The impact of widowhood on Irish mortality due to suicide and accidents

Journal:	*European Journal of Public Health*
Manuscript ID:	EJPH-2009-07-SR-0402.R1
Manuscript Type:	Short Report
Date Submitted by the Author:	
Complete List of Authors:	Corcoran, Paul; National Suicide Research Foundation; University of Oviedo, Department of Psychiatry
Keywords:	widowhood, mortality, suicide, accidents

The impact of widowhood on Irish mortality due to suicide and accidents

***Paul Corcoran*[1,2]**

Affiliations

[1] National Suicide Research Foundation, 1 Perrott Avenue, College Road, Cork, Ireland

[2] Department of Psychiatry, School of Medicine, University of Oviedo, Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Julian Claveria 6, 33006 Oviedo, Spain

Correspondence to:

Paul Corcoran

National Suicide Research Foundation,

1 Perrott Avenue,

College Road,

Cork,

Ireland

Tel.: +353 21 4277499

Fax: +353 21 4277545

E-mail: dpaulcorcoran@gmail.com

Manuscript word count: 1,183 words

Abstract

The impact of widowhood on suicide and accident mortality in Ireland was investigated using Poisson regression analysis applied to routine data relating to all 10,561 suicidal and accidental deaths of married or widowed persons aged at least 35 years in Ireland during 1986-2005. Mortality rates were almost always higher among the widowed and often by a two-fold, statistically significant difference. The excess mortality was equivalent to 2,083 or 57.6% of all suicidal or accidental deaths of widowed persons in 1986-2005. Routine contact with recently-widowed persons by public health professionals may be warranted with a view to reducing their excess mortality.

Abstract word count: 100 words

Keywords: widowhood – mortality – suicide - accidents

Introduction

The finding of increased mortality among the widowed population, often referred to as the 'widowhood effect', is well established.[1] It has been demonstrated in relation to all-cause mortality[2, 3] and suicide[4, 5] and even in relation to other external causes of death such as accidents.[6] The widowhood effect has been found to be greater on men than women[5, 7] and on young or middle-aged adults than on the elderly.[6] The widowhood effect has not been examined previously in Ireland and the aim of this study was to do so in relation to deaths by suicide and accidents.

Methods

Mortality data were obtained from the Irish Central Statistics Office relating to all deaths by an external cause (ICD-9 E800-999) that occurred in 1986-2005. The focus was on deaths of married and widowed persons aged at least 35 years due to suicide (E950-959) or of undetermined intent (E980-989), motor vehicle traffic accident (MVTA, E810-819), accidental fall (E880-889), accidental poisoning (E850-869) and accidental drowning (E910). Population data from the 1986, 1991, 1996, 2002 and 2006 national censuses were obtained from the CSO website (http://www.cso.ie/). Population estimates were interpolated for the intercensal years by assuming that population change from one census to the next involved constant year-to-year changes. Age-specific incidence rates were calculated per 100,000 population. Poisson regression assessed the age-sex-specific widowhood effect on cause-specific mortality in relation to married persons. Effects were reported as incidence rate ratios (IRRs) with 95% confidence intervals (CIs). Likelihood ratio tests were used to test for differences in the widowhood effect by time period (1986-1995 vs. 1996-2005), sex, age group (35-54, 55-74 and at least 75 years) and cause of death (suicide and undetermined death vs. accidents). Using time period as an example, this involved fitting a Poisson regression model to estimate a single widowhood effect for the study period as a whole, then fitting a model that estimated separate widowhood effects for the first and second halves of the study period. Whether the data supported the presence of differing effects was assessed by calculating the likelihood ratio statistic (twice the difference of the log likelihood values of the two models). This has a chi-square distribution where the degrees of freedom equals the number of extra parameters in the latter model.

Results

In the 20-year study period, 1986-2005, there were 10,561 deaths in Ireland where the deceased was aged at least 35 years, was recorded as married or widowed and the external cause of death was suicide or undetermined intent (3,068, 29.0%), MVTA (2,533, 24.0%), accidental fall (4,142, 39.2%), accidental poisoning (452, 4.3%) and accidental drowning (366, 3.5%). Most were male deaths (56.5%), two-thirds were recorded as married (65.7%) and similar proportions were aged 35-54 (33.8%), 55-74 (29.7%) and at least 75 years (36.5%).

Mortality rates were almost always higher among the widowed and often by a two-fold difference that reached statistical significance (Table 1). Overall, the excess mortality was equivalent to 2,083 or 57.6% of all suicidal or accidental deaths of widowed persons in 1986-2005. The widowhood effect relating to suicide did not differ from that relating to all selected accidental deaths, except among women aged 75 years and over (χ^2=17.05, df=1, p<0.001) for whom widowhood was associated with reduced risk of suicide. The effect of widowhood differed by sex only in relation to suicide (χ^2=14.66, df=1, p<0.001) due to a greater impact on men (Interaction IRR 1.51, 95%CI 1.22 to 1.86, p<0.001). Age modified the widowhood effects relating to suicide (χ^2=11.60, df=2, p=0.003) due to a greater impact on 35-54 (Interaction IRR 1.71, 95%CI 1.17 to 2.50, p=0.006) and 55-74 year-olds (Interaction IRR 1.66, 95%CI = 1.23 to 2.24, p<0.001), relating to MVTA (χ^2=15.25, df=2, p<0.001) due to a greater impact on 55-74 year-olds (Interaction IRR 1.57, 95%CI 1.25 to 1.97, p<0.001) and relating to accidental poisoning (χ^2=9.60, df=2, p=0.008) due to a greater impact on 35-54 year-olds (Interaction IRR 3.30, 95%CI 1.54 to 7.10, p=0.002).

Discussion

This study showed widowhood to be associated with increased suicide and accident mortality in Ireland except among women aged 75 years or more for whom widowhood was associated with reduced risk of suicide. The relative risk of suicide associated with widowhood was greater in men, as has been found previously,[5, 7] and in persons under 75 years. Regarding death due to MVTA,

accidental fall and accidental poisoning, the widowhood effect was pronounced in 55-74, at least 55 and 35-54 year-olds, respectively. Widowhood was associated with similar increased risk of suicidal and accidental death in some age-sex-specific populations. However, suicidal and accidental deaths differ in aetiology and it may be that widowhood contributes differently to their respective aetiologies.

At 20 years, the study period was long though the effect of widowhood did not differ between the first (1986-1995) and second (1996-2005) halves of the study period for any of the studied causes of death. However, despite studying more than 10,000 deaths, there were limited numbers and consequently low statistical power for some subgroups. The inclusion of deaths of undetermined intent with suicide deaths made little difference to the observed effects. As a cross-sectional study of routine mortality data no adjustment could be made for potential confounders such as social support and mental and physical health status nor could duration of bereavement or marriage be examined. Several studies have found increased mortality associated with widowhood remained after adjustment for relevant confounders[2, 7, 8] and it has also been found that the shorter the period since bereavement, the greater the excess mortality.[4, 5, 8] Married couples who died by suicide or accident on the same day could not be definitively identified nor could same day instances where one spouse died some days after the other or homicide-suicide cases. The available data and two previous studies suggest that same day accidents[8] and same day suicides or homicide-suicides[4] have a limited impact on the widowhood effect.

The consistency of the finding that widowed persons have elevated mortality rates due to natural causes, suicide and accidents raises the question of what can be done in terms of prevention. Recently-widowed persons are a clearly identifiable and accessible population as they come into contact with a range of civil and social services. Routine contact made with them by public health professionals may be warranted with a view to reducing their excess mortality. Annually in Ireland there are almost 10,000 deaths of widowed persons which is seven times the number of public health nurses. Thus, routine contact with the recently-bereaved by public health nurses may be feasible in practice. The initial aim would not be to routinely refer the bereaved but to facilitate

access to support for those who want it.[1] An assessment of the home environment may be beneficial for the prevention of accidents in the elderly widowed, particularly accidental falls,[9] the most common external cause of death among the elderly. A wide range of instruments are also available relating to spousal bereavement assessment[10] and these may support the identification of those with complicated grief or bereavement-related depression and stress disorders for whom referral to a bereavement intervention programme of a psychosocial or psychological counselling nature may be appropriate.[1]

Key points

- This study showed that widowhood was associated with excess mortality in Ireland in relation to suicidal and accidental deaths.
- The impact of widowhood on suicide deaths was of a similar magnitude to the impact on accidental deaths.
- The widowhood effect relating to suicide was greater in men.
- Routine contact with recently-widowed persons by public health professionals may be warranted with a view to reducing their excess mortality.

Acknowledgements

The helpful comments of Dr Ella Arensman are gratefully acknowledged as is the work of the staff of the Irish Central Statistics Office in compiling the data upon which this paper is based.

Conflicts of interest

None

References

1 Stroebe M, Schut H, Stroebe W. Health outcomes of bereavement. Lancet 2007;370:1960-73.

2 Stimpson JP, Kuo YF, Ray LA, Raji MA, Peek MK. Risk of mortality related to widowhood in older Mexican Americans. Ann Epidemiol 2007;17:313-9.

3 Subramanian SV, Elwert F, Christakis N. Widowhood and mortality among the elderly: the modifying role of neighborhood concentration of widowed individuals. Soc Sci Med 2008;66:873-84.

4 Ajdacic-Gross V, Ring M, Gadola E, et al. Suicide after bereavement: an overlooked problem. Psychol Med 2008;38:673-6.

5 Erlangsen A, Jeune B, Bille-Brahe U, Vaupel JW. Loss of partner and suicide risks among oldest old: a population-based register study. Age Ageing 2004;33:378-83.

6 Martikainen P, Valkonen T. Mortality after the death of a spouse: rates and causes of death in a large Finnish cohort. Am J Public Health 1996;86:1087-93.

7 Guohua L. The interaction effect of bereavement and sex on the risk of suicide in the elderly: an historical cohort study. Soc Sci Med 1995;40:825-8.

8 Martikainen P, Valkonen T. Mortality after death of spouse in relation to duration of bereavement in Finland. J Epidemiol Community Health 1996;50:264-8.

9 Zecevic AA, Salmoni AW, Lewko JH, Vandervoort AA, Speechley M. Utilization of the Senior Falls Investigation Methodology to identify system-wide causes of falls in community-dwelling seniors. Gerontologist 2009 [Epub on 12 June ahead of print]

10 Minton ME, Barron CR. Spousal bereavement assessment: a review of bereavement-specific measures. J Gerontol Nurs 2008;34:34-48.

Table 1. Incidence and relative risk of suicide and accidental deaths in married and widowed Irish populations, 1986-2005.

			Married		Widowed			
			Deaths	Rate[1]	Deaths	Rate[1]	IRR[2]	(95% CI)
Suicide[3]	Men	35-54yrs	1270	18.5	28	37.9	2.05***	(1.41 to 2.98)
		55-74yrs	584	15.6	118	33.9	2.17***	(1.78 to 2.64)
		75yrs+	83	12.1	64	19.5	1.61**	(1.16 to 2.23)
	Women	35-54yrs	457	6.6	26	11.1	1.68**	(1.13 to 2.50)
		55-74yrs	230	7.0	136	9.6	1.37**	(1.11 to 1.70)
		75yrs+	24	6.3	48	3.7	0.58*	(0.36 to 0.95)
MVTA[4]	Men	35-54yrs	751	11.0	12	16.3	1.49	(0.84 to 2.63)
		55-74yrs	461	12.3	76	21.8	1.77***	(1.39 to 2.26)
		75yrs+	201	29.2	113	34.4	1.18	(0.93 to 1.48)
	Women	35-54yrs	279	4.0	15	6.4	1.59	(0.95 to 2.67)
		55-74yrs	258	7.8	141	10.0	1.27*	(1.03 to 1.56)
		75yrs+	58	15.2	168	12.9	0.85	(0.63 to 1.14)
Accidental fall	Men	35-54yrs	225	3.3	5	6.8	2.07	(0.85 to 5.01)
		55-74yrs	407	10.9	91	26.1	2.40***	(1.91 to 3.01)
		75yrs+	468	68.1	485	147.5	2.17***	(1.91 to 2.46)
	Women	35-54yrs	77	1.1	3	1.3	1.15	(0.36 to 3.65)
		55-74yrs	179	5.4	150	10.6	1.94***	(1.57 to 2.42)
		75yrs+	253	66.4	1799	137.9	2.08***	(1.82 to 2.37)
Accidental poisoning	Men	35-54yrs	138	2.0	8	10.8	5.39***	(2.64 to 10.99)
		55-74yrs	53	1.4	8	2.3	1.62	(0.77 to 3.41)
		75yrs+	13	1.9	11	3.3	1.77	(0.79 to 3.95)
	Women	35-54yrs	100	1.4	10	4.3	2.96***	(1.54 to 5.67)
		55-74yrs	57	1.7	33	2.3	1.34	(0.88 to 2.06)
		75yrs+	5	1.3	16	1.2	0.93	(0.34 to 2.55)
Accidental drowning	Men	35-54yrs	140	2.0	4	5.4	2.66	(0.98 to 7.17)
		55-74yrs	103	2.8	14	4.0	1.46	(0.84 to 2.55)
		75yrs+	22	3.2	8	2.4	0.76	(0.34 to 1.71)
	Women	35-54yrs	18	0.3	0	0.0	---	---
		55-74yrs	26	0.8	13	0.9	1.16	(0.60 to 2.26)
		75yrs+	3	0.8	15	1.1	1.46	(0.42 to 5.04)

[1] Rate per 100,000 population

[2] Incidence rate ratio of death among widowed relative to married

[3] Including deaths of undetermined intent

[4] Motor vehicle traffic accidents