

NANULI NINASHVILI<sup>1,2</sup>, IRAKLI MCHEDLISHVILI<sup>1</sup>, LEVAN GIORGOBIANI<sup>1</sup>, KHATUNA TCHAAVA<sup>1</sup>, NIA SHAVDIA<sup>1</sup>, NINO GEGESHIDZE<sup>1</sup>, NATIA MEBURISHVILI<sup>1</sup>  
**ACUTE POST-OPERATIVE PAIN INTENSITY AND ASSOCIATED FACTORS IN PATIENTS AT DIFFERENT SURGICAL DEPARTMENTS OF A REFERRAL HOSPITAL**

<sup>1</sup>Tbilisi State Medical University; <sup>2</sup>National Center for Disease Control and Public Health; Tbilisi, Georgia

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ნანული ნინაშვილი<sup>1,2</sup>, ირაკლი მჭედლიშვილი<sup>1</sup>, ლევან გიორგობიანი<sup>1</sup>, ხათუნა ჭაავა<sup>1</sup>, ნია შავდია<sup>1</sup>, ნინო გეგეშიძე<sup>1</sup>, ნათია მებურიშვილი<sup>1</sup>

**მწვავე პოსტოპერაციული ტკივილის ინტენსიურობა და ასოცირებული ფაქტორები რეფერალური ჰოსპიტლის ქირურგიული პროფილის განყოფილებებში**

<sup>1</sup>თბილისის სახ. სამედიცინო უნივერსიტეტი; <sup>2</sup>დაავადებათა კონტროლისა და საზოგადოებრივი ჯანმრთელობის ეროვნული ცენტრი, თბილისი, საქართველო

**რეზიუმე**

მწვავე პოსტოპერაციული ტკივილის (მპოტ) სერიოზულ გამონწვევად რჩება სამედიცინო მომსახურების სფეროში. კვლევამ მაღალი პრევალენსი აჩვენა დედაქალაქის რეფერალური ჰოსპიტლის ოთხ ქირურგიული პროფილის განყოფილებაში 88.5% (95.0% CI = 81.2-95.8). მაჩვენებელი ყველაზე მაღალი აღმოჩნდა ორთოპედიულ-ტრავმატოლოგიურ და ზოგადი ქირურგიულ განყოფილებებში. მწვავე პოსტ-ოპერაციული ტკივილის მაღალი ინტენსიურობა აღინიშნა ქირურგიული ჩარევიდან პირველი 24 საათის განმავლობაში. შემდგომ ტკივილის დონე და სიმძიმე თანდათან მცირდებოდა, თუმცა დამოკიდებული იყო ოპერაციის ტიპზე. რამდენიმე ფაქტორი, როგორცაა ასაკი, სქესი, ოპერაციის ტიპი არაერთგვაროვან კავშირშია მპოტთან, რაც გასათვალისწინებელია პოსტ-ოპერაციული ტკივილის მართვისას.

**Introduction:** Nearly 80% of patients experienced pain after surgery which was inadequately treated [1,2]. The overall prevalence of moderate to severe postoperative pain reported in the literature is 17% to 40%, with one study revealing an incidence of up to 60% in the first 24 hours [3]. Based on the reviewed literature, prevalence of acute post-operative pain varies widely worldwide and remains a serious public health challenge [2,4-9]. 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 [10]. In a national US survey of 300 adults who had undergone surgery 86% of patients experienced postsurgical pain overall [11]. According to the reviewed literature, acute post-operative pain prevalence varies by time after operation, type of surgery, pain treatments, etc. [12-14]: Pain prevalence following surgery during the first 24 hours was 87 and the overall mean of satisfaction of all participants was moderate (66.6%) [12]. 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%).

**The aim** of this study was to determine prevalence and intensity of acute post-operative acute pain and associated factors for effective management of post-operative pain.

**Methods:** Cross-sectional survey was conducted in 4 departments of surgical profile of a tertiary hospital in the capital city of the country during 18 March – 5 May 2023. PAIN OUT post-operative pain questionnaire was translated into native language and modified in order to consider some cultural and regulatory issues. Convenient sample was selected using the selection criteria such as: age $\geq$ 18, first four days after surgical intervention. Patients' consent on participation was obtained prior to the interview by signing an informal consent form (ICF). Pain magnitude and severity were determined by numerical rating scale (NRS) during face-to-face interviews. A 10-point pain assessment scale – Numeric Rating Scale (NRS), where “1” is no pain and “10” is the worst possible pain imaginable, which has been nationally accepted in USA [17], was employed. The patient was interviewed once. 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 surgical departments of a referral hospital, located in the capital city of the Country. Table 1 provides some details of the institutions.

**Table 1.** Medical Institutions participated in the study

Medical Institutions and surgical beds	Department 1 General Surgery	Department 2 Orthopedic - Traumatology	Department 3 Neurosurgery	Department 4 Proctology	Total
# of surgical beds	34	24	23	4	83
# of patients in the study	16 – 47.06%	12 – 50.0%	4 – 17.4%	2 – 50.0%	34

Convenient sample was selected. 40 patients meeting the inclusion criteria were contacted and selected. Out of them 34 (85%) signed the informal consent form. Refusal was related to clinical condition or a fear of disclosure of individual data irrespective of the confidentiality of obtained data highlighted in the ICF. Socio-demographic profile of the patients is provided in Table 2.

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

Gender	Abs.	%
Male	16	47.1
Female	18	52.9
<b>Marital status</b>		
Married	28	82.4
Divorced	1	2.9
Unmarried	5	14.7
<b>Age range</b>		
18	1	2.9
19-29	1	2.9
30-39	7	20.6
40-49	7	20.6
50-59	6	17.7
60-69	5	14.7
≥70	7	20.6
<b>Education</b>		
Public school	4	11.8
Professional school	4	11.8
University	25	55.8
Incomplete University (Student)	1	1.9
<b>Employment status</b>		
Employed	18	52.9
Unemployed	8	23.5
Retired	8	23.5

Mean age was  $52.4 \pm 15.1$ , 95%CI =  $52.4 \pm 0.891$  ( $\pm 1.7\%$ ) [ $51.509 - 53.291$ ], Median age – 50.5, Range – 18-83 (Table 3).

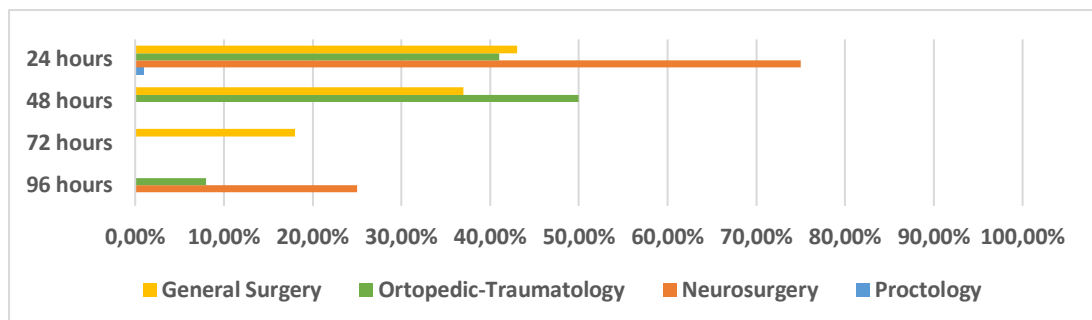
**Table 3.** Descriptive statistics of the ages of the study subjects

Mean	52,44118
Standard Error	2,646826
Median	50,5
Mode	57
Standard Deviation	15,43352
Sample Variance	238,1934
Kurtosis	-0,62366
Skewness	-0,08943
Range	65
Minimum	18

Maximum	83
Sum	1783
Count	34
Confidence Level (95,0%)	5,385008

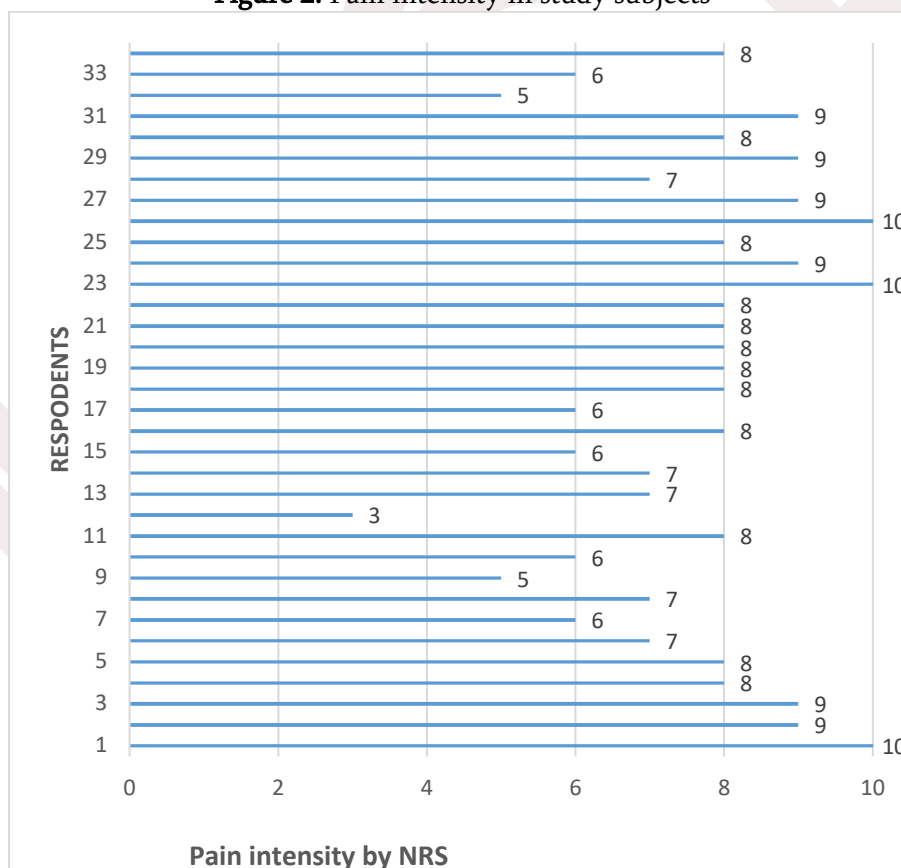
A half of the patients were interviewed during the first 24 hours after undergoing operation and only 2 patients (5.9%) after 72 hours. Most of the patients, interviewed during the first day of the surgical intervention were from the department of the general surgery (Figure 1).

**Figure 1.** Distribution of patients by department and interview time after surgical intervention



All study participants experienced acute pain after surgery, however pain severity varied by patients and departments (Figure 2).

**Figure 2.** Pain intensity in study subjects



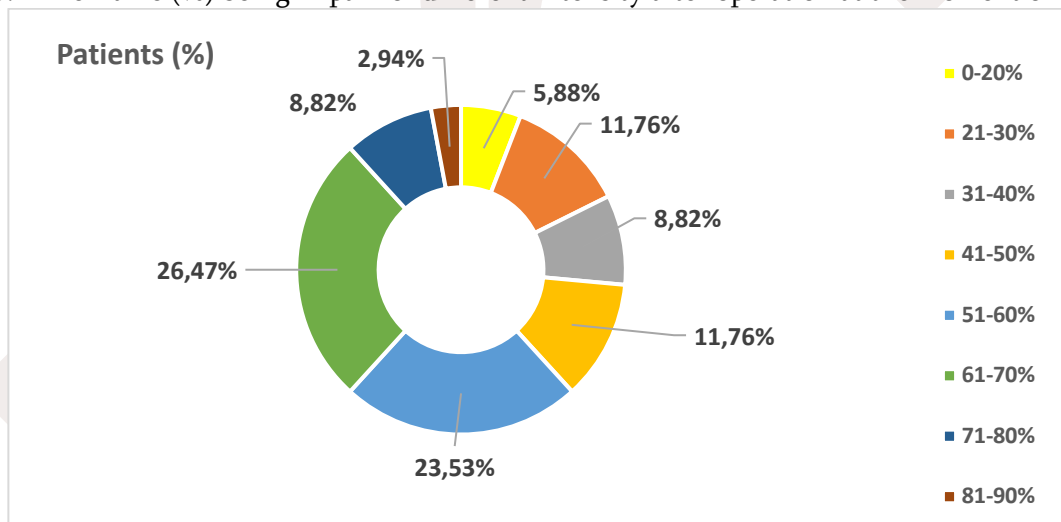
The prevalence of severe pain was high during the first 24 hours after operation (52.38%). It was highest in the department of general surgery and orthopedic-traumatology departments (Table 3). Maximum level of pain intensity was 10 and minimal – 3. Severe pain (8-10 by NRS) was indicated by 20 patients (58.82%) and the majority were from the department of general surgery and orthopedic-traumatology department. Over a half of the patients 21 (61.76%) experienced severe pain during the first 72 hours after surgical intervention.

**Table 3.** Acute post-operative pain intensity (NRS) by department and time after surgical intervention

	Department											
	General Surgery			Orthopedic - Traumatology			Neurosurgery			Proctology		
	Mild 1-3	Moderate 4-7	Severe 8-10	Mild 1-3	Moderate 4-7	Severe 8-10	Mild 1-3	Moderate 4-7	Severe 8-10	Mild 1-3	Moderate 4-7	Severe 8-10
24 hours	-	17.65 %	23.53 %	-	11.76 %	17.65 %	-	5.88 %	11.76 %	-	-	11.76 %
48 hours	-	33.3%	11.67 %	8.33 %	-	541.6 7%	-	-	--	-	-	-
72 hours	-	33.3%	2- 66.7%	-	-	-	-	-	-	-	-	-
96 hours	-	-		-	50%	-	-	-	50%	-	-	-

Our findings are in line with the study of 159 surgical patients where the percentage of moderate to severe acute post-operative pain (APOP) was found to be between 37.7% and 76.7% in the post-operative period within 72 hours of operation [15]. In our study the severity of pain was decreasing over time and remained relatively high after 73 hours only in neurological department.

Figure 3. Time frame (%) being in pain of different intensity after operation at the moment of interview



Severe pain dominated in females (52.38%) compared to males (47.63%), however the percentage difference in 10.101 is statistically insignificant due to the small size of our sample. In reviewed literature female gender was significantly associated with APOP [15-17]. Controversial finds were also stated [18]. Severe pain was common in female patients of elderly ages over 60 and 70 years.

High incidence rate of APOP was identified in the departments of orthopedic-traumatology and general surgery. Literature review also showed significant differences in association between age, pain sensitivity, pain magnitude and its severity due to sample size, study design, surgery type, timing of pain assessment, the lack of controlling perioperative pain management and magnitude of intervention.

**Conclusion:** Acute post-operative pain prevalence is high composing 88.5% (95.0% CI = 81.2-95.8). It is the highest in the departments of orthopedic-traumatology and general surgery. Severe pain is observed during the first 24 hours after surgical intervention. Pain magnitude and severity is decreasing over time, however is dependable on surgery type. Several factors such as age, gender, surgery type showed different type of association with APOP, which should be considered in pain management.

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*NANULI NINASHVILI<sup>1,2</sup>, IRAKLI MCHEDLISHVILI<sup>1</sup>, LEVAN GIORGOBIANI<sup>1</sup>, KHATUNA TCHAAVA<sup>1</sup>, NIA SHAVDIA<sup>1</sup>, NINO GEGESHIDZE<sup>1</sup>, NATIA MEBURISHVILI<sup>1</sup>*  
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**SUMMARY**

Acute post-operative pain prevalence is high 88.5% (95.0% CI = 81.2-95.8). It is the highest in the departments of orthopedic-traumatology and general surgery. Severe pain is observed during the first 24 hours after surgical intervention. Pain magnitude and severity are decreasing over time, however are

largely dependable on surgery type. Several factors such as age, gender, surgery type showed different associated with APOP, which should be considered in acute postoperative pain management.

**Keywords:** pain, post-operative, surgery, hospital

