ABSTRACT

Purpose

Approximately 70 million surgeries are performed annually in the United States1, and up to 70% of these patients experience pain post-surgery. Even though a majority of patients experience post-operative pain, insufficient management of pain is common and can lead to profound complications. Better management of postsurgical pain is hampered by the reliance on opioid medications, which are associated with numerous and potentially significant side effects. This retrospective study utilized a large, national hospital database to assess the hospital and healthcare burden of opioid-related adverse events (ORADE) on patient outcomes in patients undergoing open colectomy, laparoscopic colectomy, laparoscopic cholecystectomy, total abdominal hysterectomy, or hip replacement, procedures known to require significant postoperative pain management.

Objectives

To determine the relationship between postsurgical opioid use and occurrence of opioid-related adverse events (ORADE)

To determine ORADE impact on hospital length of stay (LOS) and total visit cost in unmatched and matched patient populations

Methods

Data Source

This study comprised a retrospective analysis of data queried from the Premier research database. The database is a complete census of all inpatients and hospital-based outpatients from a geographically diverse cohort of hospitals and health care networks on records approximately 66 million patients across more than 475 hospitals allowing for a broad national representation of results.

Patient selection

Inclusion criteria: discharge between 2008 and 2010

Adult (18+ years) age patients having an open colectomy, laparoscopic colectomy, laparoscopic cholecystectomy, total abdominal hysterectomy, or hip replacement

Methods

Patient selection criteria

- Patients with and without ORADE were assessed in unmatched and matched analyses
- Age, sex, race/ethnicity, and gender
- Independent variables

Descriptive statistics were used to determine statistical significance between ORADE and no ORADE. The unadjusted regression models determined significance between ORADE and no ORADE in categorical data and expressed as percentages of patients

Results

Table 1. Unmatched Study Population Patient Demographics

<table>
<thead>
<tr>
<th>Number of Discharges</th>
<th>Mean Age (years)</th>
<th>Gender (% female)</th>
<th>Race/Ethnicity (% white)</th>
</tr>
</thead>
<tbody>
<tr>
<td>62,814</td>
<td>58.10 18.717 13.700</td>
<td>60.4% 61.9%&lt;.00001</td>
<td>37.00% 47.3%&lt;.00001</td>
</tr>
</tbody>
</table>

Table 2. Matched Study Population Patient Demographics

<table>
<thead>
<tr>
<th>Number of Discharges</th>
<th>Mean Age (years)</th>
<th>Gender (% female)</th>
<th>Race/Ethnicity (% white)</th>
</tr>
</thead>
<tbody>
<tr>
<td>64.61±16.4 64.51±16.0</td>
<td>62.8% 62.0%</td>
<td>72.0% 69.6%&lt;.00001</td>
<td>10.1% 68.3%&lt;.00001</td>
</tr>
</tbody>
</table>

Results

Table 3. Adjusted Odds Ratios for Outcomes Comparing ORADE to no ORADE

<table>
<thead>
<tr>
<th>Total Cost Outlier</th>
<th>Length of Stay Outlier</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.66 3.60 3.16</td>
<td>2.36 2.08 2.02</td>
</tr>
</tbody>
</table>

Discussion

From this large national database, a considerable number of patients were identified as experiencing an opioid-related adverse event. Postsurgical patients who experienced an ORADE had a significantly longer LOS and a higher total cost than those without an ORADE. These findings are consistent in unmatched and matched analysis. Adjusted outcomes permitted a robust assessment of these outcomes and showed similar results. Reducing the incidence of opioid-related ADEs through reduction of opioid dosages and overall consumption should reduce LOS and total hospital costs. Further investigations regarding the impact of opioid dosage on the incidence of related ADEs should shed additional light on how to reduce LOS and hospitalization costs.

Limitations

Use of observational administrative databases has noted limitations which include selection bias and reliance on accurate and complete ICD-9 coding and billing, as utilized in this study.

References