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the question with an existing scale and not a semistructured interview. Such a subjective question requires further rigorous evaluation before we advocate its widespread application to screen for depression in patients with advanced cancer.

Contributors: ML-W and MD designed and developed the study. ML-W, FT, and IB carried out the study. ML-W, MD, and FT analysed the data. ML-W and MD drafted the paper; all authors revised and approved the final version. ML-W and MD are guarantors.

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Competing interests: None declared.

Ethical approval: Leicestershire Health Authority.


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Risk of suicide in twins: 51 year follow up study

Cecilia Tomassini, Knud Juel, Niels V Holm, Axel Skytthe, Kaare Christensen

Strong family ties and commitments are known to be important in the prevention of suicide. Having parents alive and together, being married, and having young children are negatively correlated with risk of suicide.1-3 The presence of siblings, however, has rarely been looked at in studies of suicide or attempted suicide. A Danish register study found no protective effect associated with having siblings,1 but neither the age nor the sex of siblings was considered. Twins represent a unique sibling relationship. They not only share the same family and social environment at least for the first part of their lives, but they also show a higher level of closeness both in terms of the number of years spent together before leaving the parental home and in the frequency of contacts afterwards. We investigated whether the suicide rate in twins was different to that in the general population.

Participants, methods, and results

Through the population based Danish twin registry we identified same sex twins born from 1870 to 1930 and established date and cause of death from 1943 to 1993 through the Danish registry of causes of death (this register linkage has previously been described in more detail). We included 21 653 individual twins alive on 1 January 1943, 13 318 (62%) of whom died during the follow up.

From 1951 we coded the cause of death according to the ICD-6, ICD-7, and ICD-8 (international classification of diseases, sixth, seventh, and eighth editions). For deaths from before 1951 we used the coding system of the Danish registry of causes of death. Here we report on the deaths coded as suicide (1943-50: Danish registry codes 900-930; 1951-68: ICD-6 and 7 codes 970-979; 1969-93: ICD-8 codes 950-969). We calculated the expected number suicides in the twin population by multiplying the observed person years with suicide rates for Denmark stratified for sex, one year age group, and five year calendar period (source: the Danish registry of causes of death). Standardised suicide rates were calculated as the observed number of suicides divided by the expected number of suicides.

As previously reported the twin cohorts had a mortality pattern similar to that in the general population (standardised mortality 0.95 for men and 0.98 for women). However, twins had a substantially lower suicide rate compared with the general population, with 211 observed suicides versus 292.8 expected, corresponding to a standardised suicide rate of 0.74 for men (95% confidence interval 0.62 to 0.88) and 0.69 for women (0.55 to 0.86) (table). The suicide risk for twins was consistently lower for both men and women in all six 10 year birth cohorts. We also considered the risk of suicide stratified by cohorts and follow up time (1-25 years and ≥25 years). All strata consistently showed a reduced suicide risk for twins, indicating no age or cohort differences. Furthermore, the suicide rate was of similar size in monozygotic and dizygotic twins.

<table>
<thead>
<tr>
<th>Birth cohort</th>
<th>Alive on 1 January 1943</th>
<th>Suicides</th>
<th>Standardised suicide rates (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>663</td>
<td>0</td>
<td>4.4</td>
</tr>
<tr>
<td>Women</td>
<td>799</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.84 (0.60 to 1.30)</td>
</tr>
<tr>
<td>1880-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>1021</td>
<td>9</td>
<td>10.1</td>
</tr>
<tr>
<td>Women</td>
<td>1158</td>
<td>2</td>
<td>6.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.89 (0.41 to 1.69)</td>
</tr>
<tr>
<td>1890-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>1390</td>
<td>15</td>
<td>20.4</td>
</tr>
<tr>
<td>Women</td>
<td>1483</td>
<td>4</td>
<td>12.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.73 (0.41 to 1.21)</td>
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<tr>
<td>1900-9</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>1888</td>
<td>25</td>
<td>34.7</td>
</tr>
<tr>
<td>Women</td>
<td>2048</td>
<td>16</td>
<td>23.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.68 (0.38 to 1.10)</td>
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<tr>
<td>1910-9</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Men</td>
<td>2301</td>
<td>42</td>
<td>47.0</td>
</tr>
<tr>
<td>Women</td>
<td>2736</td>
<td>26</td>
<td>35.9</td>
</tr>
<tr>
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<td></td>
<td>0.89 (0.64 to 1.21)</td>
</tr>
<tr>
<td>1920-30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>2933</td>
<td>37</td>
<td>56.3</td>
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<tr>
<td>Women</td>
<td>3241</td>
<td>33</td>
<td>39.4</td>
</tr>
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<td></td>
<td>0.68 (0.46 to 0.91)</td>
</tr>
<tr>
<td>Ali</td>
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<td></td>
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</tr>
<tr>
<td>Men</td>
<td>10 196</td>
<td>128</td>
<td>173.0</td>
</tr>
<tr>
<td>Women</td>
<td>11 457</td>
<td>83</td>
<td>119.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.74 (0.62 to 0.88)</td>
</tr>
</tbody>
</table>

*For 1951 and 1952 suicides were not coded separately and therefore both observed and expected suicides in these two years are omitted from calculations.
†Based on Poisson distribution.
Comment
Twins have a reduced risk of suicide, which supports the hypothesis that strong family ties reduce the risk for suicidal behaviour. This finding was consistent across cohorts, sex, and zygosity. As we used population based register data there was little room for selection bias. The strongest risk factor for suicide is mental illness, but other Danish register studies have found mental illness to be slightly more common among twins than among singletons. This should lead to a higher proportion of twins committing suicide compared with the general population, but our findings show exactly the opposite, further under-scoring the importance of strong family ties.

Contributors: CT and KC proposed the current use of already existing data on Danish twins’ mortality. These data were collected by NVH and AS and analysed by KJ CT prepared the first draft of the paper. All authors took part in discussions about the design, analyses, and reporting of the study, made individual contributions to the final content of the paper, and approved the final version for publication. KC is the guarantor.

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