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# EFFECT OF PREOPERATIVE OPIOIDS ON RECOVERY OUTCOMES OF PATIENTS WHO UNDERWENT EMERGENCY GENERAL SURGERY PROCEDURES

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## ABSTRACT
The study was conducted to evaluate the effect of preoperative opioids administration on recovery outcomes in patients undergoing emergent general surgeries. This retrospective study was done in the Pharmacology and Surgical Department of Rahbar Medical & Dental College, Lahore from March 2024 to March 2025. A total of 100 patients undergoing emergent general surgery were selected for the study. Postoperative parameters including severity of illness score, length of hospital stay and 30-day readmission rates were noted. Patients with active opioid prescription within a week before admission, opioid prescription at discharge and those with prescription renewals were identified. Patients with consecutive 90 days opioid prescription after discharge were regarded as ones with chronic opioid use. Results showed that previous opioids users had significantly longer length of hospital stay of 11 days as compared to 5 days in opioids naïve patients ($p<0.001$). Preoperative narcotics users were also at two times more risk of readmission (22.3% vs 9.7%, $p<0.001$). Multivariate analysis showed that preoperative opioids use was a significant risk factor of longer LOS (relative risk: 1.23 (95% CI: 0.99-1.38, $p=0.042$) and readmission (odds ratio: 2.75, 95% CI:1.31-5.80, $p=0.009$). It is concluded that preoperative exposure to opioids affects the postoperative readmission rates, length of hospital stays and frequency of refill prescriptions after emergency general surgery.

**Keywords :** Opioids, Hospital stay, Surgery

## INTRODUCTION
Opioids misuse is one the most concerning health issue all over the world. Research shows the use of prescription opioids has increased four times in the last 20 years although the incidence and degree of pain has been the same.[1]Hence, the rate of mortality due to opioid related causes has also drastically increased. In Pakistan, over 250,000 deaths occur due to opioid overuse every year which equates to 700 deaths every day.[2] The most common reason is the poor regulation of over-the-counter drug sales.

Opioids are mostly prescribed by surgeons for management of postoperative pain. Although opioids are effective analgesics, they make patients significantly susceptible to various risks. Frequent adverse effects of narcotics include respiratory distress, drowsiness, confusion, addiction, withdrawal symptoms and dependence. Long-term side effects of opioids are also extensive and eventually impact the postoperative outcome.[3, 4]Administration of opioids before surgery has been found to be related to high healthcare costs and poor prognosis after elective abdominal surgeries.[5, 6, 7]However, their impact in patients undergoing emergent procedures is not adequately studied.
This study was conducted to evaluate the effect of preoperative opioids administration on recovery outcomes in patients undergoing emergent general surgeries.

## METHODOLOGY

A retrospective study was done in the Pharmacology and Surgical Department of Rahbar Medical & Dental College, Lahore, from March 2024 to March 2025. A total of 100 patients undergoing emergent general surgery were selected for the study. General surgery procedures included small bowel resection, appendectomy, partial colectomy, laparotomy, peptide ulcer disease repair, cholecystectomy and lysis of adhesions. Patients admitted for trauma related reasons and those undergoing elective procedures were excluded. Informed consent was obtained from all patients and ethical committee of the hospital approved the study.
Age, gender, BMI and smoking status was recorded from all patients. Postoperative parameters including severity of illness score, length of hospital stay and 30-day readmission rates were noted. Patients with active opioid prescription within a week before admission, opioid prescription at discharge and those with prescription renewals were identified. Patients with consecutive 90 days opioid prescription after discharge were regarded as ones with chronic opioid use. Ohio Automated Rx Reported System calculator was used to calculate morphine equivalent dose.
Statistical analysis was done by SAS version 9.4 and JMP pro version 11. Median (IQR) was used to present continuous parameters and Wilcoxon rank sum test was performed to compare them. Percentages were used to present the categorical parameters and chi-squared test was performed to compare them. Logistic multivariate regression analysis was done for identification of associated predictors of readmission and mortality as odds ratio and Poisson regression analysis was used to identify factors related to hospital LOS as relative risk. Statistical significance was set at a probability value of less than 0.05.

## RESULTS

A total of 100 patients undergoing emergent general surgeries were included in the study among which 12 (12%) had appendectomy, 26 (26%) had cholecystectomy, 16 (16%) had laparotomy, 25 (25%) had lysis of adhesions, 7 (7%) had partial colectomy, 2 (2%) had peptide ulcer disease repair and 12 (12%) had small bowel resection. 27 (27%) had a preoperative opioids prescription, more likely to be older (51 vs 45 years, $p=0.05$), smokers (63% vs 37%, $p<0.001$) with poor SOI score (40.7% vs 31.5%, $p<0.001$) as compared to patients with no opioids use before surgery (Table I).
The number of opioids tablets given at discharge was more in previous users (55 vs 35, $p<0.001$). Same pattern was noted in case of patients requiring refills (81.5% vs 30.2%, $p<0.001$) with previous users being prescribed refills at a median frequency of 4 times as compared to none in opioid naïve patients. Total tablets prescribed in refills was 310 in previous users and 45 in opioid naïve patients ($p<0.001$). Chronic opioid use was diagnosed in 78% who were previous users and in 15.1% opioid naïve patients (Table II).Previous opioids users had significantly longer length of hospital stay of 11 days as compared to 5 days in opioids naïve patients ($p<0.001$) (Table III). Preoperative narcotics users were also at two times more risk of readmission (22.3% vs 9.7%, $p<0.001$). Multivariate analysis showed that preoperative opioids use was a significant risk factor of longer LOS (relative risk: 1.23 (95% CI: 0.99-1.38, $p=0.042$) and readmission (odds ratio: 2.75, 95% CI:1.31-5.80, $p=0.009$) (Table IV).

**Table I: Characteristics of patients with respect to opioids use**

| | **Opioids naïve patients (n=73)** | **Preoperative opioids patients (n=27)** | **P Value** |
|---|---|---|---|
| Median age | 45 (28-60) | 51 (38-59) | 0.05 |
| Gender | | | 0.10 |
| Male | 29 (39.8%) | 14 (52%) | |
| Female | 44 (60.2%) | 13 (48%) | |
| Median BMI | 29.3 (22.5-34.6) | 26.9 (21.4-35.3) | 0.41 |
| Smokers | 27 (37%) | 17 (63%) | <0.001 |
| SOI score | | | <0.001 |
| Minor | 18 (24.7%) | 2 (7.7%) | |
| Moderate | 19 (26.1%) | 6 (22.3%) | |
| Major | 13 (17.9%) | 8 (29.8%) | |
| Extreme | 23 (31.5%) | 11 (40.7%) | |

**Table II: Discharge prescription and opioids use pattern**

| | **Opioids naïve patients** | **Preoperative opioids patients** | **P Value** |
|---|---|---|---|
| Discharge | | | |
| Discharge prescription | 35 (25-55) | 55 (25-75) | <0.001 |
| Discharge morphine equivalent dose | 45 (40-85) | 70 (40-115) | <0.001 |
| Refills | | | |
| Patients requiring refills | 22 (30.2%) | 22 (81.5%) | <0.001 |
| Refills prescribed | 0 (0-1) | 4 (3-27) | <0.001 |
| Total prescription | 45 (25-75) | 310 (95-1550) | <0.001 |
| Chronic narcotics use | 11 (15.1%) | 21 (78%) | <0.001 |

**Table III: Patients outcomes based on preoperative opioids use (univariate analysis)**

| | **Opioids naïve patients** | **Preoperative opioids patients** | **P Value** |
|---|---|---|---|
| Length of hospital stay | 5 (2-11) | 11 (6-21) | <0.001 |
| Discharged to | | | 0.92 |
| Home | 53 (72.7%) | 20 (74.1%) | |
| Rehabilitation centre | 16 (22%) | 6 (22.3%) | |
| Other | 4 (5.4%) | 1 (3.7%) | |
| Readmission | 7 (9.7%) | 6 (22.3%) | <0.001 |
| Mortality | 4 (5.5%) | 1 (3.7%) | 0.60 |

**Table IV: Patients outcomes based on preoperative opioids use (multivariate analysis)**

| | **Odds ratio/ relative risk** | **95% CI** | **P Value** |
|---|---|---|---|
| Length of hospital stay | 1.23 | 0.99-1.38 | 0.042 |
| Readmission | 2.75 | 1.31-5.80 | 0.009 |
| Mortality | 0.69 | 0.20-3.44 | 0.681 |

## DISCUSSION

The present study was conducted to analyze the effects of preoperative use of opioids on recovery after emergency general surgeries. The results show that preoperative opioids are a significant predictor of readmission and longer LOS, indicating poor recovery. These patients also have higher refill rates and high doses at discharge. Previous studies have reported similar findings.[8, 9, 10]

A study was Joseph et al conducted in patients undergoing lumbar spine surgery recorded the PROMIS, PF and PI scores in a 24-months follow-up.[11] The findings showed that patients with preoperative use of opioids had significantly less improvement at 3 months, 1 year and 2 years after surgery as compared to non-opioids group ($p=0.014$).

Tian et al compared the postoperative outcomes in patients prescribed opioids before surgery and opioid naïve patients undergoing bariatric surgery.[12] The risk analysis showed that opioid users were at 2.5 times more risk of longer hospital (95% CI: 1.05-6.0, $p<0.05$) and 1.4 times high risk of complications (95% CI: 1.02-2.18). Kim et al also found that opioid users who underwent total knee arthroplasty had significantly longer hospital stay of 3.4 days as compared to non-opioid users (2.5 days) ($p=0.017$).[13] At a 6 months follow-up, the morphine equivalent dose of opioid users was 8 times greater ($p<0.001$).

Opioid use disorder before lumbar spine surgery was associated to spine surgery (adjusted odds ratio: 1.51) and general surgical complications (OD: 1.63) in Lui et al.[14] In addition, length of hospital stay, 90-day postoperative readmission and total cost was also significantly higher in opioids users. Similarly, Tang et al investigated the link between preoperative opioids exposure and postoperative readmission.[15] It was determined that opioid users were readmitted postoperatively for respiratory (OR: 1.44), pain (OR: 1.62) and opioids related causes (OR: 3.70).

Our study has some limitations. We only broadly calculated the number of prescriptions made postoperatively and did not record exact number of doses consumed. Secondly, there may be some reporting bias involved as we retrospectively analyzed data.

## CONCLUSION

Preoperative exposure to opioids affects the postoperative readmission rates, length of hospital stays and frequency of refill prescriptions after emergency general surgery.

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