

***Do Sociodemographic and Gender Determinants of Late-life Suicide Differ in Older Swedish Users and Non-users of Antidepressants?  
A National Population-based Study***

Khedidja Hedna, University of Gothenburg, Sweden  
Gunnel Hensing, University of Gothenburg, Sweden  
Ingmar Skoog, Karolinska Institutet and Stockholm University, Sweden  
Margda Waern, University of Gothenburg, Sweden

The Asian Conference on Aging and Gerontology 2020  
Official Conference Proceedings

**Abstract**

The treatment of depression is a main strategy for suicide prevention in older adults. Our aim was to examine factors related to suicide in older adults (75+) with and without antidepressant therapy. We used register data for all Swedish residents aged  $\geq 75$  years (N=1 413 806) between 2006-2014. We identified all persons who died by suicide (N=1305; 907 men and 398 women) and matched 50 controls to each case. A nested case-control design was used to investigate the sociodemographic factors associated with suicide among users and non-users of antidepressants. Risk factors were analysed in a conditional logistic regression model in the entire cohort and in men and women separately. Being born outside of Nordic countries was associated with increased suicide risk; a threefold increase in risk was observed for women not treated with antidepressants. Being married was a protective factor in men but not in women. Blue-collar occupations before retirement were associated with increased suicide risk in non-users of antidepressants, particularly in men. Upper white-collar occupations were associated with increased suicide risk in women who used antidepressants. Our differential findings on factors associated with suicide in men and women treated or not by antidepressants suggest the need for gender-specific approaches targeting psychosocial factors for the prevention of suicide in late-life that go beyond the healthcare sector.

Keywords: Suicide, Sociodemographic Factors, Antidepressants, Cohort Study, Older Adults, Population Registers

**iafor**

The International Academic Forum  
[www.iafor.org](http://www.iafor.org)

## **Introduction**

Despite the fact that suicide rates are the highest in the oldest population in many countries (Bertolote & De Leo, 2012), there is a lack of research focusing specifically on this segment of the population (Fässberg et al., 2012). Results of studies on suicide conducted in “younger” older adults cannot be extrapolated to the oldest population as risk factors differ with age in both clinical and population-based cohorts of older adults (Erlangsen, Bille-Brahe, & Jeune, 2003; Waern, Rubenowitz, & Wilhelmson, 2003).

Depression is considered a strong risk factor for suicide in older adults (Conwell et al., 2010). Most suicide preventive strategies have therefore focused on optimising the diagnosis and treatment of depression (Lapierre et al., 2011). Antidepressants (ADs) have been associated with decreased suicide risk in late-life (Barbui, Esposito, & Cipriani, 2009; Gibbons, Hur, Bhaumik, & Mann, 2005). However, despite their wide use, especially in those aged 75 years and above (Swedish National Board of Health and Welfare, 2018), suicide rates remain high in the oldest population (Statistics Sweden, 2018). One explanation is that suicide has a multifactorial aetiology, and psychosocial factors can drive the association between depression and suicide (Troya et al., 2019). A better knowledge of sociodemographic factors associated with suicide among older adults with and without AD treatment will help to inform and tailor suicide prevention efforts.

The availability of high quality national register data in Sweden makes it possible to examine phenomena associated with suicide in relation to AD use. The aim of our research was therefore to examine, in a population-based register study, sociodemographic factors associated with suicide in a total national cohort of Swedish residents aged 75 and over, with and without exposure to antidepressant therapy. We also aimed to carry out gender-specific analyses because of the large difference between suicide rates in older men and women, and the current dearth of gender-specific findings in late-life suicide research (Fässberg et al., 2012).

## **Method**

### **Study design and study population**

We conducted a population-based register cohort study including all Swedish residents aged 75+ between January 1, 2006 and June 30, 2013. All individuals were followed until December 31, 2014 or until migration or death if it occurred during the follow-up time.

### **Data sources**

Data from national registers were linked through the personal identity number. The Swedish Prescribed Drug Register was used to identify AD users based on the ATC codes (N06A, except N06AA). Suicide deaths were determined by the Cause of Death Register based on the ICD-10 codes: X60-X84, Y10-Y34, Y87.0, Y87.2). Sociodemographic data were collected from the longitudinal integration database for health insurance and labour market studies (LISA) and the Total Population Register. Individuals with a previous episode of self-harm or diagnosis of depression in

specialised care were identified from the National Patient Register. Persons residing in institutions were identified by the National Care and Social Service database.

### **Sociodemographic characteristics**

We considered the following variables: Gender, age group (75-79, 80-84, 85-89,  $\geq 90$ ), marital status (married/registered partnership, single, widow/widower, divorced), annual disposable household income (in quartiles), social allowance, country of birth (Sweden, Other Nordic countries, Outside of Nordic countries), residence in institution, education level (mandatory, upper secondary, higher) and occupation category at retirement (upper white collar, lower white collar, blue collar).

### **Statistical Analysis**

A nested case-control design was used to investigate the factors associated with suicide in the total cohort and among users and non-users of AD separately. Each person who died by suicide was matched with 50 individuals of the same gender and age group who did not die by suicide. The nested case-control data were analysed using conditional logistic regression with each case and its controls forming a separate stratum. All sociodemographic variables were included in the univariate and the adjusted models. We also included in the adjusted models the concomitant use of other psychoactive medications, occurrence of non-fatal self-harm during the preceding year and use of specialised psychiatric for depression care as a proxy for severe depression. Gender interaction was incorporated into the model.

The study was approved by the Regional Ethical Review Board in Gothenburg (no: 111-15).

### **Results**

In this national cohort including 1 413 806 persons aged 75+ and followed over an eight-year period, a total of 1305 persons (907 men and 398 women) died by suicide. Being married was a protective factor for suicide in men in both AD users and non-users, but such associations were not seen in women. Suicide risk was elevated threefold in women who were born outside of the Nordic countries and without AD treatment. There was a complex pattern of associations regarding occupational history and suicide when considering AD use and gender. An elevated suicide risk was observed in upper white-collar women who used AD, and in blue-collar men who did not.

### **Conclusion**

Our research identified particularly vulnerable groups of older adults and advocates for the need for new gender-tailored suicide prevention strategies. The optimization of treatment of late-life depression remains an important target for suicide prevention in our oldest adults, but this should be combined with innovative public health interventions to reach those not treated for depression. Research is needed in other countries and settings as socioeconomic conditions, availability of mental healthcare and cultural differences may have an impact on risk of late-life suicide.

## **Acknowledgements**

This work was supported by the Swedish Research Council (VR) (M.W., grant number 2016-01590); the Swedish Research Council for Health, Working Life and Welfare (Forte) (M.W., grant number 2016-07097); ALFGBG (M.W., grant number 715841); and the Söderström-König Foundation (K.H., grant number 844351).

The authors would like to thank Maria Persson from Statistikkonsulterna for her guidance on statistical methods and for performing the analyses.

## References

Barbui, C., Esposito, E., & Cipriani, A. (2009). Selective serotonin reuptake inhibitors and risk of suicide: a systematic review of observational studies. *Canadian Medical Association Journal*, *180*(3), 291-297.

Bertolote, J. M., & De Leo, D. (2012). Global suicide mortality rates - a light at the end of the tunnel? *Crisis*, *33*(5), 249-253. doi:10.1027/0227-5910/a000180

Conwell, Y., Duberstein, P. R., Hirsch, J. K., Conner, K. R., Eberly, S., & Caine, E. D. (2010). Health status and suicide in the second half of life. *International Journal of Geriatric Psychiatry: A journal of the psychiatry of late life and allied sciences*, *25*(4), 371-379.

Erlangsen, A., Bille-Brahe, U., & Jeune, B. (2003). Differences in suicide between the old and the oldest old. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *58*(5), S314-S322.

Fässberg, M. M., Orden, K. A. v., Duberstein, P., Erlangsen, A., Lapierre, S., Bodner, E., Waern, M. (2012). A systematic review of social factors and suicidal behavior in older adulthood. *International journal of environmental research and public health*, *9*(3), 722-745.

Gibbons, R. D., Hur, K., Bhaumik, D. K., & Mann, J. J. (2005). The relationship between antidepressant medication use and rate of suicide. *Archives of General Psychiatry*, *62*(2), 165-172.

Lapierre, S., Erlangsen, A., Waern, M., De Leo, D., Oyama, H., Scocco, P., Draper, B. (2011). A systematic review of elderly suicide prevention programs. *Crisis*.

Statistics Sweden (2018). Causes of death [In Swedish]. Retrieved from <http://www.socialstyrelsen.se/statistik/statistikdatabas/dodsorsaker>

Troya, M. I., Babatunde, O., Polidano, K., Bartlam, B., McCloskey, E., Dikomitis, L., & Chew-Graham, C. A. (2019). Self-harm in older adults: systematic review. *The British Journal of Psychiatry*, *214*(4), 186-200.

Waern, M., Rubenowitz, E., & Wilhelmson, K. (2003). Predictors of suicide in the old elderly. *Gerontology*, *49*(5), 328-334.

Swedish National Board of Health and Welfare (2018). Statistics on Pharmaceuticals 2018. Retrieved from <https://www.socialstyrelsen.se/statistik/statistikdatabas/lakemedel>

**Contact email:** Khedidja.hedna@gmail.com