Early Oral Pain Medications and the Effect on Length of Stay
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BACKGROUND
• Management of pain can be challenging for the post-operative patient. Pain must be controlled and maintained at a level that the patient can tolerate, while moving toward the goal of day of surgery discharge.
• Timing of these medications varies depending on individual nursing practice.
• Untreated or undertreated pain is associated with poor outcomes including: delayed rehabilitation, increased length of stay, poor quality of life, etc.
• There is ongoing need to prioritize pain management and provide continuous education for nurses on effective pain management.

PROBLEM
• Outpatient surgeries account for 75% of all procedures.
• Clinical observations nurses trained in the outpatient post-anesthesia care setting as compared to nurses trained in the inpatient setting revealed two distinct practices.
• Nurses trained as outpatient post-anesthesia care nurses gave oral pain medications early in Phase I of recovery, while nurses trained in the inpatient setting did not routinely give this medication.
• Ineffective pain management in day of surgery patients can occur due to patients not reporting pain accurately, under-dosing of medications, nursing bias, delay in administration of medication and lack of assessment for pain.

PURPOSE
The purpose of this study was to determine whether or not timing of oral pain medications would have any impact on length of stay, self-reported pain level at discharge, or amount of IV pain medications used/needed for patients undergoing outpatient procedures as a result of earlier control of post-operative pain.

SPECIFIC AIMS
Determine whether or not the timing of administration of oral pain medications would:
• impact the level of reported pain at discharge
• impact the length of stay
• impact the amount of IV medications that were administered

METHODOLOGY
• A quasi-experimental design was used.
• Data were abstracted by retrospective chart review.
• A convenience sample of patients undergoing general anesthesia for outpatient laparoscopic cholecystectomy was used.
• The sample size included 128 patients, of which 64 patients received oral pain medication in Phase I and 64 patients received oral pain medication in Phase II.

DATA ANALYSIS
The relationships between receiving oral medication in Phase I and categorical variables (gender, location, and oral medication at Phase 2) were assessed using a Pearson Chi-Square test.
Because boxplots of other variables indicated that outliers were present for some of the numerical variables, the relationships between oral medication in Phase I and numerical variables (age, pre-pain, pain at the end of Phase 1, pain at the end of Phase 2, pain at discharge, total morphine equivalent, and duration of stay) were assessed using Wicoxon rank-sum test.
To jointly assess the effects of Phase I oral medication and total IV medications on pain at discharge and duration, two multiple regression analyses were conducted.

RESULTS
The sample included 128 patients who met criteria for inclusion, of which 64 patients received oral pain medication in Phase I and 64 patients received oral pain medication in Phase II.
Oral pain medications most commonly used included: Hydromorphone, Hydrocodone and Oxycodone.
Study findings included a statistically significant reduction in length of stay and a statistically significant lower level of reported pain for those patients who received oral pain medications in Phase I.

Comparison of Results

![Comparison of Results](image1.png)

Table 1. Sample Characteristics

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>male</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>female</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 2. Comparison between patients who received oral medication in Phase I and patients who received oral medication in Phase II.

<table>
<thead>
<tr>
<th>Category</th>
<th>Group 1 Mean (SD)</th>
<th>Group 2 Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>4.45 (3.5)</td>
<td>4.62 (2.1)</td>
</tr>
<tr>
<td>Duration</td>
<td>2.49 (1.2)</td>
<td>2.46 (1.0)</td>
</tr>
</tbody>
</table>

Data analysis was performed by Dr. Stephen C. Patch, Mathematics Department, Mission Health System, Asheville, North Carolina.

ACKNOWLEDGEMENTS
Dr. Dana Raines and Dr. Vallire Hooper gratefully acknowledge the support of Dr. Stephen C. Patch, Mathematics Department, University of North Carolina Asheville.

IMPLICATIONS FOR PERIANESTHESIA NURSING
• This study demonstrates that there are two differing practices among nurses, which may be due to lack of knowledge, and identifies opportunity for improved patient experience and outcomes.
• Nurses assist patients in achieving a healthy emotional state and foster healing, which can be influenced through better pain management. Managed pain promotes participation in rehabilitation, activities of daily living, and reduction of risk of poor outcomes.
• Future studies exploring differences between in-patient and outpatient nurses’ beliefs or training in regards to pain management are indicated.

Sample Demographics

- Gender
  - Male: 21.9%
  - Female: 78.1%

- Age
  - Mean: 34.9 (± 8.7)

- Surgery
  - Laparoscopic cholecystectomy procedures performed under general anesthesia
  - Adults ages 18-49
  - Outpatient surgeries account for 75% of all procedures

Inclusion Criteria
- Adults ages 18-49
- Laparoscopic cholecystectomy procedures performed under general anesthesia
- Received oral pain medications either in Phase I or Phase II
- Day of surgery discharge
- Males and Females

Exclusion Criteria
- Known chronic pain
- Dementia or confusion diagnosis
- Any delay in discharge or transfers not related to pain
- Examples: awaiting ride, labs, X-ray results, history of post-op nausea/vomiting.

Sample Selection

- Exclusion Criteria:
- Any delay in discharge or transfers not related to pain
- Examples: awaiting ride, labs, X-ray results, history of post-op nausea/vomiting.

- Inclusion Criteria:
- Adults ages 18-49
- Laparoscopic cholecystectomy procedures performed under general anesthesia
- Received oral pain medications either in Phase I or Phase II
- Day of surgery discharge
- Males and Females

Comparison of Results

- Post pain Phase I - Mean 4.45 (± 3.5)
- Post pain Phase II - Mean 4.62 (± 2.1)
- Discharge Pain - Mean 4.49 (± 1.0)
- Duration (LOS) - 2.49 (± 1.2)

Analysis of Data

- The relationships between oral medication in Phase I and categorical variables (gender, location, and oral medication at Phase 2) were assessed using a Pearson Chi-Square test.
- Study findings included a statistically significant reduction in length of stay and a statistically significant lower level of reported pain for those patients who received oral pain medications in Phase I.

- Data were abstracted by retrospective chart review.
- Comparison of Results

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