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PREVALENCE AND INTENSITY OF ACUTE POST-OPERATIVE PAIN AND MANAGEMENT  
ASPECTS IN ADULT PATIENTS: A CROSS-SECTIONAL TERTIARY  
HOSPITAL-BASED STUDY

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მწვავე პოსტ-ოპერაციული ტკივილის გავრცელება და ინტენსიურობა და ტკივილის მართვის  
ასპექტები მოზრდილ პაციენტებში: ერთმომენტური ტერციალურ-ჰოსპიტალზე  
დაფუძნებული კვლევა

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რეზიუმე

მწვავე პოსტ-ოპერაციული ტკივილის გავრცელება ფართოდ ვარიირებს, თუმცა საკმაოდ ხშირია მისი არაადეკვატური მართვა. კვლევის მიზანს შეადგენდა პოსტ-ოპერაციული ტკივილის გავრცელების, მისი ინტენსიურობის და ტკივილის მართვის ასპექტების შესწავლა დედაქალაქის ოთხ სპეციალიზირებულ სტაციონარში. კვლევის შედეგების მიხედვით, პოსტ-ოპერაციული ტკივილის პრევალენსი საკმაოდ მაღალია 88.5% (95.0% CI = 81.2-95.8). ტკივილის გაუტკივარების საშუალო მაჩვენებელი 76.3%, SD -14.8 აღმოჩნდა, ხოლო პაციენტების ტკივილის მართვით კმაყოფილების დონემ რიცხობრივი შეფასების შკალით 9- და 10-ქულიანი მაჩვენებლებით 36.5% და 25.0% შეადგინა, შესაბამისად. პოსტ-ოპერაციული ტკივილის ადეკვატური მართვა პაციენტზე ზრუნვის განუყოფელი ნაწილი უნდა იყოს პაციენტის აქტიური ჩართულობით ტკივილის მართვაში და ტკივილის მართვის გადანყვეტილების მიღებაში.

**Introduction:** Pain is a subjective and multidimensional experience, which is most often ignored by health care providers. The current practice of using post-operative analgesics with a focus on patients' demands may not be adequate [1]. Untreated surgical pain may result in a decrease in alveolar ventilation and vital capacity and even pneumonic consolidation. Inadequate post-operative pain relief may result in clinical and psychological changes that may increase the morbidity and mortality as well as the cost of treatment as a whole, in addition to decreasing the quality of life post-operatively, delayed wound healing and demoralization [1,2]. It is observed that up to 50% of patients may develop chronic post-operative pain including minor depression [2] and pain-related catastrophizing [3]. A distinct element of chronic post-surgical pain (CPSP) is related to bio-psychosocial factors [4,5]. Nearly 80% of patients experienced pain after surgery which was inadequately treated [1,10]. Also, it was observed that proper education and treatment of post-operative pain has increased the positive psychological impact on these patients [6], however based on the reviewed literature, prevalence of acute post-operative pain varies widely by countries, hospitals, operations, time after operation, patients' population etc. [7-10]. At the same time the degree of pain following many types of surgery in everyday clinical practice is unknown [28].

The study aimed to determine prevalence and intensity of post-operative acute pain and predicting factors of patients' satisfaction with post-operative pain management.

**Methods:** Cross-sectional survey was conducted in 4 major tertiary hospitals in the capital city during May-June 2022. PAIN OUT post-operative pain questionnaire was translated into native language and modified to consider some cultural and regulatory issues. Convenient sample was selected using the selection criteria such as: age $\geq$ 18, first week, mainly, 2-3 days after operation. Patients' consent on participation was obtained by signing an informal consent form. Pain intensity was determined during face-to-face interviews. A 10-point pain assessment scale, which has been nationally accepted in USA [17], was employed. The assessment of pain requires not only a subjective report by the patient but also an objective observation by a pain therapist. The influence of the pain therapy on clinical function—such as the ability to take a deep breath, cough, and move—can be ascertained [17]. Study results were processed in the Microsoft Excel Program. Statistical significance was set at  $p\leq 0.05$ .

**Results and Discussion:** Study was carried out in 4 tertiary hospitals in Tbilisi (Table1).

Table 1. Medical Institutions, participated in the study

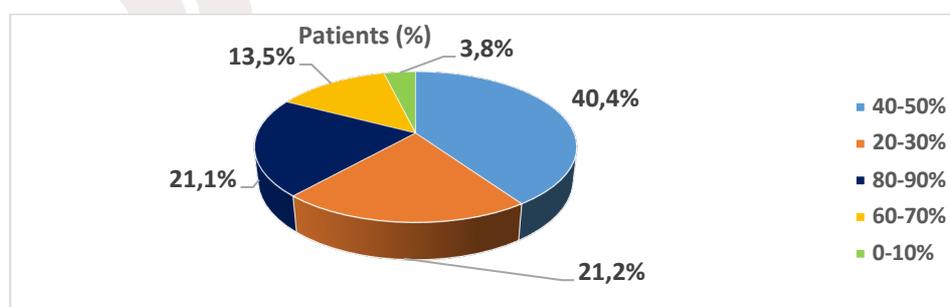
Medical Institutions	Hospital 1	Hospital 2	Hospital 3	Hospital 4
# of surgical beds	52	20	35	42
# of patients in the study	9 – 17.3%	20 – 38.5%	16 – 30.8%	7 – 13.4%

Convenient sample was selected. 52 patients meeting the inclusion criteria were enrolled. Socio-demographic profile of the patients is provided in the Table 2.

**Table 2.** Patients' Socio-demographic characteristics

Gender	Abs. #	%
Male	28	53.8
Female	24	46.2
<b>Marital status</b>		
Married	24	46.2
Unmarried	28	53.8
<b>Age range</b>		
20-29	3	5.8
30-39	8	15.4
40-49	11	21.2
50-59	11	21.2
60-69	10	19.2
70-79	9	17.3
<b>Education</b>		
Public school	6	11.5
Professional	16	30.8
University	29	55.8
Incomplete University	1	1.9

Mean age was  $53.4 \pm 15.1$ , 95%CI = 49.3-57.5, median – 55, Range - 27-79. Prevalence of post-operative pain composed 88.5% (95.0% CI = 81.2-95.8). According to the patients' estimation, they experienced pain most of the time (Fig.1). The vast majority of them indicated the worst pain within 8-10 they experienced since their surgery. Over a half had the score 10 (mean score -  $8.79 \pm 1.98$ , median – 9, mode - 10. The least pain score after surgery was 6. The mean least pain score was  $8.37 \pm 1.56$ , median – 8, mode - 8. Out of 24 patients indicating the worst pain as 10 - the highest, 17 (70.8%) showed no relief of pain after analgesia (Fig.2). Our finding are consistent with other study results: according to the US Institute of Medicine, 80% of patients who undergo surgery report postoperative pain, with 88% of these patients reporting moderate, severe, or extreme pain levels [11].



**Fig 1.** Time frame (%) being in pain after operation

In a national US survey of 300 adults who had undergone surgery 86% of patients experienced postsurgical pain overall [12]. In our study the measurements of the worst and the least pain scores since surgery demonstrated inadequate pain relief (Fig. 3). Some patients experienced acute pain of the similar

intensity of pain before and after treatment. In this regard we agree with Tong J Gan [13] and others [14,15,24,28] that postoperative pain is not adequately managed in a significant proportion of patients. It is estimated that approximately 50%-75% of patients have insufficient pain relief postoperatively [18,19]. Acute post-operative pain prevalence varies by time since operation, type of surgery, pain treatments [23,27,28]: Pain prevalence following surgery during the first 24 hours was 87 and the overall mean of satisfaction of all participants was moderate (66.6%) [23]. A high prevalence of moderate or severe pain was found during the whole of days 1–4 in the extremity surgery group (20–71%) and in the back/spinal surgery group (30–64%). Despite an acute pain protocol, postoperative pain treatment was unsatisfactory (in the University Hospital Maastricht, The Netherlands) [27]. Our study showed that almost every second respondent wished to had received more pain killers than were given after surgery. The highest level of post-operative pain relief was 90% but only in a small number of patients (16-30.7%). Most of the patients experienced severe pain equal or more than 50% of the time (Fig. 3).

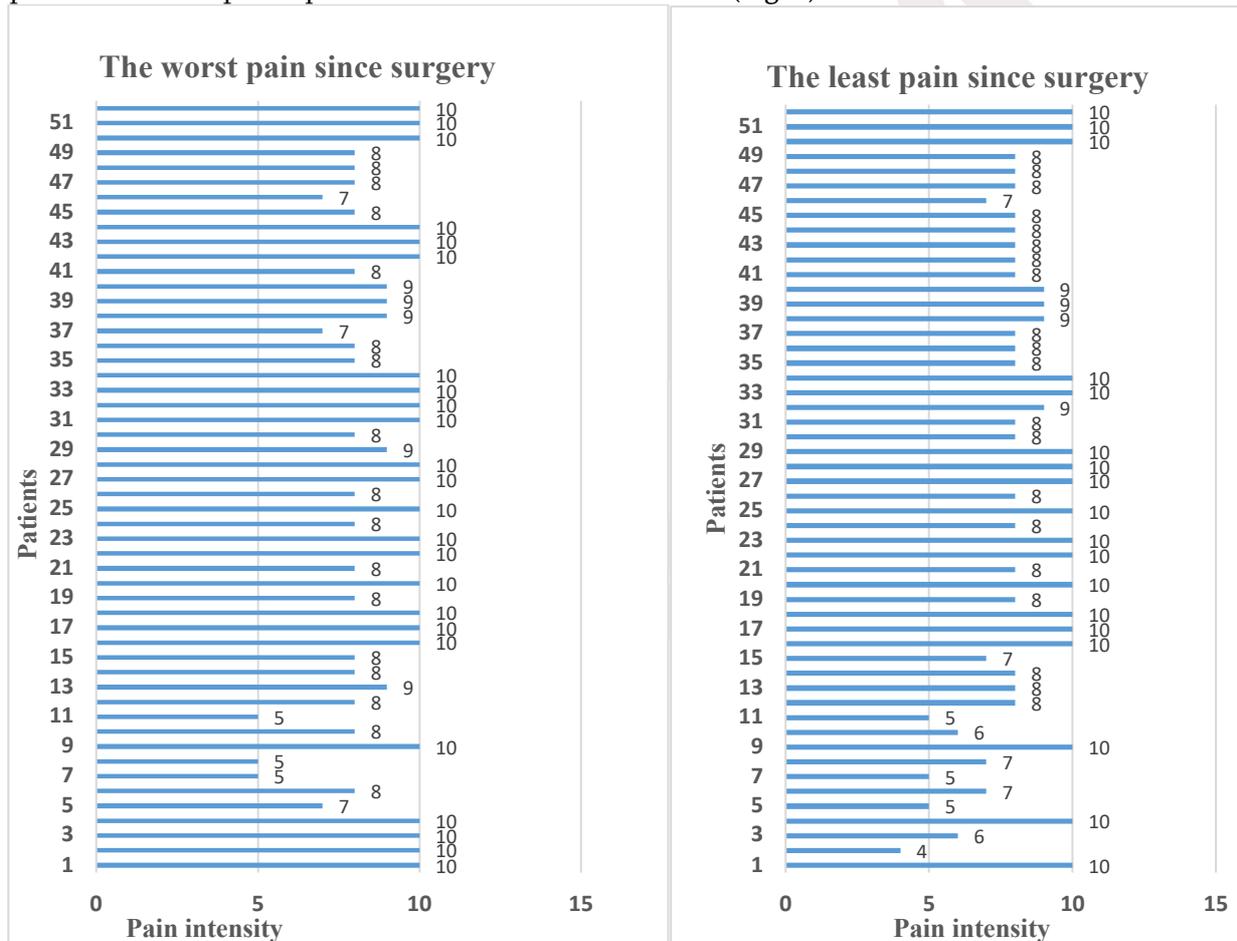


Fig.2. Prevalence of the worst and the least pain since surgery by numeric pain scale

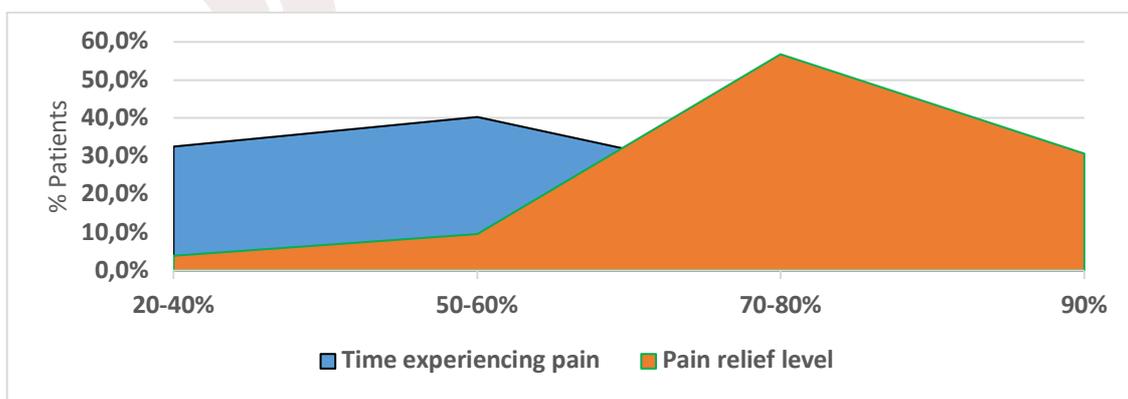


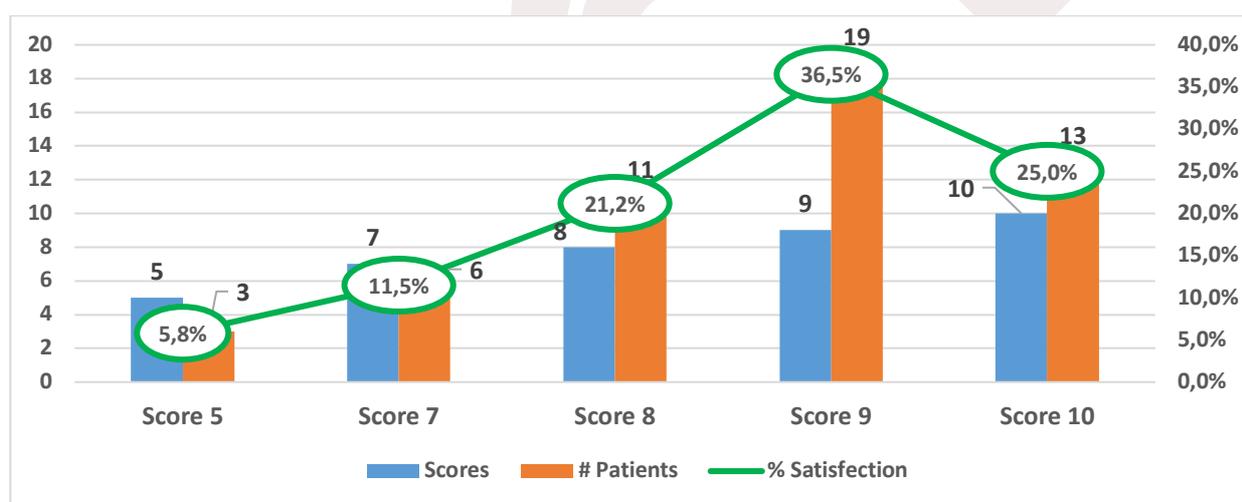
Fig. 3. Time duration of experiencing post-operation pain and pain relief level

The Table 3 describes acute post-operation pain relief characteristics. Mean pain relief was 76.3, SD -14.8. Minimal pain relief – 20%, maximal - 90.0%, IQR – 20%.

**Table 3.** Post-operation pain relief features after pain management

Mean	76.34615
Median	80
Mode	80
Standard Deviation	14.82299
Sample Variance	219.721
Range	70
Minimum	20
Maximum	90
Count	52
Confidence Level (95.0%)	
	$76.3 \pm 4.02$

None of the study subjects participated in decisions of their pain treatment and none of them used or received non-medical methods of pain relief. In present-day practice, patients have a right to be involved in all aspects of their pain management [20,21]. If surgical patients have adequate knowledge about the options available for postoperative pain relief, they will be better able to realistically discuss the suitable options for their situation and will also be better able to report their satisfaction and/or dissatisfaction levels [22]. On the question how satisfied the patients were with the results of their pain treatment since their surgery our study subjects expressed different satisfaction (Fig.4).



**Fig.4.** Satisfaction of patients (%) with pain treatment by numeric pain rating scale

Several authors pointed out that poorly controlled acute pain after surgery has been consistently shown to be a predictive factor for the development of chronic pain [13,16,24]. We share the idea that the field of perioperative pain management lacks consensus about quality indicators for assessing pain management [25,26].

**Conclusion:** Post-operative pain prevalence is high 88.5% (95.0% CI = 81.2-95.8). Mean pain relief - 76.3, SD -14.8, median - 80%. Patients' satisfaction with pain relief measured by NRS at the scores 9 and 10 composed 36.5% and 25.0% accordingly. Adequate perioperative pain management should be integral to patient care with active engagement of patients in pain management and taking decision in pain therapy.

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**PREVALENCE AND INTENSITY OF ACUTE POST-OPERATIVE PAIN AND MANAGEMENT ASPECTS IN ADULT PATIENTS: A CROSS-SECTIONAL TERTIARY HOSPITAL-BASED STUDY**

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**SUMMARY**

The prevalence of acute postoperative pain varies widely, but quite often inadequate relief of acute postoperative pain is found, which, in turn, is associated with the development of chronic postoperative pain and other health consequences. The aim of the study was to determine the prevalence of acute postoperative pain and the degree of satisfaction of patients with anesthesia after surgery in four specialized hospitals in the capital of the country. The results showed that the post-operative pain prevalence is high 88.5% (95.0% CI = 81.2-95.8). Mean pain relief - 76.3, SD -14.8, median - 80%. Patients' satisfaction with pain relief measured by NRS at the scores 9 and 10 composed 36.5% and 25.0% accordingly. Adequate perioperative pain management should be integral to patient care with active engagement of patients in pain management and taking decision in pain therapy.

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**РАСПРОСТРАНЕННОСТЬ И ИНТЕНСИВНОСТЬ ОСТРОЙ ПОСЛЕОПЕРАЦИОННОЙ БОЛИ СРЕДИ ВЗРОСЛЫХ ПАЦИЕНТОВ: ПОПЕРЕЧНОЕ ИССЛЕДОВАНИЕ НА УРОВНЕ ТРЕТИЧНОЙ БОЛЬНИЦЫ**

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**РЕЗЮМЕ**

Распространенность острой послеоперационной боли варьирует в широких пределах, однако довольно часто встречается неадекватное купирование острой послеоперационной боли, что, в свою очередь, связано с развитием хронической послеоперационной болью и другими последствиями для здоровья. Целью исследования было определить распространенность острой послеоперационной боли и степень удовлетворенности пациентов обезболиванием после операции в четырех специализированных больницах столицы страны. Результаты показали, что распространенность острой послеоперационной боли высока и составляет 88,5% (95,0% CI = 81,2-95,8). Среднее облегчение боли - 76,3%, SD -14,8, медиана - 80%. Удовлетворенность пациентов обезболиванием по шкале NRS с 9 и 10 баллами составила 36,5% и 25,0% соответственно. Адекватное периоперационное обезбоживание должно быть неотъемлемой частью ухода за пациентами с активным привлечением пациентов к обезболиванию и принятию решения о терапии боли.