



TITLE:

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Identifying bereaved griever with greatest medical or social service needs in Japan

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ABSTRACT

Objective Severe grief adversely affects the health of bereaved families, potentially burdening medical and community health services. Interventions for effective community health maintenance must identify the people likely to face severe effects of bereavement. The present study identified characteristics of mourners who experience severe grief within a year of bereavement to confirm whether this grief increased their reliance on Japanese medical and social services.

Design We conducted a nationwide postal survey of Japanese bereaved within the previous year, to compare those reporting daily or overwhelming 'heavy' grief to those with less heavy grief, in terms of demographic and socioeconomic details, daily work and non-work activity, frequency of medical and social service use.

Setting/participants In 2019, with the support of the Ministry of Education and the All Japan Funeral Co-Operation, we distributed approximately 5500 questionnaires to Japanese who had presided at funerals within the past year for anonymous return. By January of 2020, we received 1078 complete voluntary responses from bereaved Japanese.

Results Half of the 'heavy grief' group (n=143) reported adverse effects on health and daily life, including needs for pharmacological, medical or welfare support. Losses of husbands or children were particularly connected to severe grief; 'unexpected' death from cancer caused the greatest shock. Employment (even part-time) buffered against severe grief; grief was greater for the unemployed and substantially worse for those who lost significant income at the same time as they lost loved ones.

Conclusion These findings suggest that prior counselling should reduce the shock of bereavement and economic loss, which increases subsequent medical dependence. Medical professionals and community health workers can use the above factors to target in advance the family members in greatest danger of heavy grief, to intervene lest grief adversely affect their physical and psychological health after bereavement.

INTRODUCTION

Bereavement grief occasions greater use of medical and community resources, but research has not sufficiently focused on those groups most in need of support. Previous

Key messages

What is already known on this topic

► Previous research suggests that severe bereavement grief correlates with greater reliance on medical or social services, but Asian data fail to specify which bereaved cohorts are in most need of targeted interventions.

What this study adds

► Bereaved Japanese with the heaviest symptoms of grief reported greater reliance on medicines and services; this group was dominated by the unemployed losing income, women losing spouses or children and those who felt shocked by death from cancer.

How this study might affect research, practice or policy

► Healthcare workers can use these criteria to preidentify family members who will face the greatest danger of severe bereavement grief. Providing them information and psychological and logistical support may reduce adverse impacts of bereavement leading to subsequent over-reliance on medical and social services.

research shows that anywhere from 6% to 20% of bereaved people depend more on medical and social services than non-bereaved.¹ This suggests that targeted interventions to reduce or prevent prolonged complicated grief may save medical and social expenses in the long run.² Because neither personnel nor resources suffice to address every bereavement, we must target that subset of people who are most likely to face serious grief.³

Two decades ago, Parkes⁴ and Prigerson *et al*⁵ demonstrated that unexpected loss puts people at greater risk of traumatic grief. Unsurprisingly, bereavement by suicide or children's death tends to predict inconsolable long-term grief.⁶ In long-term care, where death is neither sudden nor unexpected, more positive marital relationships⁷ and more positive end-of-life caregiving⁸ correlate with longer more serious family grief after bereavement. Severe or heavy grief concerns family medicine and community

health because it increases risks for functional impairment, suicidality, psychiatric comorbidity, poor health behaviours and somatic complaints.⁹

In Japan, Miyabayashi showed that grieving women more than men displayed significantly more physical problems such as anxiety and sleeplessness even years after bereavement; sudden death exacerbated such emotional and health effects.¹⁰ Kowalski and Bondmass found self-reported physical symptoms including pain, gastrointestinal problems, medical/surgical conditions, sleep disturbances and neurological/circulatory issues.¹¹ Bereaved people, especially widows, reported psychological symptoms of depression, anxiety and loneliness, correlated with increased stress (adrenocortical activity and cortisol) and lower immunity (lymphocyte and immunoglobulin M levels).¹²

Therefore, our research question had two objectives: First, to identify the characteristics of the mourners who experience symptoms of severe grief within a year of their bereavement, and second, to ascertain whether and to what extent severe grief appears to increase Japanese bereaved reliance on medical and social services.

METHODOLOGY

Study design and data collection

A team of researchers centred in Kyoto University received Japanese federal funding to conduct nationwide surveys examining the grief, health and medical reliance of normally bereaved family members within a year of their bereavement. In contrast to DSM-5 standards that recommend professional diagnosis and treatment for severe grief showing multiple symptoms persisting for more than a year (persistent complex bereavement disorder (PCBD)),¹³ our concern was not long-term multiple persistent symptoms, PCBD nor PTSD, but rather short-term responses to deaths predictable in any ageing population, so we targeted normally bereaved people within a year of their loss.

Unlike many western nations, Japan's medical institutions retain no contact with bereaved families, so we sought the co-operation of funeral homes which retain records of bereaved families in the communities they serve. In 2018, our team initiated a pilot survey to determine what questions would most acceptably elicit clear responses from a Japanese bereaved sample.^{14,15} Based on their feedback, we improved our questionnaire format to include the variables described below. In summer of 2019, the All-Japan Funeral Co-Operation posted over 5500 questionnaires to chief mourners who had been bereaved within the past year.

Variables

The online supplemental file 1 provides an English translation of the Japanese questions discussed in this article. To divide respondents into 'heavy grievers' and 'not-so-heavy grievers' we used Japanese adaptations of Prigerson's Prolonged Grief Disorder-13 (PGD-13)¹⁶ and Pfizer's

Public Health Questionnaire-9 (PHQ-9)¹⁷ scales, with grateful permission. The Japanese PGD-13 Scale shows high internal consistency (Cronbach's alpha ranging from 0.82 to 0.93) and its translation has been widely used in Japan.¹⁸ Pfizer's Japanese PHQ-9 also shows high internal consistency (Cronbach's alpha 0.93).¹⁹ Prigerson's PGD-13 is a 13-item (5-point) scale that contains items such as, 'In the past month, how often have you felt intense emotional pain, sorrow, or pangs of grief related to the lost relationship?' with answers ranging from (1) never to (5) constantly/overwhelmingly. Pfizer's PHQ-9 (4-point) Scale contains items such as, 'I've lost interest in doing things' and 'I have no appetite, or I'm eating excessively' with answers of (1) never, (2) occasionally, (3) more than half the time and (4) almost daily. If respondents reported constant, overwhelming or daily symptoms on any item of these scales, we classified them as 'heavy grievers'. (This is neither as long term nor as stringent as DSM-5 PCBD (Diagnostic and Statistical Manual of Mental Disorders-5 Persistent Complex Bereavement Disorder) criteria that require five or more symptoms lasting over a year, which this survey did not measure.) We classified those reporting no constant, overwhelming or daily symptoms as 'not-so-heavy grievers'.

To identify characteristics of grievers, we asked demographic and socioeconomic details of the chief mourner responding to the questionnaire within a year of a death of a family member: age bracket (20s to 80s) and gender, marital status, number of cohabitants and whether they had moved (changed residences) after bereavement. We asked about the age bracket of the deceased, the respondent's relationship and emotional closeness to the deceased, the cause and location of death and whether they felt psychologically prepared for the decease.

We asked about employment and whether income had fallen or risen after bereavement. We also asked who paid for the funeral and whether that funeral expense was felt burdensome. We asked them how much their post-bereavement health conditions affected their work and their activities outside of work, on a sliding scale from 0 to 10, where 0 meant 'not at all' and 10 meant totally or overwhelmingly.

We also asked the number of times that respondents had relied on medical and social services, over the month immediately prior to responding to our questionnaire, specifically: doctor, clinic or hospital visits; pain medicines (analgesics for headaches, stomach aches, backaches, cramps, etc); daily function medicines (psychotropics such as tranquillizers, antidepressants, sleep medicines); psychiatric counselling; home helpers or social work services; legal or financial advisors; grief support groups and/or consulting family or friends on bereavement issues. We use the term 'service users' for those who relied on any of these in the past month.

Procedures and administration

The ethics statement reiterated explicitly that participation was entirely voluntary, and that total anonymity

was assured through the use of an external third-party data processing agency. The All-Japan Funeral Directors Co-Operation posted the survey in the summer of 2019 to approximately 5500 families who had used their services within the prior year. To enhance anonymity of funeral directors as well as of respondents, we did not ask geographic information nor retain postal code information.

The anonymous responses were mailed postpaid to Kyoto University, where they were numbered, boxed and mailed to a data management firm, which opened and manually transcribed them into Excel files, excluding all identifiers such as names, addresses and postal codes. The Excel files were encrypted and returned to Kyoto University for analysis. Of exactly 1100 responses returned by January 2020, 1078 (slightly less than 20%) were completed with no major omissions. The 20% response rate was better than recent nationwide surveys in the UK (13.5%)²⁰ and similar to an Australian survey (21.2%).³

Our concern was not tracking monthly grief, but rather identifying trends in medical/social service users in the year following bereavement. We estimated models comparing various age and income groups, service users and non-users, and heavy grievers and not-so-heavy grievers. Using the inclusion criterion of: 'one or more constant/overwhelming or daily symptoms on either Prigerson's PGD-13 or Pfizer's PHQ-9 scale', produced a 'heavy grief' group of 143 bereaved (13%), leaving 935 (87%) with less or no reported grief. This model proved most valid and useful for identifying bereaved family at risk and protecting community health. This ratio of constant or 'heavy' to occasional or 'not-so-heavy' grievers is comparable to that of previous surveys.³

Data preparation and preliminary analysis was conducted using SPSS V.23. Data were screened for normality, outliers, and missing data. We compared 'grievers' and 'not-so-heavy grievers' using χ^2 tests for categorical variables. We used Welch's t-tests with Bonferroni corrections to compare the two groups' average lifestyle influences and reliance on medical and social services. To conduct t-tests with effect size of 0.5 at ≤ 0.05 significance and a power of 0.9, we anticipated a need for at least 86 in each category, so with more than a thousand responses, we expected our response numbers should suffice for comparisons in each category.

RESULTS

Of 1078 respondents, exactly 700 (65%) had been bereaved for less than 6 months (shortest time 1 month) and the other 378 (35%) had been bereaved for more than 6 months. Tables show percentages of the number in each group: of 1078 in total; of 143 heavy or constant grievers and of 935 not-so-heavy/less-than-constant grievers.

Demographic commonalities of heavy grief

Bereaved respondents ranged in age from their 20s (5.8%) to their 80s–90s (3.5%); slightly more than half (50.7%) of our total sample and of our not-so-heavy griever respondents (51.5%) were in their 50s and 60s, while 22.4% of the heavy grievers clustered in their 70s. Interestingly, those above 80 years were rarer in the heavy grief group. A slightly larger number of males (51.2%) responded to our nationwide survey than females (48.7%), yet Japanese women constituted two-thirds of those (66.4% vs 33.6%) expressing heavy grief. Unmarried singles were somewhat more likely to appear in the heavy grief group (19.6% vs 13.1%), but those who lost spouses almost thrice as likely; while widow(er)s constituted 12.7% of not-so-heavy grievers, they accounted for 34.3% of heavy grievers. Heavy grief was less reported by those living with three or more other family members, while more of those living alone showed heavy grief. The results for these analyses were significant at the $p \leq 0.01$ level (see [table 1](#)).

Age at death, relationships, causes and locations of death connected to heavy grief

Overall, 57.3% of our sample reported on deaths of relatives over the age of 80 years; 'premature' death of people under 80 years was commoner in the heavy grief group. Deaths of grandparents or fathers occasioned relatively less grief than death of spouses or children. An extremely close emotional bond was commoner in the heavy grief group than the not-so-heavy group (74.6% vs 51.3%, $p=0.001$), meaning that people without 'extremely close' bonds reported fewer constant/daily symptoms. The results for these analyses were significant at the $p \leq 0.001$ level ([table 2](#)).

The most common cause of death reported in our sample was cancer (28.2%), statistically similar to Japan's 27% national average. Medically, this was followed by pulmonary (11.6% vs 10% national average), cardiovascular (11.4% vs 15% national average), stroke (5.7% vs 7% national average) and accidents (may include suicides; 1.2% vs 3% national average). Non-specific causes attributed to old age and/or 'other' accounted for 41.9% of this sample, compared with a 38% national average. None of these percentages differed significantly from national averages, although Japanese averages differ from western ones. Deaths due to cancer were significantly more common in the heavy grief group (40.6%) than in the not-so-heavy grief group (26.3%); death in elder facilities (11.6% overall) showed less grief, while death in intensive care units (ICUs) (12.6%) correlated with heavier grief at the $p \leq 0.01$ level.

Those who felt 'unready' (5.1%) or 'totally shocked' (9.9%) by the death showed significantly greater tendency to belong to the heavy grief group than those who were somewhat or well prepared. However, sudden death by accident, stroke or heart attack represented a smaller per cent of our sample than death by cancer and showed no tendency to heavy grief; it was death by cancer

Table 1 Demographic characteristics of heavy grievers in Japan

	Overall n=1078	Heavy grievers n=143	Not-so-heavy grievers n=935	P value
Respondent's age				0.003**
20s	63 (5.8%)	8 (5.6%)	55 (5.9%)	
30s	94 (8.7%)	10 (7%)	84 (9%)	
40s	205 (19.0%)	25 (17.5%)	180 (19.3%)	
50's	259 (24.0%)	38 (26.6%)	221 (23.6%)	
60s	288 (26.7%)	27 (18.9%)	261 (27.9%)	
70s	131 (12.2%)	32 (22.4%)	99 (10.6%)	
80s or 90s	38 (3.5%)	3 (2.1%)	35 (3.7%)	
Gender				≤0.001***
Male	552 (51.2%)	48 (33.6%)	504 (53.9%)	
Female	525 (48.7%)	95 (66.4%)	430 (46.0%)	
No response	1 (0.1%)	0 (0.0%)	1 (0.1%)	
Marital status				≤0.001***
Single	150 (13.9%)	28 (19.6%)	122 (13.1%)	
Widowed	167 (15.5%)	49 (34.3%)	118 (12.7%)	
Married	679 (63.0%)	53 (37.1%)	626 (67.2%)	
Divorced	72 (6.7%)	12 (8.4%)	60 (6.4%)	
Other	10 (0.9%)	1 (0.7%)	9 (0.5%)	
Cohabitants				0.003**
0 (living alone)	181 (16.8%)	36 (25.4%)	145 (15.6%)	
1	343 (31.8%)	52 (36.6%)	291 (31.3%)	
2	217 (20.1%)	29 (20.4%)	188 (20.2%)	
3	186 (17.3%)	15 (10.6%)	171 (18.4%)	
4	84 (7.8%)	8 (5.6%)	76 (8.2%)	
5	39 (3.6%)	0 (0%)	39 (4.2%)	
Living with more than 5	28 (2.6%)	3 (2.1%)	25 (2.7%)	
Moved after bereavement				0.027*
Unchanged (no move)	998 (92.6%)	125 (87.4%)	873 (93.9%)	
Moved in with family	27 (2.5%)	8 (5.6%)	19 (2%)	
Moved into a facility	4 (0.4%)	1 (0.7%)	3 (0.3%)	
Other	44 (4.1%)	9 (6.3%)	35 (3.7%)	

*p≤0.05; **p≤0.01; ***p≤0.001 using χ^2 test.

that correlated to heavy grief. In other words, families of patients with cancer felt 'unready' for their death (See [table 2](#)).

Employment and economics connected to heavy grief

Employment appeared to buffer heavy grief; those not working were twice as common in the heavy grief group (38.5%) than in the not-so-heavy grief group (18.9%). Level of income itself was not a significant factor, but sudden drop in income after bereavement connected to the higher grief group. Spouses (widows) taking primary responsibility for planning and paying for funerals more commonly showed heavier grief, while children paying for funerals did not; these analyses were significant at

the p≤0.001 level. Feeling the funeral to be a significant economic burden showed a slight but statistically small connection to heavy grief ([table 3](#)).

Connection of heavy grief to physical health, daily life, medical and social service use

Seeking a potentially more objective account of physical health, we also asked about the average number of times that members of each group relied on medical appointments, pain medicines (analgesics), daily function medicines (psychotropic tranquilizers, antidepressants, sleep medicines) and social support services. In the 'Average times used' sections of [table 4](#), the first number in each box shows the average number of uses of each service

Table 2 Relation and nature of the bereavement

	Overall n=1078	Heavy grievers n=143	Not-so-heavy grievers n=935	P value
Age of the deceased at death				≤0.001***
30s or younger	41 (3.8%)	8 (5.6%)	33 (3.6%)	
40s	36 (3.3%)	11 (7.7%)	25 (2.7%)	
50s	51 (4.7%)	12 (8.4%)	39 (4.2%)	
60s	103 (9.6%)	22 (15.4%)	81 (8.7%)	
70s	223 (20.7%)	41 (28.7%)	182 (19.6%)	
80s	358 (33.2%)	34 (23.8%)	324 (34.9%)	
90s	260 (24.1%)	15 (10.5%)	245 (26.4%)	
No/unclear response	6 (0.6%)	0 (0%)	6 (0.6%)	
Relationship to the bereaved				≤0.001***
Grandparent	177 (16.4%)	7 (5.0%)	170 (18.5%)	
Father	292 (27.1%)	27 (19.3%)	265 (28.9%)	
Mother	303 (28.1%)	41 (29.3%)	262 (28.5%)	
Spouse	167 (15.5%)	56 (40%)	111 (12.1%)	
Sibling	24 (2.2%)	2 (1.4%)	22 (2.4%)	
Child	12 (1.1%)	5 (3.6%)	7 (0.8%)	
Other	83 (7.7%)	2 (1.4%)	81 (8.8%)	
No/unclear response	20 (1.9%)	3 (2.8%)	17 (1.8%)	
Emotional closeness				≤0.001***
Extremely close	582 (54.0%)	106 (74.6%)	476 (51.3%)	
Very close	252 (23.4%)	24 (16.9%)	228 (24.6%)	
Fairly close	189 (17.5%)	8 (5.6%)	181 (19.5%)	
Somewhat removed	47 (4.4%)	4 (2.8%)	43 (4.6%)	
No/unclear response	8 (0.7%)	1 (0.7%)	7 (0.7%)	
Cause of death (%=Japan national average)				≤0.001***
Accident (3%)	13 (1.2%)	3 (2.1%)	10 (1.1%)	
Cardiovascular (15%)	121 (11.4%)	11 (7.7%)	112 (12.0%)	
Stroke (7%)	61 (5.7%)	7 (4.9%)	54 (5.8%)	
Pneumonia/pulmonary (10%)	125 (11.6%)	11 (7.7%)	114 (12.2%)	
Cancer (27%)	304 (28.2%)	58 (40.6%)	246 (26.3%)	
Senility/old age (13%)	264 (24.5%)	21 (14.7%)	243 (26.0%)	
Other (25%)	188 (17.4%)	32 (22.4%)	156 (16.7%)	
Place of decease (%=Japan national average)				0.007**
ICU	136 (12.6%)	26 (18.2%)	110 (11.8%)	
Hospital ward (ICU+hospital ward=80%)	624 (57.9%)	84 (58.7%)	540 (57.8%)	
Elder facility (5%)	125 (11.6%)	5 (3.5%)	120 (12.8%)	
Own home (13%)	161 (14.9%)	24 (16.8%)	137 (14.7%)	
Other (2%)	20 (1.9%)	3 (2.1%)	17 (1.8%)	
Unspecified	12 (1.1%)	1 (0.7%)	11 (1.2%)	
Psychological preparedness				≤0.001***
Well prepared	425 (39.4%)	35 (24.5%)	390 (41.7%)	
Somewhat prepared	479 (44.4%)	55 (38.5%)	424 (45.3%)	

Continued

Table 2 Continued

	Overall n=1078	Heavy grieviers n=143	Not-so-heavy grieviers n=935	P value
Unready to accept it	55 (5.1%)	23 (16.1%)	32 (3.4%)	
Totally shocked	107 (9.9%)	28 (19.6%)	79 (8.4%)	
No/unclear response	12 (1.1%)	2 (1.4%)	10 (1.1%)	

Japan national averages for causes and locations of death are shown in parentheses for the sake of comparison. Latest published statistics are from 2019: <https://www.mhlw.go.jp/toukei/list/saisyuiryo.html>.

p≤0.01; *p≤0.001 using χ^2 test.

ICU, intensive care unit.

per month, for the number of people reporting such use (shown in square brackets); after the square brackets is shown their per cent within the overall, heavy or not-so-heavy grief category.

Heavy grieviers relied more frequently on medical and social services than those with milder grief. Because the number of users ran in the dozens rather than the hundreds, we could not prove statistical significance at the p≤0.05 level for these categories, but their raw comparisons reveal strikingly different tendencies. Overall, 23.8%

of heavy grieviers (34) reported using pain medicines on average 9.01 times per month, compared with 9.9% of non-heavy grieviers who reported using pain medicines on average 6.74 times per month. Overall, 11.9% of heavy grieviers (n=17) reported using 'daily function medicines' at an average of 15.56 times per month (four times a week), as opposed to only 2.8% (n=26) of non-heavy grieviers reporting such medicines at an average of 8.33 times per month (twice a week). The frequencies per month of hospital and psychiatric appointments

Table 3 Heavy grieviers' income and funeral expenses

	Overall n=1078	Heavy grieviers n=143	Not-so-heavy grieviers n=935	P value
Employment				≤0.001***
Employed full time	545 (50.6%)	56 (39.2%)	489 (52.3%)	
Self-employed	154 (14.3%)	12 (8.4%)	142 (15.2%)	
Employed part-time	147 (13.6%)	20 (14.0%)	127 (13.6%)	
Not working	232 (20.9%)	55 (38.5%)	177 (18.9%)	
Income since death				≤0.001***
Income rose after death	19 (1.8%)	3 (2.1%)	16 (1.7%)	
Unchanged since death	673 (62.4%)	69 (50.4%)	604 (64.6%)	
Income declined since death	284 (26.3%)	48 (33.6%)	236 (25.2%)	
Income drastically declined since death	47 (4.4%)	17 (11.9%)	30 (3.2%)	
No/unclear response	55 (5.1%)	6 (4.2%)	49 (5.2%)	
Primary payer for the funeral				≤0.001***
The deceased	220 (20.4%)	34 (23.8%)	186 (19.9%)	
The deceased's spouse	297 (27.6%)	54 (37.8%)	243 (26.0%)	
The deceased's child	399 (37.0%)	30 (21.0%)	369 (39.5%)	
Spouse and child together	63 (5.8%)	8 (5.6%)	55 (5.9%)	
Other family	80 (7.4%)	15 (10.5%)	65 (7.0%)	
No/unclear response	19 (1.8%)	2 (1.4%)	17 (1.8%)	
Economic burden of the funeral				0.05*
No burden	401 (37.2%)	56 (39.2%)	345 (36.9%)	
Somewhat of a burden	508 (47.1%)	58 (40.6%)	450 (48.1%)	
Significant burden	110 (10.2%)	20 (14.0%)	90 (9.6%)	
Debilitating burden	22 (2.0%)	6 (4.2%)	16 (1.7%)	
No/unclear response	37 (3.4%)	3 (2.1%)	34 (3.6%)	

*p≤0.05; ***p≤0.001 using χ^2 test.

Table 4 Frequencies of medical/social service use

Number of times used in the past month	Average times used [n=users] (% of total)	Average times used [n=users] (% of heavy grievers)	Average times used [n=users] (% of not-so-heavy grievers)	P value (Welch's t-test)
Doctor, clinic or hospital appointments	2.31 [204] (18.9%)	2.27 [47] (32.9%)	2.32 [157] (16.8%)	0.885
Pain medicines (analgesics for headaches, stomach aches, backaches, cramps, etc)	7.35 [127] (11.8%)	9.01 [34] (23.8%)	6.74 [93] (9.9%)	0.326
Daily function medicine (tranquillizers, antidepressants, sleep medicines, etc)	11.19 [43] (4.0%)	15.56 [17] (11.9%)	8.33 [26] (2.8%)	0.065
Psychiatric counselling (face to face)	1.19 [16] (1.5%)	0.86 [7] (4.9%)	1.44 [9] (1.0%)	0.224
Home helpers, care managers, social work services	3.60 [15] (1.4%)	7.25 [4] (2.8%)	2.27 [11] (1.2%)	0.396
Legal or financial advisors	2.40 [144] (13.4%)	2.95 [22] (15.4%)	2.29 [122] (13.0%)	0.158
Grief support groups	3.12 [125] (11.6%)	4.27 [24] (16.8%)	2.84 [101] (10.8%)	0.410
Consulting family, friends, neighbours, colleagues	3.73 [334] (31.0%)	4.97 [59] (41.3%)	3.47 [275] (29.4%)	.049*

Medical/social service use is answered by number of times used per month. Averages show mean averages for each group. Square brackets enclose the number of respondents reporting one or more uses of each service in the past month. Percentages following square brackets show the percentage of people in each group who used that service.

*p<0.05 using Welch's t-test with Bonferroni correction.

were similar for all bereaved, but the percentage of heavy grievers turning to hospital and psychiatric appointments was two to five times greater than that of lighter grievers. In other words, heavy grievers seem more likely than non-heavy grievers to seek medical and psychiatric support services, but the frequency of such appointments (once a fortnight for hospital/medical; once in 4 weeks for psychiatric) was unchanged by the severity of symptoms reported.

Heavy grievers tended to rely on grief support groups more frequently than did lighter grievers, but all bereaved relied on consulting family, friends, neighbours and colleagues more than on any other services. Overall, 41.3% of heavy grievers reported consulting family, friends, neighbours and colleagues an average of 4.97 times per month, while not-so-heavy grievers reported similar consulting only 3.47 times per month. Statistically speaking, this social capital in the community appears at

least as important to mourners' health as their visits to doctors and pharmacies.

Table 5 shows that 51.7% (n=74) of heavy grievers reported using medical and/or social support in a month after bereavement, compared with only 29.1% (n=272) of not-so-heavy grievers. The last two lines of table 5 show respondents' subjective scoring of how their physical health adversely affected work or daily life; heavy grievers reported far more influence. Roughly half (72=50.3%) of 143 heavy grievers reported their daily or constant symptoms interfering with work and/or daily life, compared with less than one-eighth (112=12.0%) of the 935 non-heavy grievers. Not only was this percentage four times higher but their average scoring of adverse effects was also three times higher than the non-heavy group. Overall, 72 out of 74 heavy grievers not only used more services but also reported more serious effects on work and daily life, while most of the 272 not-so-heavy grievers who did use

Table 5 Effects of bereavement on service use, work and daily life

Medical/social service use	Overall n=1078	Heavy grievers n=143	Not-so-heavy grievers n=935	P value (χ^2)
Used medical or social support in past month (other than friends and family)	346 (32.1%)	74 (51.7%)	272 (29.1%)	≤0.001***
No medical or social support in the past month (other than friends and family)	732 (67.9%)	69 (48.3%)	663 (70.9%)	≤0.001***
Effect (higher score shows greater effect)	Total mean score	Heavy grievers' mean score	Not-so-heavy grievers mean score	P (Welch's t-test)
How seriously has your physical health influenced your work	1.49	3.89 (SD 3.47)	1.22 (SD 2.04)	≤0.001***
How seriously has your physical health influenced daily life outside work	1.86	4.38 (SD 3.19)	1.47 (SD 2.20)	≤0.001***

***p<0.001 using χ^2 test for service use; Bonferroni-corrected Welch's t-test for influence of health.

services did not report serious influence on work or daily life. The results for this analysis were significant at the $p \leq 0.001$ level. These admittedly subjective scores suggest that grief may engender worse ‘presenteeism’ (meaning the inability to focus on tasks to be performed) than absenteeism from work alone.²¹

DISCUSSION

Our findings support the consensus that heavy grief adversely affects daily work and daily life, and more importantly that heavy grievers tend to rely more often on medical and pharmaceutical services. This implies the desirability of targeted interventions to support bereaved psychological and physical health, as well as to lessen the burden on the community medical welfare system. The bereaved most in need of support are: widows, the unemployed or those with sudden loss of income and those bereaved by cancer or in ICUs.

Classical reviews such as by Stroebe *et al*²² and Stelle and Uchida²³ concluded that widows’ superior community networks enable them to cope with bereavement better than widowers, but recent research suggests that elder widows have more difficulty adapting to changed situations.²⁴ Our Japan data substantiates the more recent findings that widows face greater risk than widowers.²⁵ Elderly Japanese widows are more likely to rely on drugs and doctors’ appointments after bereavement, but we could not document elevated cardiovascular risks. A recent study in Norway also found elderly females with low socio-economic status associated with severe grief and higher dependency on health services.²³ Along with the death of a major provider or bread-winner, sudden loss of income was more frequent among heavy grievers. The need to plan and pay for the funeral—especially if a debilitating fiscal burden—further aggravated the tendency to serious grief.²⁶

‘Unpreparedness’ is often associated with sudden death, accidents, suicide or homicide, but in our sample, it was most closely associated with cancer, the most common cause of death in Japan. In Japan, early cancer detection and treatment are the rule; physicians inform patients and families about cancer well before months of treatments begin. Nevertheless, bereaved Japanese in our nationwide sample reported shock at death to cancer, significantly exacerbating their grief. Deaths of people in elder care homes occasioned very little severe grief—perhaps because they were more anticipated—whereas deaths in ICUs associated with heavy grief. Prolonged or persistent bereavement grief increases reliance on medical and social services, and our research tends to bear this out for our Japanese sample.

The next important step is targeting interventions for those at greatest risk of relying on public services, to improve their health and avoid medical or pharmaceutical dependence. Social or medical welfare workers can use widowhood, likely loss of employment and/or income and cancer

or ICU death as warning signs of the need for psychological and possibly financial postbereavement guidance.

Limitations

In the absence of medical/church records of bereavement, we had to rely on funeral directors to distribute our surveys. This surely excluded a minority too poor to pay for proper funerals; people harbouring residual regret or ambivalence about the funerals also may have responded less. Limitations of our research included the small percentage of respondents (20%); although the socio-economic data in our 1078 completed questionnaires are close to national averages, we do not have other national data on postbereavement service use. No postal survey can readily derive responses from suicides, alcoholics, abusive or clinically depressed clients; the fact that mourners returned our questionnaire at all indicates that they were in some semblance of functioning health. Our target was those not bereaved with severe PCBD or PTSD over several years or those in ICUs for cardiovascular events, but rather more ordinary mourners who reported daily but overwhelming symptoms at subclinical levels. Further family medical costs due to reduced social interaction and loneliness, to suicide attempts, or to decline in physical activity and consequent loss of muscle tone go beyond the scope of this study but deserve research. The many variables in this survey call out for more rigorous logistic regression analysis with statistical corrections for multiple variables; this report is a mere introduction of the rich data gathered to date.

CONCLUSIONS

The costs posed to family medicine and community health by increasing bereavements in naturally ageing populations (and pandemics) demand we address issues of bereaved health. Our study shows that 13% of Japanese bereaved in the previous year report one or more maximum psychological or physical levels of grief; half of these reported adverse effects on their health or daily lives. Women, survivors losing a husband or child, those losing income after a death and those bereaved by cancer or in ICUs seem most likely to show daily or continuous symptoms of grief and rely on medical, pharmacy and social services. We discovered that psychological unpreparedness for death from cancer is a particular risk factor in Japan, suggesting that doctors and social workers better prepare families for worst-case scenarios.

Severe bereavement grief poses costs to community health, not only in mourners’ higher medical and pharmaceutical use but also in terms of their absenteeism and ‘presenteeism’—their inability to focus on daily tasks at hand. Targeted interventions may reduce costs of such bereaved physical decline and medical dependency, but no data were previously available to identify the bereaved Japanese whose overwhelming or daily symptoms of grief connect to increased use of medical and social services. The percentage of heavy grievers turning to these services was higher than the percentage of not-so-heavy grievers; they used more medicines more often than those not

reporting heavy grief. The higher likelihood of service use and higher frequency of pharmaceutical use raise concern not only as barometers of bereaved health but also because they tax Japan's already overburdened public medical system. Additional costs of targeting and preparing those family members in greatest danger of bereavement grief might be at least partly compensated or recouped by reducing losses due to absenteeism and presenteeism at work and reducing their daily reliance on medicines and medical services. Our findings suggest the need for co-operation of family physicians and community health workers in the process of foreseeing and reducing the shock of predictable bereavement.

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Ethics approval This study involves human participants. The survey was approved by Kyoto University Psychology Ethics Committee, #30-P-14, prior to conducting the survey. Participants gave informed consent to participate in the study before taking part.

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English Back-Translation of Items used on Japanese T1 Questionnaire

I About you

Your age (by decade)

Your gender

Your marital status

Number of people living with you in your household

Have you moved recently? (No/moved with family/moved into a facility/other)

II About the deceased

Age of the deceased at death (10-year intervals)

Your relation to the deceased

How close did you feel to the deceased

Cause of their death

Place of their death

How psychologically prepared were you for their death

(Well prepared/somewhat/unready/totally shocked)

III About work and income

Your work situation: (Full time/self-employed/part-time/on leave/home & family)

Annual income: (less than 2 million/2-4 million/4-8 million/over 8 million yen)

Change in income since bereavement (rose/unchanged/declined/drastically down)

Who primarily paid for the funeral?

Did funeral expenses burden you? (no/somewhat/significantly/debilitatingly)

How seriously has your physical health influenced your work (0=none to 10=extreme)

How seriously has your physical health influenced life outside of work (as above 1-10)

IV In the past month, how many times did you use: (Used _____ times a month:)

1 Medical/hospital appointments

2 Pain medicines (headaches, stomach aches, backaches, cramps, etc.)

3 Daily function medicines (tranquillizers, antidepressants, sleep medicines, etc.)

4 Psychiatric/Psychological counseling (face to face)

5 Home helpers, care managers, social work services

- 6 Financial, legal, or welfare advisors
- 7 Grief support groups
- 8 Consulting family, friends, neighbors, colleagues

(Heavy-Grief Inclusion/Exclusion Criteria):

In the past month, how often (never/rarely/sometimes/frequently/constantly) have you:

1. felt yourself longing or yearning for the person you lost
2. felt intense emotional pain, sorrow, or pangs of grief
3. sensed the voice or presence of the departed
4. tried to avoid reminders that the person you lost is gone
5. felt stunned, shocked, or dazed by your loss
6. felt confused about your role in life, or that a part of yourself has died
7. had trouble accepting the loss
8. found it hard for you to trust others
9. felt bitter about the loss
10. felt it hard to move on (e.g., make new friends, pursue new interests)
11. felt emotionally numb
12. felt life unfulfilling, empty, or meaningless
13. cut down on time spent on socializing, work, or other important functions

How often (never/occasionally/more than half the time/almost daily) have you:

1. felt you had lost interest or pleasure in doing things any more
2. felt down, depressed, or hopeless
3. had trouble sleeping, or felt like sleeping too much
4. felt exhausted, lacking energy to do things
5. lost your appetite, or conversely eating excessively
6. felt that you were worthless, a failure, or to blame for something
7. had trouble concentrating on things, such as reading or watching TV
8. moved/spoken unusually slowly, or being unusually fidgety/restless
9. thought you should have died, or should attack or harm yourself