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The Economic Cost of Bereavement in Scotland

Abstract

Aspects of the socio-economic costs of bereavement in Scotland were estimated using three sets of data. Spousal bereavement was associated with increased mortality and longer hospital stays, with additional annual cost of around £20 million. Cost of bereavement coded consultations in primary care was estimated at around £2.0 million annually. Additionally, bereaved people were significantly less likely to be employed in the year of and two years after bereavement than non-bereaved matched controls, but there were no significant differences in income between bereaved people and matched controls before and after bereavement.

Keywords: bereavement, socio-economic costs, health, income, employment

Introduction

In Scotland in 2012 there were 54,937 deaths (General Register Office Scotland, 2013), and as many as 220,000 people may have been affected by related grief. Scotland has the highest rates of death in younger working age men and women in Western Europe (Whyte & Ajetunmobi, 2012). However, large scale studies of the impact of bereavement in Scotland have so far been limited to the work of Boyle, Feng and Raab (2011) who found spousal bereavement was associated with significantly increased mortality. These findings are in line with those from the international literature (e.g., Manor & Eisenbach, 2003).

The link between bereavement and a range of mental and physical health risks, costly to individuals and healthcare providers, is well established (Stroebe, Schut & Stroebe, 2007). For example, cardiovascular disease, with particularly high incidence in Scotland, may be a risk for bereaved individuals, and there is some evidence of higher risk in early bereavement (Buckley, McKinley, Tofler, & Bartrop, 2010). Circumstances around the death may influence an individual's wellbeing in bereavement, and protracted health problems of a dying spouse and caring are significant predictors of limitation in post bereavement activity level for bereaved widow(ers) (Lee & Carr, 2007). One in eight people in Scotland have caring responsibilities, and their wellbeing and economic activity post bereavement may be severely compromised. Also, bereaved people require significantly more new prescriptions for hypnotics and anti-depressants, and have more GP consultations, than non bereaved people (King et al., 2013). In Scotland, overall anti-depressant use is high and may cost up to £29.5 million annually to a statutorily funded National Health Service (NHS) (ISD Scotland, 2013).

Overall, the international literature indicates that bereavement leads to greater risk of morbidity and mortality, resulting in higher use and increased costs for individuals and healthcare services (Guldin, Jensen, Zachariae & Vedsted, 2013). It thus makes sense to try to gauge these health impacts in financial terms in Scotland.

For those bereaved of a partner, the financial impact of the death is highly influenced by circumstances and experiences prior to the death (Corden, Hirst, & Nice, 2008). Low income families and those dependent on welfare benefits are at particular risk of post bereavement financial difficulties. Scotland has high levels of poverty, with 14% of the population facing relative poverty, and living in households with an income below 60% of the UK median. The average direct cost of dying in the UK in 2013 was £7,622 (about US$ 12,500; Sun Life Direct, 2013).

Bereaved people take time off work, both as formal and hidden (other sick or unpaid leave) bereavement leave, and at any one time up to 5% of the working population may be on bereavement related leave (Wojcik, 2000). In addition, when bereaved employees return to work they may function at a reduced level (Charles-Edwards, 2005). A study carried out in Northern Ireland, limited by its sample size of only 11 parents and only exploring one form of bereavement, suicide of a child, estimated required time off work ranged from one to 12 weeks (Gibson, Gallagher, & Jenkins, 2010). Time off work for bereavement is challenging to assess and there is a resultant paucity of research on the socio-economic impact of bereavement on individuals and businesses, with Scotland no exception in this regard.

We may conclude from the above that there are substantive but as yet unquantified economic implications of bereavement for families, businesses and statutory sector organisations as employers, as well as for organisations supporting bereaved people, for example, the welfare state, local authority, healthcare services

and third sector organisations. However, a counter argument maintains that the sick population enables economic prosperity based on increased numbers of people employed in caring roles and able to contribute in terms of tax and insurance, and with spending power in the economy (Stack, 2007). In Scotland, increasing numbers of people live to old age and deaths are predicted to rise in the next two decades, so there is growing pressure on healthcare resources especially as healthcare workforces are not expected to grow accordingly. More information about actual costs of bereavement may enable planning ahead to improve self management strategies and resilience in communities. In addition, problems of low incomes and poverty persist in Scotland and some clarity about what bereavement means in terms of costs may inform support for employment and sustainability of workforces.

Method

The datasets used to analyse health, income, and employment costs were: The Scottish Longitudinal Study (SLS); Practice Team Information (PTI), and the British Household Panel Survey (BHPS). The SLS and PTI datasets specifically hold information on Scotland's residents. BHPS data includes participants resident in other parts of the UK and, as such, has limitations in specifically addressing the Scottish context.

The SLS was used to identify the impact of spousal bereavement on mortality and inpatient days. The sample for the SLS is drawn from the Scottish Census conducted every 10 years, which collects data on all residents in Scotland. The first wave of data collection took place in 1991 and drew a representative sample of 5.3% of the Scottish population based on 20 semi-random birthdays (113,878 people). The second wave (2001 Census data) comprised members in 1991 still alive and living in Scotland, new members born after 1991 or who moved into Scotland after 1991, and

household members of SLS members in 2001. SLS members were followed over time such that their data from 1991 and 2001 could be linked. The dataset provided extensive information on demography, socio-economic status, household composition, housing status, ethnicity, and long-term illness, but not income. For this study, SLS members were linked to their death records, spousal deaths records, and the Scottish Morbidity Record 1 (SMR01), which included information on inpatient admissions.

To estimate the impact of spousal bereavement on mortality and hospitalisation, only SLS members who were known to be in their first marriage in 1991 were considered. This information is available in Scotland's Census as participants are asked to categorise a marriage as the first or as a remarriage. The sample included the bereaved group (n = 15,007) in which members suffered spousal bereavement in the period of analysis (1991-2009) and the non-bereaved group (n = 79,703).

We used a Cox-proportional hazard survival model relating time to death and a range of variables, and a two-part difference-in-differences (DiD) model for inpatient days conditional on survival. In the survival analysis, the average annual inpatient days in the year before bereavement, and long-term illness indicator in the entry year (1991) were the variables used as proxies to control for potential unobserved common factors which influence the health status of both the bereaved individual and their deceased spouse. The DiD analysis controlled for unobserved common factors when estimating hospitalisations. Propensity score matching was used to balance the distribution of confounding factors between bereaved and non bereaved members. A predicted probability of group membership (e.g., bereaved members and controls) based on observed predictors measured in 1991 was used in all

models. This created a non-bereaved group, with hypothetical bereavement dates, comparable with the bereaved group and thus placed greater weight on the longitudinal experience of those in the non-bereaved group who more closely matched characteristics of the bereaved cohort.

For the DiD model a two-stage estimation was used where the first stage estimated the probability of there being any hospitalisation within the year, and the second stage estimated the number of inpatient days, only considering those members who had at least one inpatient day. To explore the robustness of the results another two-part model was estimated which allowed for a possible trend for impact post bereavement.

PTI data, broadly representative of the Scottish population in terms of age, gender, deprivation and urban/rural mix, collected from a sample of Scottish general practices were used to test whether bereavement would result in costs for primary care. It defines face-to-face consultations between patients and practice staff. Consultations for bereavement from 2003/04 to 2009/10 were enumerated and descriptive statistics were used to analyse the dataset.

BHPS data was used to test whether bereaved individuals were more likely to visit a GP post bereavement, were more distressed post than pre-bereavement, had less income post than pre-bereavement, and were less likely to be employed post than pre-bereavement.

The BHPS, a UK representative survey, takes place annually with the main objective of increasing understanding of social and economic change at the individual and household level in Britain. The present study focused on the BHPS from 1991 to 2008. However, the number of Scottish households surveyed was too small to yield adequate statistical power; therefore, it was decided to draw on data from across the

UK to inform the study. We looked across households of deceased BHPS participants and assumed all others in the household to be bereaved. Some participants of the BHPS may have experienced bereavement outside the household, which would not have been detected or included in the present analyses. The year of death of a household member (bereavement year) was considered as time point 0 (zero) and the evolution of outcomes both before and after bereavement were analysed.

In 1991 there were 10,264 BHPS participants, and of these 964 became bereaved sometime between 1992 and 2008. Thus, there were 9,300 (potential) participants who did not become bereaved between 1992 and 2008. The overall mean age for bereaved participants taking part in the BHPS in 1991 was 61.10 (SD=16.51).

To measure health and healthcare utilisation, variables used were visits to GP, General Health Questionnaire-12 score (GHQ-12) (Goldberg & Williams, 1988), and self reported health (Bierman, Bubolz, Fisher & Wasson, 1999). Income was measured using household equivalised income which is household income adjusted by the McClements Equivalence Scale, and takes the size and composition of the household into account. As a reference point the scale uses a couple with no children.

Propensity scoring was used to correct the estimation of the bereavement effects. Propensity score matching summarised pre-bereavement characteristics (1991) of each participant into a single index variable. The variables included in the propensity score matching were: age; gender; average self-reported health in the household in the last 12 months; whether or not they had visited their GP in the last 12 months; whether the household had an individual with higher education; the age of the oldest person in the household; the household equivalised income, and whether or not household members were employed. In the BHPS sample this put 4,109 men and

3,619 women in the matched control group for 1991. Their mean age was 58.34 (SD=18.58).

Results

For the SLS survival analysis, the following variables had significant associations with post (hypothetical) bereavement duration: the bereavement indicator, age, sex, education, social class, long-term illness indicator, and average inpatient days per year prior to bereavement (Table 1). The bereaved group had an 18.2% higher mortality rate than the non-bereaved group. Those reporting long-term illness prior to bereavement had 35.4% higher mortality rate than those not, and the mortality rate increased by 0.5% when the average annual inpatient days prior to bereavement increased by one. In addition, the results of the two-part model showed that even for those who did survive, bereavement increased the probability of hospitalisation and the length of stay in hospital increased by 0.1 days per annum (Table 2). Taking the decay of bereavement impact into consideration, hospitalisation slightly reduced over time to 0.078 of a day.

The average inpatient days were 0.34 and 0.16 for bereaved and non-bereaved SLS members, respectively. The cost of an average inpatient day (excluding long stay) in Scotland in 2011/2012 is estimated to be £561.63 per day. Thus, the total extra cost of inpatient days required for a bereaved person over a non bereaved person with similar characteristics approximates to between £43.80 and £62.90 per year. According to Scotland's Census in 2011, the total resident population aged 16 years old or more was 4,089,946 and 9.06% of this population was widowed. Thus, the total extra cost of inpatient days required for bereaved spouses over non bereaved spouses was estimated to be about £16,230,051 to £23,307,539 (U.S. about $26.6 million to $38.3 million) per year.

Estimated cost of GP consultations for bereavement from the period 2009/10, based on the PTI, was £2,030,720 (63,460 GP/practice nurse consultations x £32.00) (about US$ 3.3 million). Thus, GP consultations explicitly made for bereavement account for an extremely small part of overall spending on general medical services in Scotland (i.e., 0.3%; £2.0M ÷ £741M x 100).

BHPS data showed bereaved people were significantly less likely to visit their GP, relative to the non bereaved matched controls, at 5 to 4 years pre-bereavement ($p=.013$). The bereaved group reported significantly worse health two years pre-bereavement ($p=.001$), one year pre bereavement ($p<.05$), in the year of the bereavement ($p<.001$), and in the year after bereavement ($p=.001$) compared to the non bereaved matched controls. In the 10 to 16 years post-bereavement bereaved people also reported significantly higher GHQ-12 scores indicating more distress relative to non bereaved matched controls ($p<.05$). In addition, bereaved people recorded significantly better self-reported health (i.e. for the last 12 months) in both the 17 to 10 year pre-bereavement period ($p<.001$) and the 9 to 6 year pre-bereavement period ($p<.001$) compared with non bereaved matched controls. Bereaved people also had a significantly higher household equivalised income in the period 10 to 16 years post-bereavement ($p<.05$) than non bereaved matched controls. In terms of employment, when compared with non bereaved matched controls bereaved individuals were significantly less likely to be in work during the year of bereavement ($p<.05$) and two years post bereavement ($p<.05$).

Discussion

Innovative methods were developed and used in this study to create comparison groups from within the datasets, of non bereaved individuals closely matched with bereaved individuals. The identification strategy, difference-in-

differences, was successfully employed to compare inpatient hospital utilisation of the bereaved group with the non-bereaved group before and after the occurrence of spousal bereavement. The one-to-one propensity score matching approach estimated a propensity score with individual characteristics and matched a non-bereaved individual with a bereaved individual if they had identical or similar propensity scores. This enabled generation of hypothetical bereavement dates for those who were in the non-bereaved group, and gave added weight to individuals more closely related characteristically to bereaved persons, with whom comparison were generated.

Apart from investigating the impact of spousal bereavement on inpatient hospital utilisation, the impact on mortality was also a concern in this study. The Cox-proportional hazard analysis was successfully used to estimate the impact on mortality controlling for the unobserved common mortality factors within a couple with the proxy variables, the indicators of long-term illness in the entry year (1991) and average inpatient days per year before (hypothetical) bereavement. A further strength in our methods of analysis, for SLS looking at spousal bereavement, was in the ability to reduce contamination by excluding any member who had been widowed from a previous marriage. These methods may be adaptable to other studies using large national datasets to explore health outcomes.

Present results indicate that spousal bereavement significantly impacts hospital inpatient days and adds to the cost for healthcare services by between £16.2 million (about US$ 26.6 million) and £23.3 million (about US$ 38.3 million) per year. Further, bereavement impact on inpatient days does not diminish but instead increases over time. Length of stay doubled after the loss and stayed elevated with only slight reduction up to two years post loss. Guldin et al. (2013), in their Danish population study, also found people who were bereaved of their spouse due to cancer were at

greater risk of general or psychiatric hospitalisation in the year post bereavement than non-bereaved matched controls. That people who are bereaved of their spouse remain in hospital longer than non bereaved counterparts, as our study shows, may indicate difficulties associated with complex health and social care needs and living alone (Ou et al., 2009).

The small increase in hospitalisation over time for bereaved individuals identified in the SLS analysis, may be further explained by a lagged effect from bereavement through mental health problems to medical utilisation. After bereavement, a small but significant minority of bereaved individuals demonstrate long term mental health difficulties, with some who have low levels of depression before the loss going on to develop higher levels from 6 to 18 months post loss (Boerner, Mancini, & Bonanno, 2013). A further trajectory which may also provide explanation, identifies a small number with depression before a loss continuing to have long term manifestations after the loss. Likewise, Rando (2013) describes complicated grief as not being a single syndrome, but rather presenting as clinically diverse. Complicated grieving difficulties cover a range of factors, at times undefined and unidentified by individuals themselves and others around them and potentially manifesting in the low level of engagement for bereavement seen in the patterns of general practice contact illuminated in PTI data and in the latent translation into healthcare contacts and hospital utilisation seen in SLS analysis. Others may seek professional support in the early stages of grief, and though there is little evidence of the effectiveness of such interventions, those with complicated grief symptoms or risk of complicated grief developing may experience some relief in severity (Schut & Stroebe, 2005) negating the need for contact with a GP or other healthcare professional. Whether this translates into reduced need for additional hospitalisations

is also unclear, and given that on average SLS only provided seven years of post bereavement follow-up data it was not possible to observe any recovery. Thus, use of the longitudinal data in the SLS, controlling for numerous potential antecedent and concurrent influences indicates around £20 million (about US$ 33 million) in added health care costs.

The PTI data show a strikingly low prevalence of GP consultations explicitly related to bereavement. The contrast to the secondary care findings is highlighted when this is translated into an annual economic cost of about £2.0 million (about US$ 3.3 million) per year for NHS Scotland. Clearly, one explanation for this rather counter-intuitive finding is that the impact of bereavement may be a causative factor in many GP visits that is not recorded explicitly as bereavement related. In addition, a controlled trial of an information intervention for GPs and bereaved individuals indicates difficulties in making diagnoses of depression and complicated grief that may compromise appropriate support provision (Guldin, Vedsted, Jensen, Olesen, & Zachariae, 2013). GPs and community nurses view bereavement care as an important and satisfying aspect of their job. However, they feel underprepared and practice varies markedly across services (Nagraj & Barclay, 2011). Accordingly, the true cost of bereavement in terms of consultations at Scottish GP practices may be more substantial.

Results of the SLS analysis appear to suggest larger costs in terms of healthcare utilisation continuing to occur as years since bereavement increase. However, findings from BHPS comparing utilisation in a matched control group revealed that from four years pre-bereavement onwards there were no significant differences in terms of whether each group visited their GP. We suggest that for general practice, bereavements are not noted by the patient or GP as the reason for

contact. However, people may access services in other ways, for example, as existing patients in mental health services and be reflected in the SLS results.

Turning now to the BHPS data as a whole, one of its potential strengths was coverage of all the three areas (health, income and employment), and our ability to compare trends preceding and following death in a bereaved and matched control group. However, the 17 year longitudinal window that this opened up did not reveal many definitive patterns that distinguished these groups and only one cluster of sustained significant differences could be seen as indicative of a significant trend. This was the finding that GHQ scores showed significantly higher levels of distress for bereaved persons from 2 years pre-bereavement to one year post. This resonates both intuitively and with findings in the broader research literature. No similar trend was found in relation to self-reported health around these time points. However, it is important to note that both of the main BHPS health variables have limitations in terms of the formulation of their answering categories and bases for comparison (Smith, Oluboyede, West, Hewison, & House, 2013).

Having discussed impact on health, we now consider impact on employment and household equivalised income. Findings from the BHPS data reveal bereaved people were significantly less likely to be employed in the year of bereavement, and two years afterwards. This resonates with findings from the wider literature on bereaved carers and employment which indicates a small proportion of bereaved caregivers give up work to provide care and some reduce their hours of work (Abernethy, Burns, Wheeler & Currow, 2009). A proportion of people in our BHPS sample are likely to have been caregivers. However, the BHPS analysis showed no significant differences in household equivalised income between bereaved persons and matched controls in the 10 years pre and post bereavement, and is in line with

Rigg and Sefton (2006), using BHPS data covering 1991-2000, who also found little effect of bereavement on income changes for widowed pensioners. However, our study shows that from 10-16 years post bereavement bereaved persons had significantly higher household equivalised income than persons in the matched control group. This may reflect the younger aged widow(ers) of Rigg and Sefton (2006) recovering their financial position as time increases post bereavement.

Our present findings contrast with those of Corden et al., (2008) who identified poorer economic status for widowed people, particularly older women, in the years post loss. It may be labour market effects and changes in the economy that are reflected in income changes for our bereaved persons rather than demographic changes (Jenkins, Vignoles, Wolf & Galindo-Rueda, 2010). Changes in later years may be driven by bereaved widow(er)s accessing both partners' pension payments when they reach retirement age, leading to higher equalivised income for the single person household. There may also be a latent effect as more of the bereaved persons in BHPS start to reach retirement age. However, this is an average result so while some bereaved people may be better off, perhaps those whose spouse died at a younger age may have accumulated less pension contributions and be poorer. The present study is limited by its use of secondary data not collected specifically for analysis of post bereavement effects.

Considering care and surveillance of bereaved people, it is worth noting lower socio-economic status has been found to be consistent with higher risk of mortality across age groups (Martikainen & Valkonen, 1998). We recommend increasing the awareness of bereaved individuals and health and social care professionals enabling early recognition of developing problems that may benefit from professional help or more general social support. Similar progress in research is needed to capture the true

impact in primary care, where we believe we are only seeing a small proportion in relation to bereavement effects. Systems for collection of appropriate data to facilitate accurate estimation of costs and planning of services should therefore be developed.

Further, a limitation of present results is that we focused on one country, Scotland. We invite readers in other countries, with different systems for the administration of health and social care service, to consider where costs of bereavement fall.

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Table 1. Cox-Proportional Hazard estimation (weighted)

Dependent variable: post (hypothetical) bereavement duration	**Hazard Ratio**	**Robust Std. E**
SB (Spousal Bereavement)	1.182***	0.025
Age	1.262***	0.019
Square of age	0.999***	0.0001
Male sex	1.548***	0.038
Ethnicity (ref. White)		
Indian	0.845	0.337
Chinese	1.88*	0.707
Other	0.451	0.42
Education (ref. No high degree or qualification)		
First degree	0.778***	0.056
Other high qualification	0.826***	0.043
Social class based on occupations (ref. Managerial and technical occupations)		
Professional occupations	1.046	0.098
Skilled non-manual occupations	1.015	0.05
Skilled manual occupations	1.202***	0.053
Partly skilled occupations	1.154***	0.054
Unskilled occupations	1.321***	0.07
Armed forces	0.969	0.582
Others	1.428***	0.055
Proxies for omitted common factors		
Long-term illness	1.354***	0.033
Average annual inpatient days prior to bereavement	1.005***	0.001
Sample size 83,593		
Wald X_2 5,078.49		

* p<0.10, ** p<0.05, *** p<0.01.

Table 2. Two-Part estimations (weighted)

Constant bereavement impact		Decaying bereavement impact	
Group	Average inpatient days per bereaved per year (95% confidence interval)	Group	Average inpatient days per person per year (95% confidence interval)
Bereaved group (Sample size: 15,007 members)	0.3384 (0.3375 ~ 0.3395)	Bereaved group (Sample size: 15,007 members)	0.3394 (0.338 ~ 0.34)
Non-bereaved group (Sample size: 79,703 members)	0.1638 (0.1636 ~ 0.1641)	Non-bereaved group (Sample size: 79,703 members)	0.1636 (0.1633 ~ 0.1638)
Increase in inpatient days required for bereavement	0.1114 (0.110 ~ 0.113)	Increase in inpatient days required for bereavement	0.0781 (0.077 ~ 0.079)