Suicide History and the Mortality from Cardiovascular Disease and Un-nature Causes

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BACKGROUND

- Suicide is one of the top public health concerns in the United States.
- One million adult reported a suicide attempt in the last year in the US
- Third leading cause of death among 25-44 age group
- Individuals who attempted suicide are at higher risk for subsequent death from completed suicide
- Overall mortality is increased among suicide attempter. Yet, no specific cause has been identified.

OBJECTIVES

- To examine the prospective association between history of suicidal behavior and:
  1) Over all mortality
  2) Specific-cause mortality including: Cardiovascular Diseases (CVDs), unnatural causes, and suicide/homicide mortality.

METHODS

- 6,293 Participants of NHANES-III (aged 17-39 Yr) were followed from 1988-1994 through 2006
- Participants were categorized into: (1) No suicide history (reference) (2) Suicid ideation (3) Attempted suicide
- ICD9 and ICD10 were used to determine the specific cause of death from the data of the National Health Index.
- The covariates included: Gender, age, Socioeconomic Status (SES), race/ethnicity, education, smoking, drinking, marital status.
- Cox proportional hazard regression used to estimate the hazard ratio (HR) of overall mortality and specific causes of mortality for each group after adjustment for potential confounders.

RESULTS (BASELINE)

- Mean age was 27 Yr.
- At the baseline: 345 participants reported attempted suicide, while 765 reported suicidal ideation.
- Attempted suicide was twice in women as in men
- Attempted suicide was associated with other factors including lower income, lower education, heavy smoking, heavy drinking, cancer and Major Depressive Disorders (MDD) at the baseline.

RESULTS

- After follow-up, 219 death cases were accumulated. CVDs accounted for 41 cases, while unnatural causes and suicide/homicide accounted for 60 and 26 cases respectively.
- HR for CVDs mortality for attempted suicide group was 2.68 (1.01-7.09) before adjusting for MDD.
- HR for suicide/homicide mortality for attempted suicide group was 3.99 (1.28-12.4) after controlling for covariates and 5.08 (1.58-16.3) after controlling for MDD.
- Overall mortality did not show significant association with suicidal behavior after adjusting for confounding factors.

Hazard Ratios

<table>
<thead>
<tr>
<th>Cause of Mortality</th>
<th>Suicide status</th>
<th>Adjusted for age</th>
<th>for all variables except MDD</th>
<th>for all variables including MDD</th>
</tr>
</thead>
<tbody>
<tr>
<td>All causes</td>
<td>Attempt</td>
<td>1.99 (1.23-3.21)</td>
<td>1.54 (0.95-2.51)</td>
<td>1.52 (0.92-2.52)</td>
</tr>
<tr>
<td></td>
<td>Ideation</td>
<td>1.01 (0.66-1.54)</td>
<td>0.99 (0.65-1.50)</td>
<td>0.97 (0.63-1.50)</td>
</tr>
<tr>
<td>CVDs</td>
<td>Attempt</td>
<td>3.20 (1.23-8.31)</td>
<td>2.68 (1.01-7.09)</td>
<td>2.27 (0.79-6.51)</td>
</tr>
<tr>
<td></td>
<td>Ideation</td>
<td>0.90 (0.32-2.55)</td>
<td>0.95 (0.35-2.70)</td>
<td>0.87 (0.30-2.35)</td>
</tr>
<tr>
<td>Suicide-homicide</td>
<td>Attempt</td>
<td>5.10 (1.70-15.2)</td>
<td>3.99 (1.28-12.4)</td>
<td>5.08 (1.58-16.3)</td>
</tr>
<tr>
<td></td>
<td>Ideation</td>
<td>1.25 (0.37-4.24)</td>
<td>1.21 (0.35-4.14)</td>
<td>1.35 (0.39-4.65)</td>
</tr>
<tr>
<td>Un-natural</td>
<td>Attempt</td>
<td>2.72 (1.15-6.42)</td>
<td>2.02 (0.84-4.88)</td>
<td>2.08 (0.82-5.27)</td>
</tr>
<tr>
<td></td>
<td>Ideation</td>
<td>1.29 (0.61-2.73)</td>
<td>1.18 (0.55-2.51)</td>
<td>1.19 (0.55-2.59)</td>
</tr>
</tbody>
</table>

DISCUSSION

- Young adults who have attempted suicide are at higher risk of subsequent death from Cardiovascular disease and suicide/homicide causes.
- The risk increases mainly in the first several years of follow-up for deaths from completed suicides, homicides or other unnatural causes, but throughout the entire period of follow-up for the deaths from CVDs in spite that the increase was relatively small.
- The composition of the current study population (a relatively young and healthy household) and a long follow-up might dilute the increased risk mainly occurring at the first several years and resulted in a weaker association compared with previous reports.

IMPLICATIONS

- The current study, together with previous reports, supports the recommendation that a history of attempted suicide can be a reliable indicator calling for effective and timely interventions.
- Excessive mortality from non-suicidal causes after attempted suicide highlights the importance of a comprehensive intervention among attempters for both chronic effects of the suicide behaviors themself, and CVDs and accidental injuries.

STRENGTH AND LIMITATIONS

- Strength: Population-based study with large young-age population
- Limitation: The small number of total deaths prevented further stratification and reduced the precision of the estimates

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