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Research Article

Prospective Observational Study Assessing Opioid Addiction Risk in Postoperative Patients Using the Opioid Risk Tool (Ort) At a Tertiary Care Hospital

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A B S T R A C T

Opioids are the narcotic analgesics prescribed to treat persistent and severe pain. An alarming increase in opioid misuse in the past two and a half decades has led to a public health crisis. The present study was a prospective observational study conducted in a tertiary care hospital for a period of 6 months.

Objective: The study's primary objective was to determine the potential for opioid addiction among postoperative patients.

Methods: Patient individuals aged 18 years and above who underwent surgery and were prescribed opioid analgesics were included in the study. The opioid risk tool (ORT) was used to assess the potential for addiction of opioid drugs. Required information collected from patients, patient parties and medical records.

Results: There was a total of 220 patients prescribed with opioids after surgery. Among them 190 were males and 148 were females, which suggests among 220 patients, 18.35% patients were seen to be high potential to opioid addiction, 41.44% were at moderate risk and 35.9% were at low risk of opioid addiction potential. Assessing opioid addiction using opioid risk tool shows apersonal history of substance abuse, alcohol abuse, personal history of depression, family history of substance abuse, and long-term use of opioids are one of the main causes of opioid addiction potential.

Conclusion: Opioids are commonly prescribed for post-operative pain management, but prolonged use can lead to the induction of tolerance and the development of dependence. Alternative pain relief methods or pain management plans can be used to reduce opioid misuse and addiction.

Keywords: Opioid; Addiction Potential; Opioid Risk Tool; Post-Operative; Hospital; Patients.

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INTRODUCTION

Opioids are the narcotic analgesics prescribed to deal with continual and excessive ache which bind to opioid receptors, leading to the release of endorphins which suppress the notion of pain and raise emotions of pleasure, resulting in the dependency of the drug. India is said to be experiencing an opioid epidemic[1]. According to data from the International Narcotics and Control Board (INCB), the worldwide use of opioid analgesics has more than doubled[1].

The alarming upward thrust in opioid misuse over the past two and a half decades has resulted in a public health crisis, characterized most prominently by a dramatic increase in drug overdose deaths. In 2017,this overdose fatality rate reflects an increase of 345% between 2001 and 2016[2]. Patients often get hold of opioids either unnecessarily or in

excess of their requirements for surgical pain control. The prolonged use of opioids could lead to the induction of tolerance and the potentiation of dependence[2].

The likelihood of outpatient use after hospitalization increased by twice when opioids were administered to inpatients.Chronic opioid use is linked to the receipt of discharge opioid prescriptions in formerly hospitalized opioid naïve patients[3].

Earlier age of nonmedical use of prescription opioid drugs, earlier initiation of alcohol use, family history of alcoholism, and polydrug abuse are predictive of greater risk of developing prescription drug abuse or dependence[4].

The Opioid Risk Tool (ORT) is a brief, self-record screening tool designed to be used with adult patients in primary care settings to assess risk for opioid abuse among individuals prescribed opioids for treatment of chronic pain [5]. Prescribing opioids for a longer duration would definitely lead to addiction. A longer duration of opioid use leads to decreased capability and impaired quality of life [14-16].

Opioid risk tool(ort) [5]

Mark each box that applies	Female	Male
Family history of substance abuse		
Alcohol	1	3
Illegal drugs	2	3
Rx drugs	4	4
Personal history of substance abuse		
Alcohol	3	3
Illegal drugs	4	4
Rx drugs	5	5
Age between 16—45 years	1	1
History of preadolescent sexual abuse	3	0
Psychological disease		
ADD, OCD, bipolar, schizophrenia	2	2
Depression	1	1
Scoring totals		

Questionnaire developed by Lynn R. Webster, MD to assess risk of opioid addiction.

Webster LR, Webster R. Predicting aberrant behaviors in Opioid-treated patients: preliminary validation of the Opioid risk too. Pain Med. 2005; 6 (6) : 432[5]

MATERIALS AND METHODS

Study design: Aprospectiveobservationalstudywascarriedouttoassess opioid addiction potential in post-operative patients in a tertiary care hospital.

Sample size: The sample taken for the study was 220[6].

Study criteria:

Inclusion criteria:

- Individuals aged 18 years or above
- Patients admitted to the surgery department are prescribed with any class of analgesics.
- Patient is prescribed opioid drugs during discharge.

Exclusion Criteria:

- OPD patients
- Severely ill, unconscious and unresponsive patients.

Source of data collection

The required information was collected from patient and medical records.

Institutional ethics committee approval:

Ethical Clearance was obtained from theInstitutionalEthicsCommittee(IEC)

Statistical analysis:

Statistical analysis involves collecting and scrutinizing every data sample in a set of items from which samples can be drawn, and a suitable statistical test was applied to analyze the data. The collected data wasanalyzed using Microsoft Excel 2019 and Social Science Statistics.

RESULT:

Patient demographics:

The research included 338 participants in total. The mean age was 57.35 years (minimum 18 and maximum 85), and the sex ratio (male/female) was 1.28. The majority of participants were between 41-50 (25.73%) years old, followed by 51-60 (24.55%), 31-40 (23.96%), above 60 years (13.60%) and 18-30 (12.13%). The majority of patients, 65.08%, were prescribed opioid analgesics.57.98% were prescribed opioids during discharge. 44.08% of patients were prescribed a combination of opioid and non-opioid medications, i.e., either in one form or in separate forms. The prevalence and demographics of the patients are shown in Table 1.

TABLE 1: Demographics of Patients

Category	Variables	No. of subjects (n=338)	%
Gender	Male Female	190 148	56.21 43.79
Age (years)	18-30 31-40 41-50 51-60 > 60	41 81 87 83 46	12.13 23.96 25.73 24.55 13.60
No. of patients prescribed with opioids during post-operative hospitalisation		220	65.08
No. of patients prescribed with combination of opioid and non-opioid analgesics		149	44.08

The research included 338 participants in total. The mean age was 57.35 years (minimum 18 and maximum 85), and the sex ratio (male/female) was 1.28.

Assessment of opioid addiction potential using opioid risk tool (ort)

Opioid dependence potential was assessed using the Opioid Risk Tool and revealed that 79 patients (35.9%) were at low risk for opioid dependence, while 100 patients (41.44%) were at moderate risk and 41 patients (18.63%) were classified as being at high risk for opioid dependence. These findings highlight the need for a tailored approach to opioid prescribing and patient monitoring, taking into account the potential risk of addiction.

Opioid Risk Tool:

The assessment of opioid dependence risk using the ORT revealed variations based on different risk levels. Among patients classified as low risk (N = 79), the following results were found: 33 had a family history, and 7 had a personal history of alcohol abuse. None of the patients had a family history of illegal drug use and recreational drug use, a personal history of recreational drug use, pre-adolescent sexual abuse, or a history of bipolar disorder or schizophrenia.

Of the patients classified as moderate risk (N = 100), 51 had a family history, 57 had a personal history of alcohol abuse, and 9 had a personal history of depression. 99 had no family history and 39 had no personal history of illegal drug use.

Among patients classified as high risk (N = 41), 34 had a family history and 28 had a personal history of alcohol abuse, 35 had a family history and 4 had a personal history of illicit drug use, and 37 had a personal history of mental disorders. These results suggest that younger age, history of psychological disorder, and history of substance abuse had a greater impact on opioid addiction.

Table 2: assessment of opioid addiction potential using opioid risk tool

Sl. No	ORT Criteria	Low risk (n=79)		Moderate risk (n=100)		High risk (n=41)		P value
		Present	Absent	Present	Absent	Present	Absent	
1	Family history of alcohol abuse	33	46	51	49	34	7	<0.0001
2	Family history of illegal drug use	0	79	0	100	5	36	<0.0001
3	Family history of recreational drug use	0	79	1	99	6	35	<0.0001
4	Personal history of alcohol abuse	7	72	57	43	28	13	<0.0001
5	Personal history of illegal drug use	0	79	0	100	2	39	>0.001
6	Personal history of recreational drug use	0	79	0	100	4	37	<0.0001
7	Age between 18-45yrs	29	50	39	61	30	11	<0.0001
8	History of pre-adolescent sexual abuse	0	79	1	99	5	36	<0.0001
9	Personal history of ADHD, bipolar, schizophrenia	0	79	2	98	9	32	<0.0001
10	Personal history of depression	3	76	9	91	28	13	<0.0001

Table 2: Opioid dependence potential was assessed using the Opioid Risk Tool and revealed that 79 patients (35.9%) were at low risk for opioid dependence, while 100 patients (41.44%) were at moderate risk and 41 patients (18.63%) were classified as being at high risk for opioid dependence. (P<0.05)

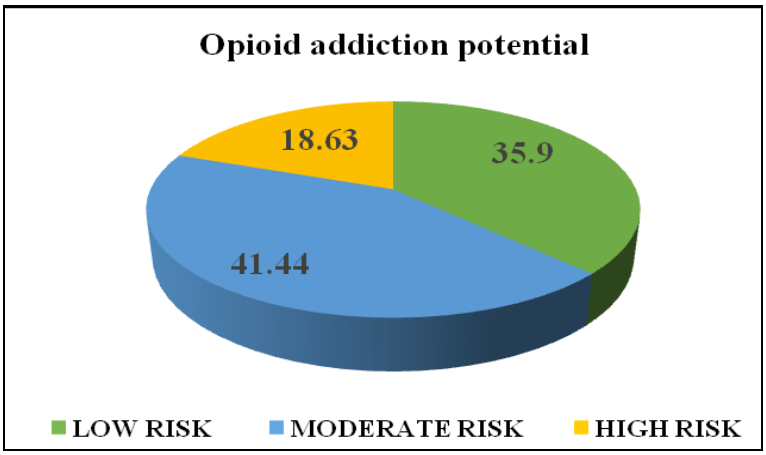

Figure 1: Assessment of Opioid Addiction Potential

Patients who were at low risk of addiction, that is 35.9%

Patients who were at moderate risk of addiction, is 41.44%

Patients who were at high risk of addiction, is 18.63%

Opioid drug characteristics and addiction potential:

The analysis of opioid medication characteristics based on addiction potential showed that in patients at mild risk for opioid dependence, the majority were prescribed traMADol (78), and only 1 patient received a buprenorphine patch. In the moderate-risk group, traMADol continued to be prescribed predominantly (96 patients), morphine and fentanyl (1 patient each), and buprenorphine (2 patients). On the other hand, patients at high risk of addiction were found to be prescribed morphine (4), buprenorphine (5), fentanyl (2), and butorphanol (3) in a significantly higher proportion, indicating that morphine, buprenorphine, fentanyl, and butorphanol have a significantly higher potential for opioid addiction compared with traMADol.

Considering the duration of opioid use, it appears that low-risk patients (n = 79) generally used opioids for 1–5 days, i.e., 55 patients and 19 patients for 6–10 days, 4 patients for 11–15 days, and only 1 patient received opioids for a longer period. In the moderate-risk group, which included 100 patients, 55 patients used opioids for 1–5 days, 38 patients for 6–10 days, 4 patients for 11–15 days, and 2 patients received opioids for a period longer than 15 days.

Among high-risk patients, only 21 patients used opioids for a short period of 1–5 days; a higher proportion of patients took opioids for longer than 15 days. The results suggest that taking opioids for a longer period of time may increase the risk of dependence. Regarding the combination of opioids and non-opioids, combinations were frequently prescribed in low-risk patients (69 out of 79) and 76 out of 100 in moderate-risk patients. In the high-risk group, the presence of combinations was much lower, with only 4 out of 41 patients.

The use of a combination of opioids and non-opioid analgesics can reduce the risk of opioid dependence inpatients. These findings emphasize the importance of understanding opioid prescribing patterns and their potential risks and contribute to more informed and cautious opioid use practices.

Table 3: Association between Opioid Drugs Characteristics and Opioid Addictionpotential

Opioid drugs characteristics		**Mild (n=79)**		**Moderate(n=100)**		**High(n=41)**		**P value**
		No. of patients	%	No. of patients	No. of patients	%	No. of patients	
Type of opioid	Tramadol (n=201)	78	38.8	96	47.76	26	12.93	<0.0001
	Morphine (n=5)	0	0	1	20	4	80	
	Buprenorphine (n=8)	1	12.5	2	25	5	62.5	
	Fentanyl (n=3)	0	0	1	33.3	2	66.6	
	Butorphanol (n=3)	0	0	0	0	3	100	
Duration(days)	1-5 (n=131)	55	41.98	55	41.98	21	16.03	<0.005
	6-10 (n=67)	19	28.35	38	56.71	10	13.92	
	11-15 (n=14)	4	28.57	5	35.71	5	35.71	
	>15 (n=8)	1	12.5	2	25	5	62.5	
Combination of opioid and non-opioid drugs	Present (n=149)	69	46.3	76	51	4	2.68	<0.0001
	Absent (n=71)	70	14.08	24	33.8	47	22.11	

Table3: Table shows that the highly prescribed opioid is traMADol(n=201) and among them 12.93% of people were seen to be at high risk of addiction, and the majority of patients were prescribed opioid for less than 5 days(n=131) were as some patients were prescribed opioid for more than 15 days (n=8) and because longer duration 62.5% were seen to be at high risk of addiction.

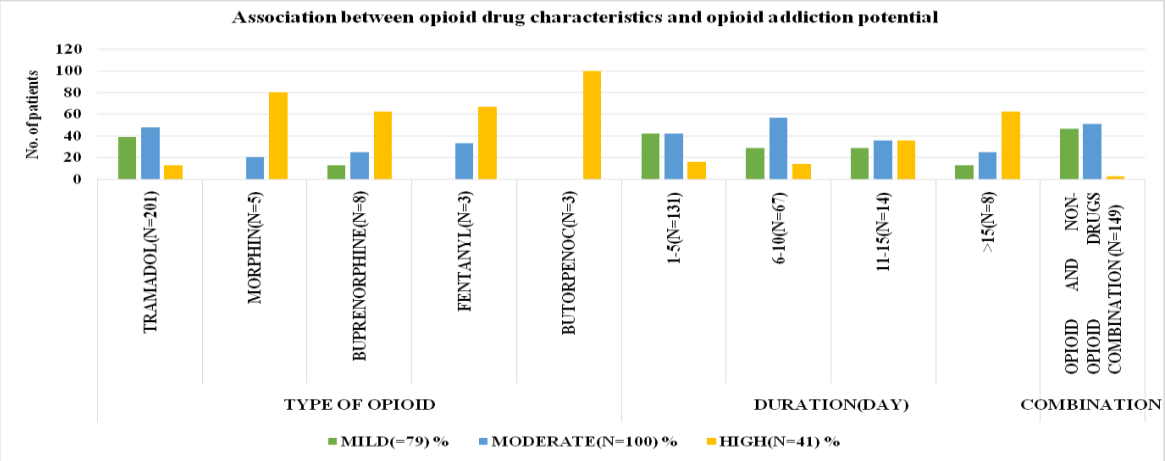

Figure.2: Association between Opioid Drug Characteristics and Opioid Addiction Potential

Figure shows type opioid prescribed and the duration of prescription which can be main cause of opioid addiction potential. Mild risk (n=79), moderate risk(n=100), high risk (n=41)

DISCUSSION:

The study shows that the use of opioid prescriptions is higher among males. Strand MA *et al*[5]study has similar results, and the opioid risk tool (ORT) has been an effective tool for detecting opioid addiction in patients. In terms of gender, male opioid prescriptions were higher, but contradictory in terms of age, where younger age groups were at high risk for opioid addiction.

The study on the potential for opioid addiction divides patients into high-, moderate-, and low-risk categories. According to the current study, men are more susceptible to opioid addiction than females. Results seen in Maumus M *et al*[13] showed that young-aged patients had a higher potential for opioid addiction, followed by middle-aged patients. Family and personal history of substance abuse, as well as a history of psychological disease, were all factors that contributed to high risk. A study conducted by Skala K *et al*[7] revealed a significant higher percentage of men in the group of patients with opioid addiction. Younger patients were found to have a higher risk of addiction. While a history of substance use disorder, certain mental health diagnosesare also at high potential for addiction are observed in the findings Klimas J *et al*[9] Additionally, a family history of psychiatric disorders, personal history, and co-morbid anxiety or depressive disorders were associated with a greater risk of opioid addiction similar results were seen in Sullivan MD *et al*[11]. Overall, these findings emphasize the need for a comprehensive approach that considers the multitude of factors contributing to opioid addiction. Edlund MJ *et al*[10] showed similar results and highlights the importance of addressing smoking habits, alcohol consumption, and mental health in addiction prevention and treatment.

CONCLUSION:

The risk of addiction to opioid analgesics in patients with chronic pain is a crucial area of active investigation.Factors contribute to the development of addiction. While a history of substance abuse and family history are two of them.

Individual, biological, and social factors have a significant impact. Childhood abuse and neglect in the context of paternal/maternal substance abuse can be used to predict the start of drug use with high accuracy.

The opioid risk tool was used to assess the risk of addiction, and it was discovered that the majority had a moderate risk of addiction.

The presence of high potential for opioid addiction was observed in patients who were prescribed butorphanol, buprenorphine, fentanyl, and morphine for a prolonged period, which suggests the need for monitoring these patients.

The development of opioid addiction can be decreased by prescribing non-opioid analgesics alongside opioids. The use of personalized pain management plans or alternative pain relief methods can help reduce opioid misuse and addiction.

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AUTHORS CONTRIBUTION:

theauthors confirm contribution to the paper as follows:

Satish S[1]: contributed in study design, analysis of data, correction of data, ethical clearance.

Tasfiya Manzer Sayed[2*:] study conception, data collection, analysis, interpretation of results and manuscript preparation.

A.R. Shabaraya[3:] reviewing of results, approving of final version of manuscripts, ethical clearance.

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“None to declare”.

CONFLICT OF INTEREST:

The authors have no conflicts of interest regarding this investigation.

REFERANCE:

1. Bohnert ASB, Guy GP, Losby JL. Opioid prescribing in the United States before and after the Centers for Disease Control and Prevention's 2016 opioid Guideline. Annals of Internal Medicine [Internet]. 2018 Aug 28;169(6):367.
2. Jalali MS, Botticelli M, Hwang RC, Koh HK, McHugh RK. The opioid crisis: a contextual, social-ecological framework. Health Research Policy and Systems [Internet].2020Aug6;18(1).
3. Clarke H, Soneji N, Ko DT, Yun L, Wijeysundera DN. Rates and risk factors for prolonged opioid use after major surgery: population based cohort study. BMJ [Internet]. 2014 Feb 11;348(feb11 3):g1251.
4. Cochran BN, Flentje A, Heck NC, Van Den Bos J, Perlman D, Torres J, Valuck R, Carter J. Factors predicting development of opioid use disorders among individuals who receive an initial opioid prescription: Mathematical modeling using a database of commercially-insured individuals. Drug and Alcohol Dependence [Internet]. 2014 Mar 14;138:202–208.
5. Strand MA, Eukel HN, Frenzel O, Skoy E, Steig J, Werremeyer A. Opioid risk stratification in the community pharmacy: The utility of the Opioid Risk Tool. Research in Social and Administrative Pharmacy [Internet]. 2022 Jul 31;18(12):4065–4071.
6. Webster LR, Webster RM. Predicting Aberrant Behaviors in Opioid-Treated Patients: Preliminary Validation of the Opioid Risk Tool. Pain Medicine [Internet]. 2005 Nov 1;6(6):432–442.
7. Skala K, Reichl L, Ilias W, Likar R, Grogl-Aringer G, Wallner C. Can we predict addiction to opioid analgesics? A possible tool to estimate the risk of opioid addiction in patients with pain [Internet]. PubMed. 2013.
8. McElyea J, Sam B, Hollingsworth H, Chamberlain C, Brown LS. The effect of patient opioid education on opioid use, storage, and disposal patterns. Journal of Pain & Palliative Care Pharmacotherapy [Internet]. 2022 Jan 2;36(1):11–17.
9. Klimas J, Gorfinkel L, Fairbairn N, Amato L, Ahamad K, Nolan S, Simel DL, Wood E. Strategies to identify patient risks of prescription opioid addiction when initiating opioids for pain. JAMA Network Open [Internet]. 2019 May 3;2(5):e193365.
10. Edlund MJ, Steffick D, Hudson T, Harris KM, Sullivan M. Risk factors for clinically recognized opioid abuse and dependence among veterans using opioids for chronic non-cancer pain. Pain [Internet]. 2007 Apr 21;129(3):355–362.
11. Sullivan MD. Depression effects on long-term prescription opioid use, abuse, and addiction. Clinical Journal of Pain [Internet]. 2018 Mar 2;34(9):878–884.
12. Wang SC, Chen YC, Lee CH, Cheng CM. Opioid Addiction, Genetic Susceptibility, and Medical Treatments: A review. International Journal of Molecular Sciences [Internet]. 2019 Sep 2;20(17):4294.
13. Maumus M. The Opioid Risk tool Assessing opioid risk: Why is the sensitive question important? Springer eBooks [Internet]. 2017. p. 217–224.
14. Huffman KL, Shella ER, Sweis G, Griffith SD, Scheman J, Covington EC. Nonopioid substance use disorders and opioid dose predict therapeutic opioid addiction. Journal of Pain [Internet]. 2014 Nov 8;16(2):126–134.
15. Kaye AD, Jones MR, Kaye AM, Ripoll JG, Galan V, Beakley BD, Calixto F, Bolden JL, Urman RD, Manchikanti L. Prescription Opioid abuse in Chronic Pain: An Updated Review of Opioid Abuse Predictors and Strategies to Curb Opioid Abuse: Part 1 [Internet]. PubMed. 2017.
16. Kolodny A, Courtwright DT, Hwang CS, Kreiner P, Eadie JL, Clark TW, Alexander GC. The Prescription Opioid and Heroin Crisis: A Public Health approach to an Epidemic of Addiction. Annual Review of Public Health [Internet]. 2015 Jan 12;36(1):559–574.