Spousal depression, anxiety, and suicide after myocardial infarction

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Aims
Death of a spouse from acute myocardial infarction (AMI) presents hardship, yet few studies have investigated the psychological consequences of fatal and non-fatal AMI on spouses.

Methods and results
Several Danish national registries were linked to identify individuals whose spouses had a fatal or non-fatal AMI. Married patients with fatal or non-fatal AMI (1997–2008) were matched with their counterparts dying or hospitalized with a non-AMI cause; incident use of antidepressants and benzodiazepines, incident depression care, and suicides were compared pre- and post-event using Poisson models. Overall, 16,506 spouses of individuals dying of AMI were matched with 49,518 spouses of individuals dying of a non-AMI cause. Similarly, 44,566 spouses of individuals with a non-fatal AMI were matched with 131,563 spouses of individuals with a non-fatal, non-AMI hospitalization. Those whose spouse died of AMI (compared with a non-AMI cause) had increased antidepressant and benzodiazepine use [peak incidence rate ratio (IRR) 5.7 vs. 3.3, and 46.4 vs. 13.0, respectively; \( P < 0.001 \)]. Those whose spouse had a non-fatal AMI (compared with a non-AMI hospitalization) had increased risk for antidepressant and benzodiazepine initiation (IRR 1.5 vs. 1.1, and 6.7 vs. 1.3, respectively, \( P < 0.001 \)). Spouses of fatal AMI patients also had an increased risk of depression and suicide. Male individuals whose spouse had a fatal or non-fatal AMI had a relatively higher increased risk of depression than female individuals.

Conclusion
Spouses of those who experience AMIs—both fatal and non-fatal—are at elevated risk for psychological consequences; therefore, the care needs of AMI patients and their spouses need to be considered.

Keywords
Acute myocardial infarction • Spousal psychological consequences

Introduction
More than 7 million individuals across the world experience an acute myocardial infarction (AMI) annually,1 with a substantial number of these being fatal (~16% within 30 days).2 Previous work has shown that 18% of patients with an AMI are at risk for developing major depressive syndromes, whereas up to half experience minor or major depression post-AMI.3–5 Yet an AMI may also be a life-changing event for the patient’s spouse. Although many have seen this anecdotally, there have been few systematic studies of the impact of AMI on patients’ spouses on a national scale. Studies of bereavement suggest that losing a spouse increases the risk of rare events such as death,6,7 suicide,8,9 and also myocardial infarction,10 yet few studies have examined the effect of both a fatal and non-fatal unexpected major health event on important and prevalent outcomes such as depression, anxiety, and suicide as measures of post-traumatic stress syndrome.11 Bereavement literature is based on the event of losing a spouse,11 assuming that this effect applies to all types of fatal events and only fatal events. Yet the definition of bereavement may have to be expanded to include non-fatal events, and a better understanding of a non-fatal AMI’s effect on the spouse may support enhanced surveillance of adverse spousal psychological consequences.

Linking several complete nationwide registries in Denmark, we sought out to (i) examine the incidence of depression, antidepressant medication use, benzodiazepine medication use, and
suicide among spouses of patients with fatal and non-fatal AMI; (2) compare the risk of depression, antidepressant use, benzodiazepine use, and suicide between spouses of patients with incident AMI vs. non-AMI events and fatal vs. non-fatal events; and (3) examine age and gender differences in the psychological after-effects among spouses.

### Methods

#### Data sources and study design

The Danish National Health Service provides universal tax-supported health care, guaranteeing access to general practitioners and hospitals for all Danish citizens. Prescribed medications are partially reimbursed by the government financed system. Complete linkage of all administrative registries at the individual level is possible in Denmark using a unique personal identifier assigned to all Danish citizens at birth and to residents upon immigration. For this study, we obtained information on all Danish residents over the age of 9 years from 1 January 1997 to 31 December 2008 (4.6 million individuals). The Danish registries include information on sociodemographic characteristics, income, education level, hospitalizations, and out-patient visits with diagnoses, causes of death, all prescribed medications, and also whether the individual is married (and if so, when and to whom [via the National Civil Status Registry]). Diagnostic information from hospital admissions and outpatient visits are coded using the International Classification of Diseases, Tenth Revision (ICD-10) and drugs were grouped according to Anatomical Therapeutic Chemical (ATC) codes. The data hold information on all claimed prescriptions in Denmark since 1995, ensuring complete data on date of dispensing, strength of the tablets, and number of pills dispensed. We identified comorbidities one year prior to the index event (Table 1) using validated definitions. Concomitant pharmacotherapy was assessed 6 months prior to the date of the index event. Average 5-year family income prior to the event was calculated and summarized in quartiles.

#### Study cohorts

We studied spouses of patients with either a first-time fatal or non-fatal AMI and compared these with spouses of patients with non-AMI fatal and non-fatal events. We categorized fatal events (by primary cause of death) into two groups: (i) fatal AMI (ICD-10 codes I21-I22 as the primary diagnosis on the death certificate) with no prior history of AMI; and (ii) all other fatal non-AMI events. The fatal AMI group was then matched by age, gender, and calendar year to spouses of the fatal non-AMI group using the Greedy match algorithm in a 1:3 ratio. Only matched controls were included in the

### Table 1  Baseline characteristics of spouses according to the event of the patient experiencing the event

<table>
<thead>
<tr>
<th></th>
<th>Fatal events</th>
<th>Non-fatal events</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fatal AMI</td>
<td>Fatal non-AMI event</td>
</tr>
<tr>
<td><strong>n</strong></td>
<td>16 506</td>
<td>49 518</td>
</tr>
<tr>
<td><strong>Median age (IQR), years</strong></td>
<td>72.5 (64.1–79.4)</td>
<td>72.5 (64.1–79.4)</td>
</tr>
<tr>
<td><strong>Women, %</strong></td>
<td>76.5</td>
<td>76.5</td>
</tr>
<tr>
<td><strong>History of (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVD</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Malignancy</td>
<td>1.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Previous MI</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>COPD</td>
<td>1.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>1.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Heart failure</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Medication use within 6 months of event</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta-blockers</td>
<td>8.4</td>
<td>9.1</td>
</tr>
<tr>
<td>Diuretics</td>
<td>16.2</td>
<td>16.4</td>
</tr>
<tr>
<td>ARBs</td>
<td>11.1</td>
<td>11.7</td>
</tr>
<tr>
<td>Lipid-lowering drugs</td>
<td>5.5</td>
<td>6.6</td>
</tr>
<tr>
<td>Glucose-lowering drugs</td>
<td>4.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>7.2</td>
<td>8.2</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Anxiolytics or sedatives</td>
<td>14.7</td>
<td>18.2</td>
</tr>
<tr>
<td><strong>Average 5-year family income prior to event, % in quartiles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1 (lowest)</td>
<td>43.7</td>
<td>39.4</td>
</tr>
<tr>
<td>Q4 (highest)</td>
<td>10.5</td>
<td>12.5</td>
</tr>
</tbody>
</table>

AMI, acute myocardial infarction; ARB, angiotensin receptor blocker; CCS, Charlson comorbidity score; COPD, chronic obstructive pulmonary disease; CVD, cerebrovascular disease; MI, myocardial infarction.

*Fatal non-AMI events are defined as all deaths not attributable to AMI.*

*Non-fatal non-AMI events are defined as all hospital admissions not attributable to AMI.*
study and the case-group (fatal AMI) was preserved as originally identified. We likewise categorized non-fatal hospitalizations (survived to discharge) according to: (i) first-time non-fatal AMI (ICD-10 code I21-I22 as the primary or secondary diagnosis code on discharge); and (ii) all other non-fatal non-AMI events; groups were similarly matched in a 1:3 ratio by age, gender, and calendar year. For purposes of sensitivity analyses, we also stratified the control non-AMI event groups according to broad diagnostic groups (i.e. cancer, other cardiovascular causes, respiratory disease, gastrointestinal disease, Alzheimer’s disease, and other causes).

The National Civil Status Registry was queried to see if the patients were married at the time of the event and those who were not married, were excluded. The date of the event was used as the index date and the patients’ spouses were then included in this study for follow-up.

Outcomes
The following outcome measures of psychological effects were studied among spouses of patients after the initial event: (i) incident use of antidepressant medications (ATC code N06A including all types of antidepressants); (ii) incident use of benzodiazepines (ATC code N05BA); (iii) incident hospital system contact (hospital admission or an ambulatory visit) for depression (ICD-10 codes F20.4, F31.3, F31.4, F31.5, F34.1, F34.2, F41.2, and F43.2); and (4) suicide (ICD-10 codes X60-X84 as primary code on death certificate).

Statistical analysis
We used the Kruskal–Wallis test for continuous variables and \( \chi^2 \) tests for categorical variables to test for differences between groups. Using the Poisson regression, we estimated the incidence rate as number of incident events per 1000 person-years of each outcome before and after the index date for each study cohort. Patients were followed until occurrence of outcome (incident use, analysed separately), end of follow-up period (1 year after event), death, or death of spouse (for non-fatal event groups). For antidepressant medications and benzodiazepines, we estimated the incident use rate in the year prior to the event, year after the event, and monthly in the latter. This was done similarly, but in 3-month increments post-event for the depression outcome in order to maximize power. Poisson regression modeling was then used to compare the patient-level incidence rate ratio (IRR) before the event (referred) and after the event, within study cohorts. Therefore, patients are used as their own controls in the model for calculating changes in incidence of outcomes pre- and post-event. We refer to the comparison of 1 year prior and 1 year subsequent to events as the ‘overall IRR’. To avoid excessive testing, we only tested for interactions corresponding to a difference in overall IRR, among study cohorts and categories of gender and age (divided below and above the median age). A two-sided \( P \) value of <0.05 was considered statistically significant. All analyses were performed using the SAS software package (SAS 9.2, SAS Institute, Cary, NC, USA).

Results
A total of 128,932 patients with a first-time AMI between 1997 and 2008 were identified (28,833 fatal and 100,099 non-fatal), of whom 61,072 (47%) were married and eligible for our study. We identified 16,506 spouses of patients who died of an AMI and these were matched with 49,518 spouses of patients who died of a non-AMI cause. We further identified 44,566 spouses of patients with a non-fatal first-time AMI matched to 131,564 spouses of patients with a non-fatal, non-AMI event. Baseline characteristics for the surviving spouses according to groups are shown in Table 1. Spouse characteristics and concurrent therapy use were well balanced between the fatal AMI group and the non-fatal AMI event groups, and between the non-fatal AMI and the non-fatal non-AMI event groups.

Antidepressant use
Incident use of antidepressant medication was stable over our study period ranging from the lowest percentage of 2.0% of patients in 2000 to the highest of 3.7% in 2009. Prevalent antidepressant treatment increased from 7.0 to 12.6% during our study period. The rates of incident antidepressant use before and after the index spouse event are shown in Figure 1A and the corresponding incidence rate ratios for pre-post effects are shown in Figure 1B. The exact number of events and calculated IRRs for all groups are shown in Supplementary material online, Table S1. Among spouses of patients with a fatal event, in the year prior to the event, overall incidence of antidepressant use was lower for the AMI group compared with the non-AMI group (27.0, 95% confidence interval [CI] 24.6–29.6 vs. 34.5, 95% CI 32.9–36.2 events per 1000 person-years). For the fatal AMI group, the incidence of antidepressant medication use was significantly higher following the event (overall IRR of 3.30, 95% CI 2.97–3.68); with the greatest difference at 2 months (IRR 5.72, 95% CI 4.85–6.74) and the smallest difference in incidence after 12 months (IRR 2.20, 95% CI 1.71–2.82). The incidence declined slowly and steadily over the course of the subsequent year after event. Similarly, incidence was increased following a fatal non-AMI event, although the magnitude of change was significantly less (overall IRR 2.21, 95% CI 2.08–2.34, \( P \) for interaction <0.0001).

Figure 1C and D shows the incidence rates for antidepressant use and the corresponding IRRs for non-fatal event groups, respectively. The pre-event incidence rates in subjects whose spouse subsequently developed non-fatal AMI compared with those who subsequently experienced a non-fatal non-AMI hospitalization differed minimally, though significantly (21.9, 95% CI 20.5–23.3 vs. 18.9, 95% CI 18.2–19.7 events per 1000 person years). When we compared the year before the event with the entire year after, we saw a significant effect in the non-fatal AMI group with an overall IRR of 1.17, 95% CI 1.07–1.28; whereas there was no significant effect in the non-fatal, non-AMI event group (overall IRR 1.04, 95% CI 0.98–1.09, \( P \) for interaction 0.02). The overall effect in the non-fatal AMI group was significantly smaller than for the fatal-AMI group (\( P \) for interaction <0.0001). Seven months after the non-fatal AMI, the incidence rate of antidepressant use returned to the pre-event level and remained there thereafter.

Benzodiazepine use
For incident benzodiazepine use, the incidence rates and corresponding IRRs are illustrated in Figure 2 and shown in Supplementary material online, Table S2. Relative to the year before we saw a high incident use of benzodiazepines in the month after the event for the fatal AMI group (IRR 46.4, 95% CI 42.2–50.9), the fatal non-AMI event group (IRR 13.0, 95% CI 12.4–13.6), and the
non-fatal AMI group (IRR 6.7, 95% CI 6.1–7.4); however, this was only borderline statistically significant and of a smaller magnitude in the non-fatal non-AMI event group (IRR 1.3, 95% CI 1.1–1.5). In the fatal AMI and the non-fatal AMI groups, the incident benzodiazepine use returned to the pre-event level after 5 months, whereas this was evident after one month in the control groups. Among incident benzodiazepine users in the 3 months post-event period; 2.0% of people in the fatal AMI group were still taking benzodiazepines at the end of the year (9–12 months after event); 1.0% in the fatal non-AMI event group, 0.3% in the non-fatal AMI group; and 0.08% in the non-AMI non-fatal event group.

**Risk for depression and suicide**

Table 2 shows the IRRs for differences between incidence of a health care system visit for depression before and after the event. Overall, the incidence of depression was significantly higher after the event in the fatal AMI group and in the fatal non-AMI group (pre–post \(P < 0.0001\)). The proportion of spouses who committed suicide in the year after the event are illustrated in Figure 3. Although rates were generally low, those who lost a spouse to a fatal AMI tended to be more likely to commit suicide than those losing a spouse to another cause (0.24 vs. 0.17%, \(P=0.07\)). These percentages were lower in the non-fatal groups, but significantly higher in the non-fatal AMI group compared with the non-AMI non-fatal event group (0.06% vs. 0.01%, \(P < 0.0001\)).

**Gender and age differences**

Figure 4 shows the overall results according to gender and median age for the fatal and non-fatal AMI groups for incident use of antidepressants (Figure 4A), benzodiazepines (Figure 4B), and incident contact to the hospital system for depression (Figure 4C). The results showed that overall, men tended to have a higher increment in incidence rate of all outcomes relative to women. In the fatal AMI group, younger (<median age) people had a higher IRR for incident antidepressant use (\(P\) for interaction 0.002) and benzodiazepine use (\(P\) for interaction <0.0001), whereas older individuals had a higher IRR for incident contact to the hospital system for depression (\(P\) for interaction 0.04). For incident benzodiazepine use and for contact to the hospital system for
Figure 2  Incidence rates of benzodiazepine medication use. Incidence rates according to spouse’s type of event (A, fatal events and C, non-fatal events) and incidence rate ratios (B, fatal events and D, non-fatal events). The incident rate in the year prior to event per group is shown separately from the post-period. \( P \) for interaction; overall difference in annual IRR was <0.0001 for both the fatal events and for the non-fatal events. IRR, incidence rate ratio; MI, myocardial infarction.

Table 2  Incidence rate ratios for depression according to group

<table>
<thead>
<tr>
<th></th>
<th>Fatal events*</th>
<th>Non-fatal events†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fatal AMI IRR (95% CI)</td>
<td>Fatal non-AMI event IRR (95% CI)</td>
</tr>
<tr>
<td>1 year prior to event</td>
<td>1.00 (reference)</td>
<td>1.00 (reference)</td>
</tr>
<tr>
<td>1 quarter after event</td>
<td>3.74 (2.48–5.65)</td>
<td>2.43 (1.85–3.20)</td>
</tr>
<tr>
<td>2 quarters after event</td>
<td>2.89 (1.86–4.50)</td>
<td>2.87 (2.21–3.73)</td>
</tr>
<tr>
<td>3 quarters after event</td>
<td>2.72 (1.74–4.27)</td>
<td>2.16 (1.63–2.88)</td>
</tr>
<tr>
<td>4 quarters after event</td>
<td>1.79 (1.07–2.99)</td>
<td>1.84 (1.36–2.48)</td>
</tr>
<tr>
<td>Entire year after event vs. year before</td>
<td>2.79 (2.00–3.89)</td>
<td>2.33 (1.90–2.85)</td>
</tr>
</tbody>
</table>

CI, confidence interval; IRR, incidence rate ratio; All other abbreviations can be found in Table 1.

*\( P \) for interaction; difference in overall IRR between fatal AMI and fatal non-AMI group was 0.4.
†\( P \) for interaction; difference in overall IRR between non-fatal AMI and non-fatal non-AMI group was 0.5.
depression, we observed no difference between men and women and young and old in the non-fatal AMI group (P for interaction 0.3 and 0.8, respectively). For suicide, we observed an overall difference according to gender; men had an overall higher rate of suicide compared with women in the year after the event (0.14% vs. 0.05%, P < 0.0001 for difference).

Additional analysis
To test for differences in the pre–post effect within the non-AMI control groups and for purposes of sensitivity analyses, we examined these groups according to broad diagnostic categories (i.e. cancer, other cardiovascular, respiratory, gastrointestinal, Alzheimer’s disease, and other causes). Cancer comprised 39.7% of the fatal non-AMI control group and other cardiovascular causes comprised 26.2%. Overall, the AMI groups were consistently associated with significantly larger pre–post effects than other diagnostic groups; and these were, in turn, associated with a similar and lesser increment in risk of all outcomes. Figure 5 shows the annual pre–post effect in the fatal non-AMI control group according to the overall disease classification for use of antidepressants. Similarly, Supplementary material online, Figure S1 shows the results for the non-fatal non-AMI group. Hospitalizations for cancer and AMI were associated with a significant pre–post effect.

Discussion
There are five main findings from this study regarding the psychological morbidity to the spouses of those with an AMI. First, we found that spouses of those experiencing AMIs (both fatal and non-fatal) exhibit significantly higher risk of developing depression and requiring initiation of antidepressant medications compared with spouses of non-AMI patients. Second, spousal suicide was more common among the groups with fatal events, but also higher in the non-fatal AMI group compared with the non-fatal, non-AMI group. Third, we observed a substantial use of benzodiazepines in the period just after the event, yet few people were still using benzodiazepines a year after the event. Fourth, male spouses were associated with greater risk of incident depression requiring antidepressant and benzodiazepine treatment, relative to female spouses. Finally, the pre–post effect of a fatal AMI on our measures of psychological changes was significantly bigger than for other fatal control conditions whereas Alzheimer’s disease was not associated with a change in depression.

Although prior studies in selected populations have found that the loss of a spouse can affect an individual’s health and life expectancy, to our knowledge, this is the first study to examine this effect for AMI relative to non-AMI patients and for non-fatal as well as fatal events. Our results suggest that the outcome of the bereaved individual varies based on the type of spousal mortality and the type of the event. Specifically, those dying of an AMI often die suddenly and unexpectedly. This acute loss appears to have a larger psychological impact on the spouse.
than a loss due to other causes—in line with theoretical considerations comparing bereavement with post-traumatic stress disorder.11 This was also the case for non-fatal events and is consistent with speculations regarding anticipatory grief for more predictable causes of death.6,11 Similarly, Schulz and Beach18 examined 217 family caregivers to patients dying from dementia and found that the caregivers reported considerable relief after the death of the patient. We found a similar relationship in our study on a national scale using hard endpoints. A less marked but significant relationship was seen for risk of death for the surviving spouse after the death of his or her spouse.6,7 Importantly, these studies compared the event of losing a spouse for various causes with not losing a spouse and thereby limiting them to the question of death per se.

Our results also demonstrate an increase in psychiatric pharmacotherapy utilization among spouses after a first-time non-fatal AMI. We observed a smaller pre–post-change in outcomes in the non-fatal AMI group relative to the fatal AMI group, yet the absolute number of affected individuals was still relatively high due to the high incidence of AMI (7 million people per year worldwide). If we assumed first that a short-term survival rate of 84% after AMI,2 second that half of these 7 million people were married, and third that pre-event rates and post-event rates were as reported in our analyses, then an additional 11 000 people would likely be started on antidepressants (using a 1.17 IRR to calculate) just after the non-fatal AMI. Using the same approach, ∼ 35 000 spouses to those who had a fatal AMI would initiate antidepressant treatment.

Moreover, although suicide rates among spouses of those with fatal AMI were generally low, ∼1400 people would be projected to take their own life in the year following a spouse’s AMI death using a 16% initial AMI mortality rate and a 0.24% suicide rate to calculate. Therefore, our study suggests that losing a spouse or having a spouse experiencing a non-fatal AMI is a major public health issue for which there is very little awareness among physicians and policy makers. Prior studies of United States census data have shown that the risk of suicide is higher among those that are widowed and that this is particularly marked among young men.8,9 Importantly, we did not find an effect of other non-fatal events on the spouse, which suggests that stratification of risk (i.e., identifying spouses at high risk of depression) can be based on the acuity and severity of the event. Large national campaigns against suicide have not been able to reduce suicides substantially; however, our findings suggest that an effective strategy for suicide prevention could be to target efforts to vulnerable spouses. More studies are needed to understand the direct physiological and behavioural mechanisms that are active in this interplay of loss and helpless emotions.

Currently, there is no mechanism in place to identify these individuals and institute preventive strategies such as depression screening and grief counseling. Despite this, we found a high use of antidepressants in the months immediately after the event. This not only underlines the acute severity of the event on the spouse, but also suggests that the system may not be prepared to take care of these individuals and antidepressants are maybe used as a temporary solution. Interestingly, we also found high use of benzodiazepines in the months immediately after the event further recognizing this void in care. Benzodiazepines would most likely be prescribed by the spouse’s general practitioner as a result of the traumatic event and the general practitioner would be the safety-net for these people. Without a proactive surveillance system screening spouses, depression may only be recognized in individuals who contact the health system for care, leaving a gap for spouses who may not have the time or insight to seek care. Hospital physicians, general practitioners, patient support groups, and family members will passively be confronted with individuals that have lost a spouse.

Our study also demonstrated some differences in grief response between sex and age groups. The majority of the cohort comprised women and similar to what prior studies have shown, men had a lower incidence of all the outcomes prior to the event than women, but their relative increase following the event was more pronounced than it was for women.8,15,17 Men were also significantly more likely to take their own life compared with women. For age, we only observed differences in the fatal AMI group. Results showed that younger individuals were more likely than older individuals to be started on antidepressant medications, as well as benzodiazepines. Conversely, older people were more likely than younger people to initiate contact with the hospital system for depression. These results suggest that health care providers may be treating younger patients with medications more aggressively, while older patients have a higher rate of severe depression requiring contact to the hospital system.

**Limitations**

Our study had several limitations. First, this is a pre–post observational analysis and direct causality cannot be implicated; however, it should be noted that the Danish administrative registries provide a unique dataset and opportunity to study these issues in detail on a national scale. Second, we used matched control groups in order to address the effect of time and other similar fatal and non-fatal conditions on the outcomes. The reported results are very unlikely to be caused by time-changes and the effect seen for fatal AMIs is
also not likely to be caused by death per se, as this effect was very different from that seen in the control groups. Third, we only examined initiated treatment as a surrogate for depression; thus, we are unable to assess whether our results represent underutilization of antidepressants (i.e., missed depression) or overutilization (i.e., reflexive use of benzodiazepines and antidepressants). Fourth, our data do not include information regarding the quality of the marriage and people could potentially be living separately. Furthermore, whether our results are generalizable to people who are not married, but live in a relationship, is unknown (although likely). As a result, our analysis could represent only a fraction of this problem. Finally, extrapolating these results to other health care systems and to other countries should be done with caution.

Conclusions

Losing a spouse to an AMI is a critical event associated with a high risk of subsequent depression. Our study also demonstrates a relatively high risk of spousal depression in the first 6 months after a non-fatal heart attack. In the setting of an acute event, our study suggests that clinical attention needs to be paid to both the patient, who is suffering from the physical and mental trauma of the event, and the spouse, who has to live through the event alongside the patient. Hippocrates once said ‘cure sometimes, treat often, comfort always’, which frames the need for identifying and best treating spousal depression and bereavement.

Supplementary material

Supplementary material is available at European Heart Journal online.

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Conflict of interest: none declared.

References