What is the association between obesity and the risk of suicide attempts and injuries in the Canadian and American female population?

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Abstract

Background: Obesity is a significant problem for many developed and developing countries. Estimates indicate that 19% of the Canadian population and 29% of the United States population are obese. Previous studies have shown Body Mass Index (BMI) may be associated with either an increased or decreased risk of suicide attempts and injuries.

Objective: We performed a structured literature review examining the association between obesity and the risk of suicide attempts and injuries in the Canadian and American female population.

Methods: The following search terms were used: ‘suicide’ AND (BMI) OR (obesity) OR (body mass index) OR (overweight), and were used to search the online database Medline through PubMed providing 689 results. The search was then limited to English articles published after 2000, containing the MeSH term ‘female’, and studies examining populations in Canada or the United States reducing the search to 132 results. The titles and abstracts were then examined to determine the relevance of the article for our review. Articles that were deemed relevant were checked to see if they met the inclusion and exclusion criteria shown in Table 1. Studies were included using a 4-rater system, there was perfect agreement between raters (k=1.00). As a result, 8 studies were identified and the following data were extracted for the purposes of this review:

- Author’s last name
- Definition of overweight or obesity status
- Study design
- Sample size
- Statistical analysis results (including confidence intervals if available)
- Possible confounders

Table 1. Inclusion and Exclusion Criteria

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
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<tr>
<td>- Male/Female data analysis is not separate</td>
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<tr>
<td>- Focus population not representative of general population (veterans, inmates, etc.)</td>
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Methods (cont.)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Study design &amp; sample size</th>
<th>Association value (WIC)</th>
<th>Conclusion</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muthai et al.</td>
<td>Cross-sectional (N=19526)</td>
<td>Life time: OR=1.56 (95%, 1.19-2.04)</td>
<td>Positive association</td>
<td>Adjusted for age, education, other psychiatric disorders, and Charlson comorbidity Index (includes sociodemographic and measure of physical illness burden)</td>
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<tr>
<td>Kaplan et al.</td>
<td>Cross-sectional (N=261)</td>
<td>Adjusted Hazard ratio=0.86 (95%, 0.26-0.81)</td>
<td>Inverse association</td>
<td>- Positive association</td>
</tr>
<tr>
<td>Dave &amp; Rashid</td>
<td>Cross-sectional (N=14180 to 15532)</td>
<td>Probit Regression - Attempt 0.0182 (95%), Injury - 0.0032</td>
<td>Positive association</td>
<td>Regression involving - drinking &amp; driving, carrying weapons, fighting, smoking, substance abuse, sexual activity, team sports, school safety, and depression.</td>
</tr>
<tr>
<td>Eamon et al.</td>
<td>Cross-sectional (N=6321)</td>
<td>Adjusted HR=1.49 (95%, 1.00-2.23)</td>
<td>- Race is a co-founder</td>
<td>- Adjusted for Race/ethnicity</td>
</tr>
<tr>
<td>Leshart et al.</td>
<td>Cross-sectional (N=3075)</td>
<td>OR=0.467 (95%, 0.718-1.508)</td>
<td>No association</td>
<td>No association</td>
</tr>
<tr>
<td>Raciliff et al.</td>
<td>Cross-sectional (N=18)</td>
<td>OR=1.55 (95%, 0.55-4.35)</td>
<td>No association</td>
<td>No association</td>
</tr>
<tr>
<td>Crow et al.</td>
<td>Cross-sectional (N=2357)</td>
<td>AOR=0.88/95% (0.76-1.02)</td>
<td>No association</td>
<td>Adjusted for race, SES, and depression</td>
</tr>
</tbody>
</table>

Table 2. Summary of Results of Selected Articles

Results

Authors
- Muthai et al.
- Kaplan et al.
- Dave & Rashid
- Eamon et al.
- Leshart et al.
- Raciliff et al.
- Crow et al.

Definition of obesity/BMI intervals
- Muthai et al.: BMI ≥ 30
- Kaplan et al.: BMI ≥ 30
- Dave & Rashid: BMI ≥ 30

Discussion

Findings
- There is great heterogeneity in the conclusions of the studies.
- The association between obesity and suicide is unclear.

Limitations of the Study
- Only English studies were assessed
- Only studies that were accessible through the uOttawa library’s subscription were used
- Time was a limiting factor as we were not able to use services such as interlibrary loans
- The use of BMI across the studies was inconsistent
- Results from cross-sectional data is not effective in determining cause-and-effect relationships

Contextualizing the Findings of the Literature
- It is very surprising there were contradictions with the data. We expected a positive association between obesity and suicide ideation/attempt due to our literature review.
- Research conducted outside of North America have similar conclusions that support the findings of our research.

Future Considerations
- More research is needed looking at potential confounders such as marital status, and socio-economic status.
- Standardizing the definition of obesity

Conclusion

The research findings were inconsistent and provided conflicting results. Future studies should consider confounding variables such as body image and beauty standards in females portrayed by the media and society. Further research should be done to better understand this relationship, and its impacts on our society.

Acknowledgements

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References available on a separate handout.