Does the association between behavioral health conditions and suicide attempts persist after accounting for chronic medical comorbidities?

**Background**

In 2013, there were 41,149 deaths by suicide, making it the 10th leading cause of death in the United States. Estimates in the elderly population indicate that approximately 1 suicide occurs for every 4 suicide attempts. Psychiatric disorders are strongly associated with the risk of suicide. A number of population studies have also shown an increased risk of suicide associated with a range of specific physical illnesses and with general physical ill health. These studies have demonstrated that the elevated suicide risk associated with physical illness increased progressively with frequency and recentness of hospital admission, as well as with comorbidity involving several organs or systems of the body. Although past research has demonstrated an association between suicide attempts and behavioral health (BH) conditions, many of these studies did not account for multiple comorbid chronic medical conditions, which have also been shown to be correlated to suicide attempts.

**Objective**

To evaluate the relationship between suicide attempts and BH conditions in a population matched on number of chronic medical conditions.

**Methods**

**Study Design:** Historical matched case-control study

**Data Source:**
- This study was conducted using administrative claims data from Humana Inc., a health care company insuring over 13.8 million Medicare Advantage members (Q2 2014)

**Inclusion Criteria:**
- Cases were identified as patients enrolled in a Medicare Advantage plan between July 1, 2013 to June 30, 2014 who had at least one claim for an attempted suicide (ICD-9 codes E950-E959) during the observation period
- Controls were then randomly selected from the same patient population (Medicare Advantage, July 1, 2013 to June 30, 2014) – No claims for an attempted suicide during the observation period
- Matched to cases on age, gender, and number of chronic conditions
- At least 6 months continuous enrollment with at least 1 claim with BH in the top 6 diagnoses was required

**Outcomes and Statistical Analyses:**
- Primary outcome: relationship between number of BH conditions (defined using clinical guidelines and expert opinion) and attempted suicide, assessed by conditional logistic regression
- Secondary outcomes:
  - Relationships between attempted suicide and BH healthcare utilization, assessed by conditional logistic regression
  - Relationship between BH diagnoses (depression, anxiety, serious mental illness, post-traumatic stress disorder) and suicide re-attempts, assessed by Chi-square

**Results**

Table 1. Patient Characteristics

<table>
<thead>
<tr>
<th>Measure</th>
<th>Suicide Attempters</th>
<th>Suicide Non-Attempters</th>
</tr>
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<tbody>
<tr>
<td>N</td>
<td>1344</td>
<td>1344</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>60 (14.04)</td>
<td>60 (14.04)</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>805 (60)</td>
<td>805 (60)</td>
</tr>
<tr>
<td>Number of Chronic Conditions, n (%)</td>
<td>2 (1.69)</td>
<td>2 (1.69)</td>
</tr>
<tr>
<td>Cancer</td>
<td>111 (8)</td>
<td>130 (10)</td>
</tr>
<tr>
<td>CHF</td>
<td>207 (15)</td>
<td>179 (13)</td>
</tr>
<tr>
<td>COPD</td>
<td>400 (30)</td>
<td>367 (27)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>439 (33)</td>
<td>493 (37)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>964 (72)</td>
<td>964 (72)</td>
</tr>
</tbody>
</table>

**Conclusion:**

Among those attempting suicide, there was a significant relationship between suicide re-attempts and certain behavioral health diagnoses.

**Limitations**

- The study does not demonstrate a temporal relationship between behavioral health diagnoses and suicide attempts and therefore does not allow an inference of causality.
- Socioeconomic and occupational factors that might contribute to suicide risk, and duration or severity of behavioral health diagnoses were not controlled.

- The sample population included individuals with Medicare insurance from a single health plan with a strong concentration in the Southeast, and may not be generalizable to the general US population without Medicare, or individuals with no insurance.

**References**