatric diseases and suicide, especially major depression and bipolar depression, which are found in 65–90% of suicides (Sudbrack and Cataldo, 2009). A revision of the literature performed by Minayo and Cavalcante (2010) shows that depression is the most relevant factor associated with suicide in the majority of the studies evaluated. Hardwood et al. (2001) also found depression to be one of the main diagnoses in individuals that committed suicide.

Mood disorders increase the risk of death by suicide by 20 percent. Bipolar is a psychiatric disorder associated with a high risk of suicide (Kutcher and Chehil, 2007), which is in accordance with the findings of this study where individuals with current episode of bipolar disorder presented a greater suicide risk. Major depression and the mixed and depressive phases of bipolar disorder are the most frequent diagnoses found in deaths by suicide. Individuals that present depressive episodes in bipolar disorder can be at greater risk of committing suicide than those people who have unipolar depression.

In summary, present study found a high rate of suicide risk in the elderly population living in the community. The study protocol used prioritized a model able to screen and diagnose mood and cognitive disorders useful and replicable at community and primary care levels (Nogueira et al., 2013). An Increased mental distress was noted in these evaluated individuals and it was possible to identify some relevant patterns related with suicide risk. Loss of sons may partly explain the suicide risk in some individuals, although the relationship with a subtype of late onset depression and bipolar syndromes deserves further

studies. These findings can be a useful to generate other research hypothesis and can be useful for health professionals who care older persons. Detecting characteristics linked to suicide risk, therefore opening up the possibility of preventing self-harm or complete suicide.

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Conflict of interest

Authors declare no conflict of interest.

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