Prescription Opioid Death Rates are Greater for Females than Males

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Background

- In July 2013, the Centers for Disease Control and Prevention (CDC) showed prescription opioid deaths increased 400% for females compared to 265% for males from 1999-2010
- We examined data from the Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS®) System Poison Center Program for similar trends

Methods

- Data from the RADARS System Poison Center Program between January 1, 2006 and June 30, 2014 were used
- Inclusion criteria:
  - Individuals greater than 12 years old
  - Known gender
  - Involved at least one fentanyl, hydrocodone, hydromorphone, morphine, oxycodone, oxymorphone, tapentadol, or tramadol product
  - Resulted in direct death
- Quarterly rates were calculated by summing the death cases and dividing by the sum of the gender-specific population and prescriptions dispensed in covered areas.
- Poisson regression was used to model these rates
  - Covariates included were gender, linear and quadratic terms for quarter, and linear and quadratic terms for quarter by gender interactions
- The trend in number of prescriptions per population was examined by gender using linear polynomial regression
- Average quarterly changes in the prescriptions per population were compared for males and females

Results

- Population adjusted death rates increased for both genders until July 2010 then declined.
- Prescription adjusted death rates increased until October 2009 then declined.
- The death rates were higher for women than men in any given quarter, with the population adjusted death rate 45.2% higher for females than males (p<0.001), and the prescription adjusted death rate 10.5% higher for females (p=0.069).
- There were significant quadratic trends for population and prescriptions rates
- Prescriptions per population increased for both genders from 2006-2011 then leveled out.
- On average, females were dispensed 31.5% more opioid prescriptions per population than males (p<0.001).
- There was a significant cubic trend for prescriptions per population.
- Trends were similar between males and females in all three models, but intercepts differed by gender.

Table 1. The RADARS® System Poison Center Program
Death rate ratios by gender from January 1, 2006 to June 30, 2014

<table>
<thead>
<tr>
<th>Rate</th>
<th>Female to Male Rate Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths per 100,000 Population</td>
<td>1.452 (1.304, 1.616)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Deaths per 10,000 Prescriptions</td>
<td>1.105 (0.992, 1.230)</td>
<td>0.069</td>
</tr>
<tr>
<td>Prescriptions per 100 Population</td>
<td>1.315 (1.304, 1.326)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Conclusions

- While trends in prescription opioid deaths are similar between genders, population and prescription adjusted rates of prescription opioid deaths were higher for females than males.
- Theses results may be due to greater drug availability for females.