

Unexplored Costs of Bereavement Grief in Japan: Patterns of Increased Use of Medical, Pharmaceutical, and Financial Services

OMEGA—Journal of Death and Dying
2021, Vol. 83(1) 142–156
© The Author(s) 2021



Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0030222821992193
journals.sagepub.com/home/ome



Carl B. Becker¹ , Yozo Taniyama²,
Megumi Kondo-Arita³,
Noriko Sasaki⁴, Shinya Yamada⁵, and
Kayoko Yamamoto⁶

Abstract

Bereaved families may experience psychological and physical problems increasing their reliance on medical, pharmaceutical, and financial/legal services. Our Japan-wide survey (n = 1078) researched bereaved who showed increased reliance on medical, pharmaceutical, and financial/legal services. Increased use was most evident in the '50's age bracket, and for unemployed widows; it corresponded less with low annual income than with high income declining significantly after bereavement. Increased users showed higher psychological and physical symptoms of grief, and

¹Policy Science Unit, Kyoto University, Kyoto, Japan

²Department of Letters, Tohoku University, Sendai, Japan

³Nakayama International Center, Osaka Medical College, Osaka, Japan

⁴Department of Healthcare Economics and Quality Management, Kyoto University School of Medicine, Kyoto, Japan

⁵Religious Anthropology, National Museum of Japanese History, Sakura City, Japan

⁶Medical Education Research Center, Tenri Health Care University, Tenri City, Japan

Corresponding Author:

Carl B. Becker, School of Medicine, Kyoto University, Yoshida Konoe-cho, Sakyo-ku, Kyoto 606-8501, Japan.

Email: becker.carlbradley.5e@kyoto-u.ac.jp

reported their decline in physical health seriously influencing their work and lives, suggesting “presenteeism”—reduced productivity for those continuing to work. Increased users spent 2.7 times more for medical and pharmaceutical services than those reporting continual use, portending 4 to 10 times more Japanese government expense for this group, half of whom considered their own out-of-pocket expenses a financial burden. These findings warrant further research on cost-effectiveness of interventions to reduce declining health of the bereaved.

Keywords

grief, bereavement, funeral, productivity, health, medicine, cost, Japan

Introduction

Japan has one of the oldest populations in the world. Roughly 30% of Japan’s population is already over the age of 65, and this percentage will continue to grow over the coming decades. Simply by the aging of the population, almost everyone in Japan will be bereaved by family members—parents, grandparents, great-grandparents—before 2030. If even a fraction of Japan’s entire population increasingly relies on medical and social welfare services because of bereavement grief, this may strain Japan’s already bankrupt treasury to the breaking point. So study of the medical costs of the side-effects of serious grieving is a pressing necessity for Japan, with implications for other countries which economically subsidize their elders’ medical care.

The death of a parent, partner, or child causes serious physical as well as psychological problems to the bereaved who must carry on. Over 20 years ago, Prigerson et al. (2000) showed higher risks of depression and disease for bereaved, with post-bereavement medical costs after good marriages more than doubling after the death of a spouse (see Nielsen et al., 2017). Fujisawa et al. (2010) reported that sudden death of dear loved ones could cause complications “without significant decrease” up to ten years after the death, for as many as a quarter of all bereaved. Deterioration of cardiovascular health after bereavement is widely documented (Carey et al., 2014) leading to increased mortality (Zisook et al., 2014). Van den Berg et al. (2011) found that bereavement seriously worsened arthritis and diabetes, increasing life-threatening diseases in future years. In their analysis, bereaved males died two years, females three years earlier than they would have, but females lost even more *healthy* life years before passing—and this was after a third of the respondents *stopped responding because of health reasons!*

Along with increased fatality and chronic disease, bereaved families used far more medical and health services than non-bereaved. In the first few years after

their loss, Guldin et al. (2013) found a major increase in use of sedatives and antidepressants after a death, with prescriptions continuing a steady increase over the following two years. While most families return to pre-loss levels in about a year, scholarly reviews show that 10% show chronic depression several years later (Kuo et al., 2017). Against the theory that caregiving or meaningful work would buffer the bereaved from the stress or grief of death, Moriarty et al. (2015) found working-age caregivers to have significantly greater risk of mental health problems than non-working or non-caregiving relatives (cf. Schulz et al., 2006). Physiologically, this may be due to the bereaveds' flatter diurnal cortisol slopes, showing increased vulnerability to stress, analogous to but greater than that created by other negative emotions or smoking (Ong et al., 2011).

Looking at economic costs, a study covering 658,000 Swedes found rising drug costs for widows and widowers compared to non-bereaved (Möller et al., 2011). In the Netherlands, Rolden et al. (2014) found monthly health care expenses rising about 50% after bereavement, and up to 82% in elderly males, concluding that loss of the spouse leads to long term increases in health costs. In Scotland too, spousal bereavement correlated with earlier death, more hospital consultations and stays adding costs of £20 million annually (Stephen et al., 2015), with an added £2.0 for primary care consultations and £29.5 million annually for antidepressant use. Tseng et al. (2018) found a 19.2% higher mortality rate for the bereaved than comparable non-bereaved. Ornstein et al. (2019) found that 68% of surviving female spouses showed a \$3500 increase in medical spending two years after death, associated with a \$625 quarterly increase in Medicare expenditures, regardless of their caregiving status, the cause of death, or length of terminal illness.

Not only is medical cost itself expensive; if the person who dies or the bereaved stops working, the loss of their contribution to society is substantial. For example, Kinchin and Doran (2018) estimated the average cost of suicide at \$2,884,426 including \$9,721 in direct costs, \$86,460 in bereavement side effects, and an average of \$2,788,245 lost in lifetime productivity. Similarly, Kennelly (2007) calculated the costs of suicide in Ireland at over 900,000,000 Euros annually, or almost 1% of Ireland's GNP! So between rising medical expenses, shortened lifespans, and reduced productivity, bereavement is a serious blow to society even if it only affects a minority of the population.

Although women tend to be significantly more social and less lonely than males of the same health and financial situations, which may protect women somewhat, those in poorer economic conditions report greater loneliness and increased health risks (De Jong Gierveld & Van Tilburg, 2010). Corden and Hirst (2013) showed that poorer economic status for older widowed women contributed to difficulties coping with grieving. On the other hand, Nam (2012) could not find connections between economic hardship or changes in household income and complicated grief. In Indonesia, Grimm (2010) found that families with higher education lost more potential income (forgone

earnings) than did less educated families with the death of the breadwinner. The poorest 40% of the population were adversely affected not so much by grief itself as by poverty; having less economic leeway, they significantly deplete their assets and savings after the death of an income earner. Maguire et al. (2017) suggest that higher education protects against poor post-bereavement health, as seen in lower dependency on antidepressant medication, but this may also be a byproduct of more economic leeway to travel or dine out after bereavement.

Given this background—that bereavement grief decreases productivity and increases medical reliance—we crafted a questionnaire for a bereaved Japanese population, to determine what percentage of bereaved Japanese increase their medical and social expenses, and what psycho-social variables affect such increased expenses. Our pilot study was introduced in an earlier issue of *OMEGA* (Becker et al., 2020); here we introduce the more robust results from our full nationwide survey.

Materials and Methods

A subgroup of the International Working Group on Death Dying and Bereavement, which convened in 2018 in London Ontario, pooled their expertise to propose the first draft of this questionnaire. The face sheet asked the chief mourner about their background and socio-economic status and their relations with the deceased. Next we inquired about the cost of and satisfaction with the funeral on a 5-item Likert scale, where higher scores indicated higher satisfaction. To evaluate their psychological and physical condition during the past month, we used the Japanese versions of Prigerson's 13-item grief scale (with grateful permission), also a 5-point Likert scale, and Pfizer's open access Public Health Q-9 Scale, a 4-point scale; in these, higher scores indicated higher psychological or physical symptoms of grief. We also asked questions about changes in their work and daily activity, and most centrally, the frequency, cost, and increase in their use of medical and social services over the past month. The form totaled 100 questions including numerous open-response items which we shall analyze in another article.

In fall and winter of 2018–2019, we polished the Japanese wording and readability, and gained approval for content and method from our university ethics review committee. Since Japanese hospitals do not retain contact with the families of deceased patients, we had to turn to funeral directors to reach bereaved across the country. From the spring of 2019, we asked the All-Japan Funeral Cooperative to distribute over 5000 questionnaires to recently bereaved clients, from whom we received 1100 (1078 perfectly completed) responses by the end of 2019, for an overall response rate of roughly 20%. Responses were anonymized and tabulated into Excel spreadsheets, from which we performed statistical correlations using SPSS v. 23 for Mac.

Results

Our first concern was to identify the subset who confirmed an increase in cost and frequency of medical/social service use since their bereavement. Of 1078 complete responses, a total of 122 (11%) reported some increase in their use of medical or social services due to bereavement, with most of these responders reporting increased use of two or more services. (The survey also inquired about use of psychological counseling, bereavement support groups, and home helpers, none of which showed a significant number of or cost to new users.) As shown in Table 1, most of the 122 reported conferring with financial, legal, or welfare advisors after their loss, but the increase in financial/legal consultations was minor compared to those who showed no increase. By contrast, the reliance on medical/hospital appointments and pain medicines rose significantly for 4 to 6% of all respondents, some overlapping. This is consistent with Aoun et al.'s (2015) finding that 6% to 7% of all bereaved are in danger of serious grief and in need of support.

17 respondents reported new reliance on what we called "Daily Function Medicines" (tranquillizers, antidepressants, sleeping pills, and diet-related supplements). Their frequency of reliance was less than that of the 21 users who reported continually using such medicines before and after their bereavement, so their dependency was not yet chronic, but the number of users almost doubled after bereavement, from 21 to 43 .

Next we compared these 122 (11%) who increased their use of services with the 89% who did not, to identify their characteristics as well as costs. The age group in their 50's showed significant increase, with unemployed widowed women more prominent than men or married couples or those working (see Table 2).

The average household income in Japan is four to five million yen, and our sample showed a distribution similar to that of the rest of the country.

Table 1. Services of the 122 Respondents Who Reported Increased Use After Bereavement.

	Number of increased users	Appointments per month	Average use by those reporting no increase
1 Medical/hospital appointments	67	4.1	1.8 or less
2 Pain medicines (headaches, stomach aches, backaches, cramps, etc.)	48	10.5	6.8 or less
3 Daily function medicines (tranquillizers, antidepressants, sleep medicines, etc.)	22	6.6	14.2 (21 users)
6 Financial, legal, or welfare advisors	71	2.8	2.1 or less
Total number who increased use of services	122	9	2

Table 2. Age, Gender, and Marital Status of Those With Increased and No Increased Use.

Respondents (n)	Total (1,078)	Increased use (122)	No increased use (956)	p
1. Respondent's age				
① 20's	5.8%	1.6%	6.4%	(0.06*)
② 30's	8.7%	3.3%	9.4%	(0.04**)
③ 40's	19.0%	20.5%	18.8%	(0.75)
④ 50's	24.0%	33.6%	22.8%	(0.01***)
⑤ 60's	26.7%	23.0%	27.2%	(0.37)
⑥ 70's	12.2%	15.6%	11.7%	(0.28)
⑦ 80's or 90's	3.5%	2.5%	3.7%	(0.68)
Younger than 50	33.6%	25.4%	34.6%	(0.05*)
50 or older	66.4%	74.6%	65.4%	(0.05*)
2. Gender (%)				
① Male	51.2%	41.8%	52.4%	(0.03**)
② Female	48.7%	57.4%	47.6%	(0.05*)
③ Other/abstain	0.0%	0.0%	0.0%	
3. Marital status				
Single	13.9%	14.8%	13.8%	(0.88)
Widowed	15.5%	26.2%	14.1%	(0.001***)
Married	63.0%	50.8%	64.5%	(0.001***)
Divorced	6.7%	8.2%	6.5%	(0.6)
Other/abstain	0.6%	0.0%	0.6%	(0.82)

* = p < 0.1, ** = p < .05, *** = p < .01.

Those with less than average income showed less medical and service reliance than those with more than average income, perhaps out of concern for out-of-pocket expenses. Curiously, the 17% in the highest income bracket showed more increased use (particularly financial and legal consultations). In terms of income, it was the 31% whose bereavement created a significant decline in income who tended to correlate with increased service use of all types (see Table 3).

Unsurprisingly, death of a spouse or child under the age of 60 was most likely to provoke additional service use. Deaths by cancer were most likely to provoke grief at the level requiring additional medical or service attention. The 4.3% of those dissatisfied with the (small) number of people who attended the funeral, overlapping with the 10.2% who felt funeral costs to be a significant burden, also correlated with the increased users group (see Table 4).

The increased users exhibited significantly higher grief scores on every single category of Prigerson's 13-item grief scale, and worse health on every item of Pfizer's Public Health Q-9 Scale than those who did not increase service use after bereavement. Since not everyone who had high grief or health issues turned to additional medical or support services, these scales alone cannot suffice to predict

Table 3. Correlation of Increased Service Users With Income Level and Change of Income.

Questions about income	Total (1,078)	Increased use (122)	No increased use (956)	p
Household annual income before decease				(0.01**)
① Under 2 million yen	7.9%	2.5%	8.6%	(0.03**)
② 2 to 4 million yen	28.8%	25.4%	29.2%	(0.45)
③ 4 to 8 million yen	38.6%	42.6%	38.1%	(0.38)
④ More than 8 million yen	17.3%	25.4%	16.2%	(0.02**)
Income change after decease				(0.001***)
① Rose	1.8%	0.8%	1.9%	(0.63)
② No change	62.4%	54.1%	63.5%	(0.06*)
③ Fell	26.3%	33.6%	25.4%	(0.07*)
④ Plummeted	4.4%	10.7%	3.6%	(0.001***)

* = $p < 0.1$, ** = $p < .05$, *** = $p < .01$.

Table 4. Economic Burden of Funeral and Satisfaction With Funeral Attendance.

Economic burden of the funeral	Total (1,078)	Increased use (122)	No increased use (956)	(0.05*)
① No burden	37.2%	29.5%	38.2%	(0.08*)
② Somewhat of a burden	47.1%	50.8%	46.7%	(0.44)
③ Significant burden	10.2%	15.6%	9.5%	(0.05*)
④ Debilitating burden	2.0%	3.3%	1.9%	(0.44)
Dissatisfaction with the number of people who attended	4.3%	9.0%	3.7%	(0.01**)

* = $p < 0.1$, ** = $p < .05$, *** = $p < .01$.

who will need most bereavement support, but coupled with the other information above, they might be useful to begin to profile and anticipate those who may face greatest need or danger after bereavement. The above categories like gender, age, bereavement type, income decline, and perhaps funeral experience may be among the causal factors which exacerbate the grief of the bereaved.

Next let us consider statistically significant differences between the increased users group and continuing or non-users group in terms of frequency and costs. The increased users group lost slightly more hours of work for reasons of physical health, and significantly more hours of work for reasons other than physical health (including financial and legal consultations) than the bereaved who did not show higher service use. Of greater concern is the finding that they reported that their physical health significantly influenced their work and life outside of work. This is congruent with Fox et al.'s (2014) findings that costs associated with on-the-job productivity losses (“presenteeism”) may outweigh the costs associated

Table 5. Changes in Work and Life in the Past Month Due to Bereavement Issues.

About your work and life over the past month	Total (1,078)	Increased use (122)	No increased use (956)	p
1. Hours of work missed for reasons of physical health	3.13	4.46	2.96	(0.49)
2. Hours of work missed for reasons other than physical health	7.47	12.12	6.88	(0.08*)
3. How seriously your physical health influenced your work	1.49	2.85	1.31	(0.001***)
4. How seriously your physical health influenced life outside work	1.86	3.65	1.60	(0.001***)
Overall effect of bereavement on work or life	1.82	3.63	1.56	(0.001***)
% of the 1078 who reported significant effects on work or life	17.1%	42.6%	13.8%	(0.001***)

* = $p < 0.1$, ** = $p < .05$, *** = $p < .01$.

with absenteeism; our increased service-users only averaged 90 minutes per month more absenteeism than other bereaved, but reported more than double the impact on their productivity in and out of work (see Table 5).

In terms of number of hospital appointments or medical consultations per month, those whose use increased after bereavement almost doubled the frequency of those with continuous use; this was also true of pain medicines. They also spent more on “daily function medicines” (tranquillizers, antidepressants, sleep medicines, etc.), but the numbers reporting were insufficient to prove statistical significance. Overall, users’ financial outlays averaged almost 13000 yen for appointments, 3500 yen for pain medicines, and 1400 yen for tranquillizers and anti-depressants monthly, almost thrice (2.7 times) higher than those who used such services continually from before bereavement. When we consider that the Japanese consumer personally pays only about 20% of real costs for these services, this implies additional government costs of up to 72000 yen per month for an additional 6% of the bereaved population, beyond the 26000 yen per month that it was already paying for 12% of the population both before and after bereavement.

While 7% of our total sample reported semi-monthly visits with bankers or legal advisors both prior to and following their bereavements, an additional 7% in our sample began semi- to thrice monthly consultations for the first time after their bereavements, with an average out-of-pocket personal cost of 50600 yen per month, as compared to 14400 yen per month for those who already had semi-monthly consultations. Almost half (47.5%) of those facing increased medical and/or legal monthly expenses found them to be a somewhat or significant financial strain. The bereaved persons’ increased expenses of consultations with financial, legal, or welfare advisors would clearly not be covered by government subsidies, but these were mostly from the upper-income group, less likely to

Table 6. Monthly Frequency, Cost, and Strain of Additional Service Use After Bereavement.

	Average number of uses for those reporting [out of 1078 total]	Increased users [out of 122]	Reporting continuing but not increased use after loss [out of remaining 956]	p
Dependence on services over the past month				
Medical/hospital appointments	2.31[204]	3.11[67]	1.92[137]	(0.001***)
Pain medicines (headaches, stomach aches, back-aches, cramps, etc.)	7.35[127]	10.13[48]	5.66[79]	(0.02**)
Daily function medicines (tranquillizers, antidepressants, sleep medicines, etc.)	11.19[43]	9.59[22]	12.86[21]	(0.39)
Financial, legal, or welfare advisors	2.4[144]	2.76[71]	2.04[73]	(0.01***)
Cost of services over the past month	Amount (in yen) you spent [out of 1078 total]	Increased users' average	Average for those reporting continuing use before and after	
Medical/hospital appointments	7,410.3[204]	12,983.6[67]	4,684.7[137]	(0.02**)
Pain medicines (headaches, stomach aches, back-aches, cramps, etc.)	2,154.3[127]	3,504.2[48]	1,334.2[79]	(0.03**)
Daily function medicines (tranquillizers, antidepressants, sleep medicines, etc.)	1,016.3[43]	1,418.2[22]	595.2[21]	(0.17)
Financial, legal, or welfare advisors	32,254.2[144]	50,600.0[71]	14,411.0[73]	(0.15)
Were the above expenses a financial strain?		For increased users (122)	For those reporting No increased use (956)	(0.001***)
Not at all	65.0%	52.5%	66.6%	(0.001***)
Somewhat	21.6%	36.1%	19.8%	(0.001***)
Significant	2.6%	11.5%	1.5%	(0.001***)

* = p < 0.1, ** = p < .05, *** = p < .01.

report financial strain. It was rather more likely that the lower-income or declining-income sectors were the ones reporting financial strain from added hospital visits or pharmaceutical costs. The time taken off for these additional consultations, coupled with lower productivity while at work, remain causes for concern even for the wealthier reporters (see Table 6).

Discussion/Implications

In terms of cost effectiveness, Connor and McMaster (1996) showed that hospice bereavement counseling on average reduced two clinic visits and three hospital days for bereaved survivors, saving \$3650 per bereaved (much more in today's dollars!). Lazar (2010) produced an entire tome documenting the cost-effectiveness of psychotherapy, including for bereavement issues.

Savings seem particularly noteworthy for those bereaved by suicide, who have some of the worst grief experiences; Australia's StandBy Response Service was projected to save Australia more than \$155,000,000 over 5 years of operation (United Synergies, 2011), while Doran et al. (2016) show that interventions may save four dollars for every dollar of investment, not to mention the value of lives lengthened (cf. Onrust et al., 2008).

What kinds of interventions can prove useful in reducing complicated grief and related costs? Wittouck et al.'s (2011) overview of research to 2008 found post-vention but not preventive intervention to be statistically effective. By contrast, Garrido and Prigerson (2014) observed that encouraging patients' advanced care planning and improving their quality of death should improve their caregivers' bereavement adjustment. Aoun et al.'s (2015) work suggests that less than 10% of all bereaved experience serious complicated grief, so assessment is needed to suitably identify them (cf. Mancini & Bonanno, 2009). Studies like these suggest that well targeted social support and post-vention counseling might be able to reduce the physical manifestations of grief requiring additional medical care and expense. Japan has not yet established any standardized interventions for post-bereavement grief, but this present study is one step towards targeting the range of those who might most require such assessment.

Conclusions

This study confirmed that grief correlates with serious psychological and physical effects, leading bereaved people to increased use of medical, pharmaceutical, and financial services. More than 11% (122 out of 1078) of Japanese bereaved reported increased use of medical, pharmacological, and/or financial services after bereavement. Increased use was most prominent for bereaved in their '50's, and for unemployed widows. Initially high but declining household income

correlated with higher post-bereavement medical and pharmaceutical use, as did the financial burden of, and dissatisfaction with attendance at, the funeral.

Increased users were thrice as likely to report bereavement having significant effects on their work or lives, and felt their decline in physical health influenced their work and lives twice as seriously as those who showed no increase in medical, pharmaceutical, or services use. Increased users averaged 2.7 times more spending for medical and pharmaceutical services than those reporting regular use prior to the bereavement, and almost half considered this a financial burden. These findings warrant further research on the cost-effectiveness of targeted interventions for people most likely to face decline in physical health and rely on medical services after bereavement.

This study also enables some ball-park estimates of personal and government medical expenses. Since at least one hundred million Japanese will be bereaved in the next ten years, if as few as 6% of the bereaved population require increased medical services, this adds up to six million increased users. If each increases government medical and pharmaceutical costs to the tune of an additional 50,000 to 70,000 yen per person per month as our sample would indicate, then we might face three to four hundred billion yen *monthly* in additional government expenses. For the ten to twenty percent whose age exceeds 74, the Japanese government pays ten times rather than three to four times their personal outlay, so this is probably a conservative underestimate. Thus it may behoove us to explore ways of pre-identifying and supporting those likely to be in most need of help, before their physical conditions deteriorate to the level of needing medical and pharmaceutical assistance.

Several provisos and limitations of this survey must be acknowledged. We have no data on the effects of quarantine in this time of Covid-19. Nevertheless, the correlation between dissatisfaction with low funeral attendance and higher medical/pharmaceutical reliance may be a danger sign that the bereaved who desire but cannot receive sufficient psycho-social support through funeral gatherings are at higher risk for subsequent psycho-physical problems.

We had no choice but to ask the All Japan Funeral Cooperative to help us to identify and ask recently bereaved families about their experiences. This might bias the responses towards those whom it was easiest to ask, who had relatively good experiences with their funeral homes, or who felt comfortable about replying to potentially sensitive questions.

We are concerned at the poor response rate of 1100 returns out of roughly 5500 distributed. It is conceivable that the more estranged, less satisfied, or more deeply troubled Japanese who received questionnaires would be less likely to complete and return them; if this be the case, then the frequency and cost of psycho-physical problems requiring medical responses may be even higher than that of those who had the time, willingness, and peace of mind to complete our admittedly tedious questionnaires.

We continue the process of analyzing a thousand open-ended comments, which may shed further light on some of the statistical correlations presented here. We are also conducting a follow-up survey asking the same questions of the same respondents one year later, to try to identify their grief trajectories and consequent medical expenses over time. Our findings suggest the importance of further research to assess the cost-effectiveness of interventions to minimize the decline in psychological and physical health of those bereaved most in need of support.

Acknowledgments

The authors wish to thank Holly Prigerson for graciously granting permission to include the Japanese version of her earlier grief scale in our study.

Carl B. Becker: Conceptualization, Writing, Supervision, Administration

Yozo Taniyama: Conceptualization, Resources, Investigation

Megumi Kondo-Arita: Conceptualization, Methodology, Analysis

Noriko Sasaki: Conceptualization, Methodology, Analysis

Shinya Yamada: Conceptualization, Methodology, Writing

Kayoko Yamamoto: Conceptualization, Resources, Analysis.

Ethical Approval

The survey was approved by Kyoto University Psychology Ethics Committee, #30-P-14.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was supported by Japanese Ministry of Education Research Grant A#18H04075.

ORCID iD

Carl B. Becker  <https://orcid.org/0000-0002-4519-8837>

References

- Aoun, S. M., Breen, L. J., Howting, D. A., Rumbold, B., McNamara, B., & Hegney, D. (2015). Who needs bereavement support? A population based survey of bereavement risk and support need. *PLoS One*, *10*(3), e0121101. <https://doi.org/10.1371/journal.pone.0121101>
- Becker, C. B., Taniyama, Y., Kondo-Arita, M., Yamada, S., & Yamamoto, K. (2020, August). How grief, funerals, and poverty affect bereaved health, productivity, and medical dependence in Japan. *OMEGA—Journal of Death and Dying*. Advance online publication. <https://doi.org/10.1177/0030222820947573>

- Carey, I. M., Shah, S. M., DeWilde, S., Harris, T., Victor, C. R., & Cook, D. G. (2014). Increased risk of acute cardiovascular events after partner bereavement: A matched cohort study. *JAMA Internal Medicine, 174*(4), 598–605. <https://doi.org/10.1001/jamainternmed.2013.14558>
- Connor, S. R., & McMaster, J. K. (1996). Hospice, bereavement intervention, and use of health care services by surviving spouses. *HMO Practice, 10*(1), 20–23.
- Corden, P. A., & Hirst, M. A. (2013). Economic components of grief. *Death Studies, 37*(8), 725–749. <https://doi.org/10.1080/07481187.2012.692456>
- De Jong Gierveld, J., & Van Tilburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: Tested on data from 7 countries in the UN generations and gender surveys. *European Journal of Ageing, 7*(2), 121–130. <https://doi.org/10.1007/s10433-010-0144-6>
- Doran, C. M., Ling, R., Gullestrup, J., Swannell, S., & Milner, A. (2016). Impact of a suicide prevention strategy on reducing the economic cost of suicide in the NSW construction industry. *Crisis, 37*(2), 121–129. <https://doi.org/10.1027/0227-5910/a000362>
- Fox, M., Cacciatore, J., & Lacasse, J. R. (2014). Child death in the United States: Productivity and the economic burden of parental grief. *Death Studies, 38*(6-10), 597–602. <https://doi.org/10.1080/07481187.2013.820230>
- Fujisawa, D., Miyashita, M., Nakajima, S., Ito, M., Kato, M., & Kim, Y. (2010). Prevalence and determinants of complicated grief in general population. *Journal of Affective Disorders, 127*(1-3), 352–358.
- Garrido, M. M., & Prigerson, H. G. (2014). The end-of-life experience: Modifiable predictors of caregivers' bereavement adjustment. *Cancer, 120*(6), 918–925. <https://doi.org/10.1002/cncr.28495>
- Grimm, M. (2010). Mortality shocks and survivors' consumption growth. *Oxford Bulletin of Economics and Statistics, 72*(2), 146–171. <https://doi.org/10.1111/j.1468-0084.2009.00566.x>
- Guldin, M.-B., Jensen, A. B., Zachariae, R., & Vedsted, P. (2013). Healthcare utilization of bereaved relatives of patients who died from cancer. A national population-based study. *Psycho-Oncology, 22*(5), 1152–1158.
- Kennelly, B. (2007). The economic cost of suicide in Ireland. *Crisis, 28*(2), 89–94.
- Kinchin, I., & Doran, C. M. (2018). The cost of youth suicide in Australia. *International Journal of Environmental Research and Public Health, 15*(4), 672. <https://doi.org/10.3390/ijerph15040672>
- Kuo, S. C., Sun, J. L., & Tang, S. T. (2017). Trajectories of depressive symptoms for bereaved family members of chronically ill patients: A systematic review. *Journal of Clinical Nursing, 26*(23-24), 3784–3799. <https://doi.org/10.1111/jocn.13720>
- Lazar, S. G. (Ed.). (2010). *Psychotherapy is worth it: A comprehensive review of its cost effectiveness*. American Psychiatric Publishing.
- Maguire, A., Moriarty, J., O'Reilly, D., & McCann, M. (2017). Education as a predictor of antidepressant and anxiolytic medication use after bereavement: A population-based record linkage study. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation, 26*(5), 1251–1262. <https://doi.org/10.1007/s11136-016-1440-1>
- Mancini, A. D., & Bonanno, G. A. (2009). Predictors and parameters of resilience to loss: Toward an individual differences model. *Journal of Personality, 77*(6), 1805–1832.

- Möller, J., Björkenstam, E., Ljung, R., & Yngwe, M. A. (2011). Widowhood and the risk of psychiatric care, psychotropic medication and all-cause mortality: A cohort study of 658,022 elderly people in Sweden. *Aging & Mental Health, 15*(2), 259–266.
- Moriarty, J., Maguire, A., O'Reilly, D., & McCann, M. (2015). Bereavement after informal caregiving: Assessing mental health burden using linked population data. *American Journal of Public Health, 105*(8), 1630–1637. <https://doi.org/10.2105/AJPH.2015.302597>
- Nam, I. (2012). *Effects of economic hardship on complicated grief* [PhD dissertation]. University of Pittsburgh.
- Nielsen, M. K., Neergaard, M. A., Jensen, A. B., Vedsted, P., Bro, F., & Guldin, M. B. (2017). Predictors of complicated grief and depression in bereaved caregivers: A nationwide prospective cohort study. *Journal of Pain and Symptom Management, 53*(3), 540–550. <https://doi.org/10.1016/j.jpainsymman.2016.09.013>
- Ong, A. D., Fuller-Rowell, T. E., Bonanno, G. A., & Almeida, D. M. (2011). Spousal loss predicts alterations in diurnal cortisol activity through prospective changes in positive emotion. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association, 30*(2), 220–227. <https://doi.org/10.1037/a0022262>
- Onrust, S., Smit, F., Willemsse, G., van den Bout, J., & Cuijpers, P. (2008). Cost-utility of a visiting service for older widowed individuals: Randomised trial. *BMC Health Services Research, 8*, 128. <https://doi.org/10.1186/1472-6963-8-128>
- Ornstein, K. A., Garrido, M. M., Siu, A. L., Bollens-Lund, E., Rahman, O. K., & Kelley, A. S. (2019). An examination of downstream effects of bereavement on healthcare utilization for surviving spouses in a national sample of older adults. *PharmacoEconomics, 37*(4), 585–596. <https://doi.org/10.1007/s40273-019-00787-4>
- Prigerson, H. G., Maciejewski, P. K., & Rosenheck, R. A. (2000). Preliminary explorations of the harmful interactive effects of widowhood and marital harmony on health, health service use, and health care costs. *The Gerontologist, 40*(3), 349–357.
- Rolden, H. J., van Bodegom, D., & Westendorp, R. G. (2014). Changes in health care expenditure after the loss of a spouse: Data on 6,487 older widows and widowers in The Netherlands. *PLoS One, 9*(12), e115478.
- Schulz, R., Boerner, K., Shear, K., Zhang, S., & Gitlin, L. N. (2006). Predictors of complicated grief among dementia caregivers: A prospective study of bereavement. *The American Journal of Geriatric Psychiatry, 14*(8), 650–658.
- Stephen, A. I., Macduff, C., Petrie, D. J., Tseng, F.-M., Schut, H., Skår, S., Corden, A., Birrell, J., Wang, S., Newsom, C., & Wilson, S. (2015). The economic cost of bereavement in Scotland. *Death Studies, 39*(1-5), 151–157.
- Tseng, F.-M., Petrie, D., Wang, S., Macduff, C., & Stephen, A. I. (2018). The impact of spousal bereavement on hospitalisations: Evidence from the Scottish longitudinal study. *Health Economics, 27*(2), e120–e138. <https://doi.org/10.1002/hec.3573>
- United Synergies. (2011). *Final report: Economic valuation of the standby response service*. Griffith University/The Science of Knowing.
- Van den Berg, G. J., Lindeboom, M., & Portrait, F. (2011). Conjugal bereavement effects on health and mortality at advanced ages. *Journal of Health Economics, 30*(4), 774–794.
- Wittouck, C., Van Autreve, S., De Jaegere, E., Portzky, G., & van Heeringen, K. (2011). The prevention and treatment of complicated grief: A meta-analysis. *Clinical Psychology Review, 31*(1), 69–78.

Zisook, S., Iglewicz, A., Avanzino, J., Maglione, J., Glorios, O. D., Zetumer, S., Seay, K., Vahia, I., Young, I., Lebowitz, B., Pies, R., Reynolds, C., Simon, N., & Shear, M., K. (2014). Bereavement: Course, consequences, and care. *Current Psychiatry Reports*, 16(10), 1–10.

Author Biographies

Carl B. Becker is a professor of Policy Science at Kyoto University, where for 30 years he has researched and taught Japanese medical and environmental ethics, terminal care, death and dying. He leads a national Japanese project investigating the effects of bereavement on productivity and medical/welfare costs.

Yozo Taniyama is an associate professor of Clinical Thanatology (spiritual, religious, and grief care) in the Department of Religious Studies at Tohoku University, Sendai, Japan. As a Buddhist priest, he worked as a hospice chaplain and has been teaching and training chaplains in Japan following the tsunami-earthquake disaster of March 2011.

Megumi Kondo-Arita is a junior associate professor and the vice director of the Nakayama International Center for Medical Cooperation at Osaka Medical College. Her research focuses on the psychology of death and life, especially in palliative and terminal care of children in Sweden and Germany as well as Japan. She garnered the Japan Qualitative Psychology Association Field Research Award for 2012, and became a licensed clinical development psychologist in 2015.

Noriko Sasaki is an associate professor in the Department of Healthcare Economics and Quality Management at the Graduate School of Medicine, Kyoto University. In addition to her medical work as a cardiologist, her teaching and research focuses on quality in healthcare, healthcare economics, and implementation science.

Shinya Yamada is a professor in the Department of Folklore and Folk Culture at the National Museum of Japanese History. Japan's leading academic expert in the changing nature of funeral rituals, burial systems, monuments and embalming in modern Japan, he has served as a visiting researcher at Oxford University's Nissan Institute.

Kayoko Yamamoto is a full-time lecturer in the Department of Medicine at Tenri Health Care University in Nara, Japan, specializing in grief care and spiritual education. A licensed chaplain, she is particularly interested in researching the roles and narratives of non-religious chaplains and caregivers in secular society.