

Quality of Pain Management among Post-Operative Patients in Bir Hospital

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ABSTRACT

Background: Most of the patients experienced pain after surgery. Inadequately managed pain affects the physiological and psychological state of the patient, interferes with daily activities, reduces the satisfaction of care provided, and interferes with quality of life. The study aims to assess the quality of pain management among admitted postoperative patients of Bir Hospital, Nepal.

Methods: A descriptive cross-sectional study was conducted at the National Academy of Medical Science, Bir Hospital using the Revised American Pain Society Patient Outcome Questionnaire and patients' charts. A total of 352 post-operative patients were interviewed. Descriptive statistics were used to analyze the severity of pain, and satisfaction levels. Spearman's correlation coefficient, chi-square test, and ordinal logistic regression were used as an analytical approach using SPSS Version 16.

Results: About 95.2% of patients reported postoperative pain during the first 24 hours after surgery with a mean pain intensity score of 4.9 ± 2.3 . Of these patients, 44.3% had moderate, and 27.8% had severe pain. The mean satisfaction with the quality of postoperative pain management was 4.6 ± 2.3 . Only 21.6% were very satisfied with pain management. There was a significant positive correlation between the pain intensity score with the interference of physical and emotional activities. Satisfaction with quality of pain management was significantly associated with the patient's demand for pain medications and intensity of pain. The satisfaction with the quality of pain management was 3.4 times, 7.1 times, and 8.7 times more likely in moderate, mild, and no pain intensity in comparison to severe pain intensity respectively.

Conclusion: The majority of postoperative patients experienced moderate to severe pain and the majority of patients were only moderately satisfied with the quality of pain management. Hence, additional efforts are required to reduce postoperative pain and improve the quality of pain management.

Keywords: pain intensity; patient satisfaction; postoperative pain; quality of pain management.

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INTRODUCTION

Pain is a subjective sensation produced by an emotionally unpleasant experience.¹ Despite the advancements in pharmacological, technological, and new standards development and increased focus on pain management programs, many patients continue to experience intense pain after surgery.² Unrelieved pain is a major preventable public health problem.³

A study conducted in the US reported that 80% to 86% of patients experienced acute pain after surgery in which, 75% to 86% had moderate, severe, or extreme pain, with 74% still experiencing these levels of pain after discharge.^{4,5}

Severe pain was found in 62% of postoperative patients in a Hospital of South Africa.⁶ Pain was reported by 78% of patients in the past 24 hours in China.⁷ In India, 84.17%, 92.5% and 96.66% of postoperative pain was found among patients in the fifth post-operative hour, second and third post-operative day respectively.⁸ Forty-eight percent of patients had severe pain on the 1st postoperative day and 66% had moderate pain on 2nd postoperative day in a tertiary hospital in Nepal.⁹

Postoperative pain is not adequately managed in greater than 80% of patients in the US, 80.1% in an Ethiopian Hospital, and 60.2% in China.^{7,10, 11} Inadequately treated post-operative pain causes various adverse physical and psychological consequences.^{12,13} Unrelieved pain results in postsurgical infection, poor wound healing, negative effects on the various systems, and reduces mobility, causing different complications, long hospital stay, and readmission.¹⁴⁻¹⁷

Poorly controlled acute postoperative pain is associated with increased morbidity, prolonged use of opioids, delayed recovery, functional and quality-of-life impairment, and higher costs. The presence and severe intensity of acute pain after surgery may increase the risk of developing chronic pain.^{11,18,19} Severe and chronic pain adversely affects mental health, sleep, walking ability, general activity, employment status, social and personal relationships, and sexual functioning which reduced quality of life. Impaired sleep causes drowsiness during the day.^{14,20,22}

Higher levels of pain and depression are linked to poor satisfaction with care.²³ High priority should be given to acute postoperative pain care which indicates the quality of treatment.^{24,25} Ninety-eight to 50% of post-operative patients were satisfied with pain management in different hospitals in different countries.^{10,26} Likewise, 44.8% of patients were very satisfied, 40% moderately satisfied and 15.2% of patients were mildly satisfied with the pain management in a tertiary care teaching hospital.²⁷ In Nepal, 65% of patients were fully satisfied with overall post-operative pain management.⁹

Quality care is the right of all patients and the ethical responsibility of service providers. Nurses have the responsibility of adequately managing patients' post-operative

pain.²⁸ Patients' satisfaction is one of the indicators of quality care. This study aims to assess the quality of pain management among postoperative patients.

MATERIALS AND METHODS

A descriptive cross-sectional study was used to assess the quality of pain management among postoperative patients in Bir Hospital, Mahaboudha, Kathmandu, Nepal. The study started after obtaining approval from the Institutional Review Board of the National Academy of Medical Sciences, (Reference Number: 1130) Kathmandu, Nepal. Written informed consent was obtained from each patient before data collection. Patients with abdominal and urology surgery were the population of this study. Data was collected from the male surgical ward (MSW) and female surgical ward (FSW). The sample size was calculated using the formula of $n = Z^2pq/d^2$, taking 5% allowable error and considering the 65% prevalence of satisfaction among postoperative patients in Nepal.¹⁵ The required sample size was 352. Data were collected by using the purposive sampling technique. Male and female patients, age ≥ 18 years, and on 2nd or 3rd postoperative day in surgical wards were included. Patients having neuro-surgery, and cardiothoracic surgery, critically ill and having communication problems were excluded from the study. Data were collected by using the Revised American Pain Society Patient Outcome Questionnaire and patients' charts were reviewed for the clinical information. The level of pain was categorized as no pain (0); mild pain (1-3); moderate pain (4-6); severe pain (7-10) and the level of satisfaction was categorized as mild satisfied (1-3); moderately satisfied (4-6) and very satisfied (7-10). Descriptive statistics were used to analyze the severity of pain, and satisfaction levels. Spearman's correlation coefficient, chi-square test, and ordinal logistic regression were used as an analytical approach using SPSS Version 16.

RESULTS

The results showed that the mean age of patients was 42.49 ± 16.34 years. Majority of the patients were Male (55.4%), Brahmin/ Chhetri (42.3%), Literate (65.3%), Homemaker (29%). The majority of patients (83.2%) had gone through Gastrointestinal (GI) surgeries and general anesthesia. Only 23.6% had a history of previous surgery and 56.5% had received pre-operative teaching. The majority of the patients (80.4%) had a demand for pain-reducing medicines. Almost all (96.5%) received pain-reducing medicine within 15 minutes (Table 1).

The mean score of the patient's experience of pain intensity during 24 hours after surgery was 4.9 ± 2.3 . The majority (44.3%) of patients reported moderate pain and 40.1% of patients were moderately satisfied with post-

operative pain management during the first 24 hours of surgery (Table 2).

There was a significant positive correlation between the pain intensity score in the first 24 hours with the interference of physical and emotional activities (Table 3).

There was a significant association between the pain intensity with occupational status and the patient's demand for pain-reducing medications. However, there was no significant association between pain intensity and other variables (Table 4).

There was a significant association between the level of satisfaction and ethnicity of the patients, demand for pain-

reducing medications, and intensity of the pain (Table 5). Pain intensity increased by 2.7 times as patients had a demand of pain-reducing medicine compared to those with no demand (Table 6).

Satisfaction with the quality of postoperative pain management reduces by 14% if the patient had demands for pain-reducing medications. Satisfaction increases by 3.4, 7.1, and 8.7 times in moderate, mild, and no pain intensity respectively in comparison to severe pain intensity.

Table 1. Socio- demographic and clinical characteristics

Socio- demographic Characteristics	Frequency (%)	Clinical Characteristics	Frequency (%)
Sex		Type of Surgery	
Male	195(55.4)	Gastrointestinal	293(83.2)
Female	157(44.6)	Other (Urology, Nephrology, Burn Plastic Surgery)	59(16.8)
Ethnicity		Type of Anesthesia	
Brahmin/ Chhetri	149(42.3)	General	278(79)
Janjati	133(37.8)	Local	74(21)
Other (Dalit, Madhesi, Muslim)	70(19.9)		
Educational Status		History of Previous Surgery	83(23.6)
Literate	230(65.3)		
Illiterate	122(34.7)	Pre-operative Teaching Received	199(56.5)
Occupational Status			
Homemaker	102(29)	Demand for Pain Medicine	283(80.4)
Farmer	89(25.3)	Waiting Time to Receive Pain reducing Medicine n= 283	
Service holder	66(18.8)	Within 15 minutes	273(96.5)
Other (Business, Labor, Student)	95(26.9)	More than 15 minutes	10(3.5)

Table 2. Respondents' experience of post-operative pain and satisfaction level

Pain Intensity	Number (%)	Satisfaction level	Number (%)
No pain	17(4.8)	Mild satisfied	135(38.4)
Mild pain	81(23.0)	Moderately satisfied	141(40.0)
Moderate pain	156(44.3)	Very satisfied	76(21.6)
Severe pain	98(27.9)	-	-
Mean Pain Score: $4.9 \pm SD= 2.3$		Mean Satisfaction Score: $4.9 \pm SD= 2.3$	

Table 3. Relationship of pain intensity score with activities of respondents(n=352)

Activities	Pain Intensity
	Pearson's Correlation coefficient ®
Pain interfered doing activities in bed	0.443**
Pain interfered doing activities out of bed	0.442**
Pain interfered falling asleep	0.402**

Pain interfered staying asleep	0.345**
Pain caused to feel anxious	0.211**
Pain caused to feel depressed	0.264**
Pain caused to feel frightened	0.212**
Pain caused to feel helpless	0.199**

** = p- value <0.01(2-tailed)

Table 4. Association of pain intensity with socio-demographic and clinical character						
Characteristics		Pain Intensity				χ^2
		No pain n(%)	Mild pain n(%)	Moderate pain n(%)	Severe pain n(%)	p- value
Socio-demographic Characteristics						
Age	<20	1 (3.1)	10 (30.3)	14 (42.4)	8 (24.2)	0.929
	21-40	9 (6.3)	35(24.5)	61(42.6)	38(26.6)	
	41-60	4 (3.4)	25 (21.2)	53 (44.9)	36(30.5)	
	>60	3 (5.2)	11 (19.0)	28 (48.3)	16 (17.5)	
Sex	Female	10 (5.1)	45 (23.1)	84 (43.1)	56 (28.7)	0.950
	Male	7 (4.5)	36 (22.9)	72 (45.9)	42 (26.7)	
Ethnicity	Janajati	10 (7.5)	27 (20.3)	64 (48.1)	32 (24.1)	0.092
	Brahmin/Chhetri	4 (2.7)	31 (20.8)	69 (46.3)	45 (30.2)	
	Other	3 (4.2)	23 (32.9)	23 (32.9)	21 (30.0)	
Occupational Status	Farmer	6 (6.7)	18 (20.2)	26(29.2)	39 (43.8)	0.001
	Service holder	5(7.6)	13 (19.7)	39 (59.1)	9 (13.6)	
	Homemaker	2 (2.0)	21 (20.6)	55 (53.9)	24 (23.5)	
	Other	4 (4.2)	29 (30.5)	36 (37.9)	26 (27.4)	
Educational Status	Illiterate	4 (3.3)	27 (22.1)	54 (44.3)	37 (30.3)	0.704
	Literate	13 (5.7)	54 (23.5)	102 (44.3)	61 (26.5)	
Clinical Characteristics						
Anesthesia	GA	15 (5.4)	65 (23.3)	120 (43.2)	78 (28.1)	0.711
	Local	2 (2.7)	16 (21.6)	36 (48.6)	20 (27.1)	
Pre-operative teaching status	Yes	14 (7.0)	51 (25.6)	82 (41.2)	52 (26.1)	0.059
	No	3 (2.0)	30 (19.6)	74 (48.4)	46 (30.1)	
Previous surgery history	Yes	4 (4.8)	18 (21.7)	34 (41.0)	27 (32.5)	0.749
	No	13 (4.8)	63 (23.4)	122 (45.4)	71 (26.4)	
Demand for pain-reducing medications	Yes	8 (2.8)	57 (20.1)	134 (47.4)	84 (29.7)	0.001
	No	9 (13.0)	24 (34.8)	22 (31.9)	14 (20.3)	
Ward	FSW	11 (4.9)	49 (21.8)	101 (44.9)	64 (28.4)	0.909
	MSW	6 (4.7)	32 (25.2)	55 (43.3)	34 (26.8)	
Type of surgery	GI	15 (5.1)	66 (22.5)	131 (44.7)	81 (27.6)	0.904
	Other	2 (3.4)	15 (25.4)	25 (42.4)	17 (28.8)	

Table 5: Association of the level of satisfaction with socio-demographic and clinical characteristics (n=352)					
Characteristics		Satisfaction Level			χ^2
		Mild satisfied (%)	Moderately satisfied (%)	Very satisfied (%)	p-value
Socio-demographic Characteristics					
Age (years)	< 20	14(42.4)	10(30.3)	9(27.3)	0.931
	21 – 40	55(38.5)	58(40.6)	30(20.9)	
	41 – 60	43(36.3)	49(41.5)	26(22.2)	
	>60	23(39.6)	24(41.4)	11(19.0)	
Sex	Female	68(34.9)	85(43.6)	42(21.5)	0.254
	Male	67(42.7)	56(35.6)	34(21.7)	

Ethnicity	Janjati	60(45.1)	42(31.6)	31(23.3)	0.022
	Brahmin/Chhetri	51(34.2)	73(49.0)	25(16.8)	
	Other	24(34.3)	26(37.1)	20(28.6)	
Occupational Status	Farmer	40(45.0)	35(39.3)	14(15.7)	0.348
	Service holder	24(36.4)	29(43.9)	13(19.7)	
	Homemaker	32(31.4)	45(44.1)	25(24.5)	
	Other	39(41.1)	32(33.7)	24(25.2)	
Educational Status	Illiterate	50(41.0)	46(37.7)	26(21.3)	0.740
	Literate	85(37.0)	95(41.3)	50(21.7)	
Clinical Characteristics					
Anesthesia used	GA	107(38.5)	116(41.7)	55(19.8)	0.232
	Local	28(37.8)	25(33.8)	21(28.4)	
Pre-operative teaching status	Yes	78(39.2)	73(36.7)	48(24.1)	0.254
	No	57(37.3)	68(44.4)	28(18.3)	
Previous surgery history	Yes	30(36.1)	32(38.6)	21(25.3)	0.640
	No	105(39.1)	109(40.5)	55(20.4)	
Demand of Pain medicine	Yes	122(43.1)	127(44.9)	34(12.0)	0.001
	No	13(18.8)	14(20.3)	42(60.9)	
Surgery Type	GI	115(39.2)	115(39.2)	63(21.6)	0.720
	Other	20(33.9)	26(44.1)	13(22.0)	
Ward	FSW	82(36.4)	98(43.6)	45(20.0)	0.199
	MSW	53(41.7)	43(33.9)	31(24.4)	
Pain intensity	No pain	5(29.4)	2(11.8)	10(58.8)	0.001
	Mild pain	17(21.0)	32(39.5)	32(39.5)	
	Moderate pain	51(32.7)	81(51.9)	24(15.4)	
	Severe pain	62(63.3)	26(26.5)	10(10.2)	

Table 6. Ordinal Logistic Regression model for socio-demographic and clinical characteristics as predictors of intensity of pain(n=352)

Characteristics		B	SE	OR	P-value	CI for B	
						Lower	Upper
Socio-Demographic characteristics							
Age	≤ 20	-0.175	0.519	0.839	0.736	-1.191	0.841
	21- 40	-0.021	0.340	0.980	0.952	-0.687	0.646
	41- 60	0.214	0.319	1.238	0.503	-0.412	0.839
	> 60	-	-	1	-	-	-
Sex	Female	-0.066	0.242	0.936	0.786	-0.541	0.409
	Male	-	-	1	-	-	-
Ethnicity	Janajati	0.043	0.280	1.044	0.879	-0.507	0.593
	Brahmin/Chhetri	0.274	0.280	1.316	0.326	-0.274	0.822
	Others	-	-	1	-	-	-
Educational status	Illiterate	-0.067	0.261	0.936	0.799	-0.579	0.446
	Literate	-	-	1	-	-	-
Occupational status	Farmer	0.557	0.327	1.746	0.088	-0.083	1.198
	Service holder	-0.265	0.323	0.768	0.412	-0.897	0.368
	Homemaker	0.195	0.327	1.216	0.551	-0.446	0.837
	Other	-	-	1	-	-	-
Clinical Characteristics							
History of surgery	Yes	0.257	0.246	1.293	0.296	-0.226	0.740

	No	0	1				
Pre-operative teaching status	Yes	-0.334	0.209	0.716	0.110	-0.743	0.076
	No	-	-	1	-	-	-
Surgery type	Abdominal surgery	-0.031	0.273	0.969	0.909	-0.566	0.503
	Other	-	-	1	-	-	-
Anesthesia	GA	-0.342	0.269	0.711	0.204	-0.869	0.185
	Spinal	-	-	1	-	-	-
Demand of Pain medicine	Yes	1.007	0.259	2.738	0.000	0.500	1.515
	No	-	-	1	-	-	-

$R^2 = 0.83$ (Cox and Snell), 0.91 (Nagelkerke), 0.36 (McFadden); -2Log likelihood = 740.22; Model Chi-square = 3

Table 7 Regression model for socio-demographic and clinical characteristics as predictors of satisfaction of post-operative pain management n=352

Characteristics		B	SE	OR	p-value	CI for B	
						Lower	Upper
Socio-Demographic Characteristics							
Age	≤20	.067	.551	1.069	.903	-1.013	1.147
	21-40	.056	.363	1.057	.878	-.655	.767
	41-60	.125	.338	1.132	.712	-.537	.786
	>60	-	-	1	-	-	-
Sex	Female	.022	.260	1.022	.933	-.488	.531
	Male	-	-	1	-	-	-
Ethnicity	Janajati	-.492	.301	0.611	.103	-1.082	.099
	Brahmin/Chhetri	-.185	.297	0.830	.532	-.767	.396
	Others	-	-	1	-	-	-
Educational status	Illiterate	-.195	.278	0.823	.484	-.740	.351
	Literate	-	-	1	-	-	-
Occupational status	Farmer	.093	.350	1.097	.790	-.594	.780
	Service holder	-.110	.346	0.895	.750	-.789	.568
	Homemaker	.421	.349	1.523	.228	-.263	1.106
	Other	-	-	1	-	-	-
Clinical Characteristics							
History of surgery	Yes	.316	.260	1.371	.225	-.194	.826
	No	-	-	1	-	-	-
Pre-operative teaching status	Yes	-.153	.224	0.858	.495	-.592	.286
	No	-	-	1	-	-	-
Surgery type	Abdominal surgery	-.147	.290	0.863	.614	-.716	.423
	Other	-	-	1	-	-	-
Anesthesia	GA	-.236	.286	0.789	.410	-.797	.325
	Spinal	-	-	1	-	-	-
Demand for Pain reducing medicine	Yes	-1.978	.297	0.138	.000	-2.559	-1.396
	No	-	-	1	-	-	-
Intensity of pain	No pain	2.172	0.621	8.780	.000	1.073	3.272
	Mild pain	1.965	0.320	7.137	.000	1.338	2.593
	Moderate pain	1.230	0.283	3.421	.000	.687	1.774
	Severe pain	-	-	1	-	-	-
$R^2 = 0.26$ (Cox and Snell), 0.29 (Nagelkerke), 0.14 (McFadden)-2Log likelihood = 606.65Model Chi-square = 107.39							

DISCUSSION

The present study reveals that almost all patients (95.2%) reported post-operative pain within the first 24 hours of surgery. This finding is consistent with the findings of the studies conducted in Ethiopia, Turkey, and Nepal, where 95.2%, 97.1%, and 95.4% of patients reported postoperative pain respectively.^{10,29,30} Nearly half (44.3%) of the patients reported moderate pain and more than one quartile (27.8%) had severe pain within 24 hours of surgery with a mean \pm SD of pain score of 4.9 ± 2.3 . This finding is similar to the study conducted in Nepal where 46.2% of the patients reported moderate pain, and 13.5% severe pain during the first 24 hours after surgery with the mean pain intensity score 4.13 ± 2.23 and 4.8 ± 2.4 .^{30,31} Findings from another study revealed that hard pain was among 28.0%, 39.3% of the patients during the day of the operation and during the first postoperative night respectively.³²Varies in the intensity of pain among studies might be due to subjective assessment of the level of pain.

Overall, 72.1% of patients experienced moderate to severe pain during the first 24 hours after surgery. In contrast to this finding, the study conducted in Nepal revealed only 59.7% of patients experienced moderate to severe pain during the first 24 hours after surgery.³⁰

There was a significantly positive correlation between the pain intensity score and interference with physical activities in the first 24 hours after surgery. Similar findings were found in the study conducted in Ethiopia and Nepal.^{10,30}

This study found a statistically significant association between pain intensity score with the occupation of patients and demand for pain medications however, the pain intensity score was not statistically significant with age, sex and educational status, history of previous surgery, pre-operative teaching, type of surgery and type of anesthesia. Similar findings were revealed in the

study conducted in Nepal where sex, education, history of previous surgery, and type of anesthesia were not associated with pain intensity but significant association was found with the type of surgery.³⁰ Another study in Turkey and Nepal showed there was no significant association between pain level with age, sex, and educational status. However, a significant association was found with previous surgery history.^{29,31} Likewise, another study stated race, education level, and previous operation status had a significant association with pain intensity score.³³ Differences among studies' findings might be due to differences in the study setting, subjective data, and sample size.

Satisfaction with quality of pain management increases by 3.4 times, 7.1 times, and 8.7 times in moderate, mild, and no pain intensity in comparison to severe pain intensity respectively. These findings are consistent with the findings of the studies conducted in Ethiopia and Nepal.^{10,30,31}

CONCLUSION

Instead of growing evidence, and technology on pain management, pain is still a prevalent problem. Almost all postoperative patients experienced pain during 24 hours of surgery. However, more than three-fifths of patients were moderate to very satisfied with postoperative pain management. Hence, the institution should focus resources and efforts on continually evaluating the quality of pain management, and educating both patients and health care professionals to improve the quality of pain management. Training and professional development in pain management among inter-professional groups might have implications for increasing quality in pain management.

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