

Original Research

# Pain management in hospitals: patients' satisfaction and related barriers

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Received (first version): 8-May-2018

Accepted: 1-Sep-2018

Published online: 25-Sep-2018

## Abstract

**Background:** Suboptimal pain control has been frequently reported in healthcare settings and documented to negatively impact patients' health. Patients' perception regarding pain management may influence their satisfaction regarding treatment.

**Objectives:** This study focuses on the assessment of patients' satisfaction regarding pain therapy and defining patient-related barriers for its implication.

**Methods:** A cross-sectional study was conducted in two tertiary care hospitals from April till July 2017. A face-to face interview questionnaire was filled regarding pain scores and patients' attitudes regarding pain management. Both medical and post-surgical adult patients with all types of pain were eligible to participate. A descriptive analysis of patient satisfaction and perceptions regarding pain management was done.

**Results:** Results from 183 participants with a mean age of 49 (SD=17.33) revealed that pain was their main reason for hospitalization (71.6% of the cases). Numeric pain scores were recorded only in 14.2% of the patient medical files. Pain intensity documentation by healthcare professionals was found in 41.5% of the cases, and 7.7% of the patients had to wait for more than 30 minutes before getting the pain medication. Around 85% of the patients were satisfied with their pain management. Patients' barriers to effective pain therapy were mainly fear of adverse effects, addiction, and additional costs ( $p < 0.05$ ).

**Conclusions:** Pain remains a prevalent problem that requires more efforts for improvement. Our study can effectively serve as a start for larger studies where barriers to pain management can be assessed as an independent variable affecting pain management practice.

## Keywords

Pain; Attitude to Health; Pain Management; Patient Satisfaction; Inpatients; Surveys and Questionnaires; Lebanon

## INTRODUCTION

Patient's right to involvement in all aspects of his/her pain management is promoted by governing organizations and healthcare institutions.<sup>1-3</sup> Patients' satisfaction with treatment is crucial to measure performance and success of the healthcare setting.<sup>2</sup> In fact, patients expect to receive optimal pain management resulting in fewer adverse effects.<sup>4</sup> Despite pain-related position statements and the recommendation of the American Pain Society that pain should be assessed by health care providers (HCPs) as a 'fifth vital sign'<sup>5-7</sup>, under-treatment of pain remains a global concern. Although the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the American Society of Anesthesiologists addressed patients' rights to have effective pain management<sup>1,2</sup>, insufficient knowledge of pain management still leads to inadequate pain evaluation which might adversely affect patients' quality of life, physical and psychological wellbeing.<sup>3,4,8</sup> Suboptimal pain control has been frequently reported in acute care settings to negatively impact patients' health and reduce patient satisfaction.<sup>9,10</sup>

In the Middle East, the literature pertaining to the adequacy of pain management is still inaccurate and only few observational studies addressed the management of pain in Lebanese hospitals with a focus on the different patient-related barriers to adequate pain management.<sup>11,12</sup> Despite the emphasis of the National Committee for Pain and Palliative Care to set standards for the improvement of pain management in Lebanon, many patients still suffer from pain during hospitalization.<sup>13,14</sup> For instance, a Lebanese study conducted by Ramia *et al.* found that documentation of pain intensity was not completed for more than 90% of surveyed patients<sup>15</sup> which constituted a major problem for adequate pain assessment. Similarly, multiple studies on pain management showed that documentation of pain was not consistently done which deprived the patients from proper treatment.<sup>16-20</sup> Thus, understanding patient's satisfaction as well as defining the barriers inhibiting such an appropriate assessment needs further investigation.

Accordingly, this study aims at 1) assessing patients' description of pain intensity and characteristics; and 2) evaluating overall patients' satisfaction regarding pain management. Secondary objectives were 1) describing if pain assessment and evaluation were practiced and documented by HCPs according to patients' statements, 2) assessing patients' attitudes and perceptions towards their pain management during hospitalization and their barriers prohibiting adequate therapy and 3) identifying predictive factors that affect patients' satisfaction regarding pain management.

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## METHODS

### Study design and setting

A prospective, descriptive, cross-sectional study was conducted from April till July 2017 in two private tertiary-care centers. Patients' surveys were used to describe patients' pain intensity as well as their attitudes and beliefs prohibiting its adequate management. Other information such as the methods of pain assessment and their documentation by HCPs were also obtained from patient medical charts, physician orders and nurses' progress notes.

### Study population

The study targeted all inpatient adults with pain of any origin during their hospital stay. Eligible patients were alert adults who have been hospitalized for at least 24 hours and prescribed at least one analgesic. Patients were distributed among four different hospital units: Internal Medicine (IM), Obstetrics and Gynecology, Coronary Care Unit (CCU) and orthopedics unit. Excluded patients were pediatrics (<18 years old) or older adults (>85 years old) with cognitive impairment. Patients admitted to the emergency room (ER), or discharged within 24 hours or less, and those who were missing a complete medical record were also excluded from the study.

### Tool for data collection

Face-to-face questionnaires, divided into two sections, one for the description of pain and patients' satisfaction and another for patient's perceptions regarding pain therapy, were developed in English and then translated to Arabic. It consisted of 8 data collection pages, with most of the questions requiring a "yes" or "no" answer. The first set of questions regarding pain score and intensity was developed in congruence with the American Pain Society Patient Outcome Questionnaire (APS-POQ) (Internal reliability: alpha Cronbach's score of 0.89) and modified to align with the study requirements.<sup>21,22</sup>

Patient-related barriers were incorporated from the Barriers Questionnaire-13 (BQ-13) (Internal reliability: alpha Cronbach's score of 0.86) obtained from the study conducted by Boyd-Seal *et al.*<sup>23</sup>

Participating patients were asked to voluntarily fill out the questionnaires that included the following sections: 1) Demographic features including age, gender, educational status, living place, income, health insurance and marital status; 2) pain intensity measured with the items "least" and "most" severe based on numerical rating scales (NRS) with answer options ranging from 0 to 10, where 0 reflects no pain and 10 worst pain possible; 3) pain interference with activities (walking, sitting, and standing) and sleep (turning, repositioning in bed, difficulty falling asleep and difficulty staying asleep); and 4) overall patient satisfaction measured using a 4-point Likert scale including strongly dissatisfied, dissatisfied, satisfied, and strongly satisfied that was assessed after 48 hours from the initiation of the first prescribed analgesic. Patient satisfaction categories were then divided into two groups: strongly dissatisfied or satisfied and satisfied or strongly satisfied.

Pain evaluation by HCPs section included 1) patient's recall if pain intensity was communicated with any HCP; 2) the existence of documentation of pain scores in patients' medical files; 3) patient's education regarding therapy; 4) timely delivery of intervention; and 5) follow-up of any HCP with the patients. As for the attitudes of patients regarding pain management, barriers to adequate pain management such as fear of addiction/tolerance, fear of side effects, fear of additional costs and injections were recorded. Barriers such as communication problems, and fear of distracting a physician were also reported. Social and cultural opinions such as sparing medications for severe illnesses, the association of step-up therapy with poor prognosis, the belief that "good" patients do not complain about pain were subsequently noted. Patient's opinions categories were grouped as "Do not believe" or "believe".

Concerning the health status of each patient, the investigators referred to the patient's charts, physician orders, and nurses' progress notes in order to record the reason of hospitalization, co-morbidities, home medications and smoking history as well as allergies. Pain categories were later classified as: mild (NRS score of 1–3), moderate (NRS score of 4–6), and severe (NRS score of 7–10) as per World Health Organization (WHO) pain ladder.<sup>5,24</sup>

The study was completed in accordance with the Ethics Code set and approved by the Medical Directory of the hospital. Participation was voluntary and oral consents were taken from each study participant. This study was performed in accordance with the ethics standards as laid down in the 1964 Declaration of Helsinki and its later amendments.

### Data collection

Eligible patients for inclusion were identified by a pain medication order arriving to the hospital pharmacy. Interviewers and the chief pharmacist of each hospital were making sure that medications such as acetaminophen and non-steroidal anti-inflammatory drugs (NSAIDs) were prescribed for pain rather than fever reduction. That was done by referring to nurses and progress notes or physician orders and by checking the vital signs of each patient especially the temperature. Any temperature below 38°C was not considered to be a fever.<sup>25</sup> When in doubt or in the case of borderline temperatures; interviewers asked the nurses of each medical department about the reason of each analgesic administration and referred always to the patient to ask about pain status and for their willingness to answer the questionnaire. Prescribed pain medications and the occurrence of any side effect were also recorded from patient's medical records and progress notes. A follow-up after 48 hours from the initiation of pain therapy was done to track therapy changes, and assess helpfulness of pain treatment as well as patient satisfaction and perceptions.

### Statistical analysis

Completed questionnaires were analyzed using SPSS version 22.0. Descriptive statistics were used to describe patients' characteristics. Means and standard deviations were calculated for continuous variables. Pain characteristics, including severity, method of pain assessment, patterns of pain, non-pharmacologic and

pharmacological therapies were summarized. Relationship between categorical variables such appropriateness of therapy and its relationship with patients' satisfaction were examined using Pearson's Chi<sup>2</sup>. Fisher's exact test was used when a condition of any expected cell count in a 4x4 table is less than 5. An alpha level of ≤5% was used to detect statistical significance. A forward stepwise likelihood ratio logistic regression was then conducted for multivariable analysis to identify the predictive factors associated with patients' satisfaction. The dependent variable was satisfaction of the patients and variables that showed significant results in the univariate analysis (p<0.001) were considered the independent variables. Such a restrictive criterion was considered because of the small sample size of the study. The Hosmer-Lemeshow goodness-of-fit test was used to assess the overall fit of the model, and adjusted odds ratios (aOR) were calculated.

## RESULTS

### Baseline characteristics

A total of 200 patients were eligible to participate in the study. 82 were selected from the first hospital and 118 from the second hospital. Of them, 183 (91.5%) patients met the inclusion criteria and completed the questionnaire whereas 17 (8.5%) were excluded. The most common reason for exclusion was lack of follow-up due to hospitalization of less than 48 hours (Figure 1). The mean age was 49 (SD=17.335) [range 19-85]. There was a similar distribution of the gender groups (57.4% females, 42.6% males). Patients were distributed as follows: 127 (69.4%) from IM, 15 (8.2%) from CCU, 29 (15.8%) from obstetrics and 12 (6.6%) were from the orthopedics unit. 53.9% of the patients underwent surgeries (obstetrical, orthopedics, or any type of surgery such as gastric sleeve, appendectomy, etc.). The majority of patients were covered by national social security fund (NSSF) (54.6%) or private insurances (13.1%) or both (8.2%). Around 64% were admitted with health coverage of a second medical class versus 21.9% were from the first class and 13.1% from the third class. 125 patients (68.2%) were given analgesics before admission. The mostly prescribed home analgesics were

acetaminophen (53%), ketoprofen (4.9%), ibuprofen (3.8%), diclofenac (3.8%), and tramadol (2.7%) either on regular basis or as required. More baseline characteristics are listed in Table 1.

### Primary Endpoints

Around three-quarters (71.6%) of the sample reported that pain was their main reason for hospitalization while pain was determined after an operational procedure in 98 cases (54%). When asked to describe their pain intensity on NRS with answer options ranging from 0 to 10, where 0 reflects no pain and 10 worst pain possible, the majority of the patients described their pain as severe (85.2%, n=156) at its highest intensity whereas only three patients (1.8%) described it as severe at its least. they varied in their description of pain and reported pain of different intensities: mild (69.2%) and moderate (29%). When at its highest, the pain intensity was again broadly reported as mild (2.2%, n=4) and moderate (12%, n=22).

After 48 hours of follow-up, new pain scores were recorded: the majority (59.4%) reported to have mild pain (n=110), 35.5% (n=66) reported to have moderate pain and only two (1.2%) as severe. Most of the patients reported that pain interfered severely with some of the daily activities: 84 (46%) determined that pain severely interfered with their ability to turn, sit and reposition in bed whereas 80 (43.7%) reported that pain interfered moderately with such activities. A similar number reported that they could not do activities out of bed such as eating, walking and sitting (49.1% as severe versus 41.5% as moderate). Similarly, pain interfered moderately with the ability of patients to fall asleep (41.5%) and stay asleep (40.4%).

Results from the first day of admission revealed that 82 patients (44.8%) were prescribed one medication, 89 (48.6%) two, nine patients (4.9%) three and one participant only (0.5%) four different pain medications, while two patients (1.1%) were not given any pain medication at all. Adjunct therapy, such as gabapentin was given to one patient whereas hyoscine butylbromide was prescribed for eight patients (4.4%) and phloroglucinol for six patients

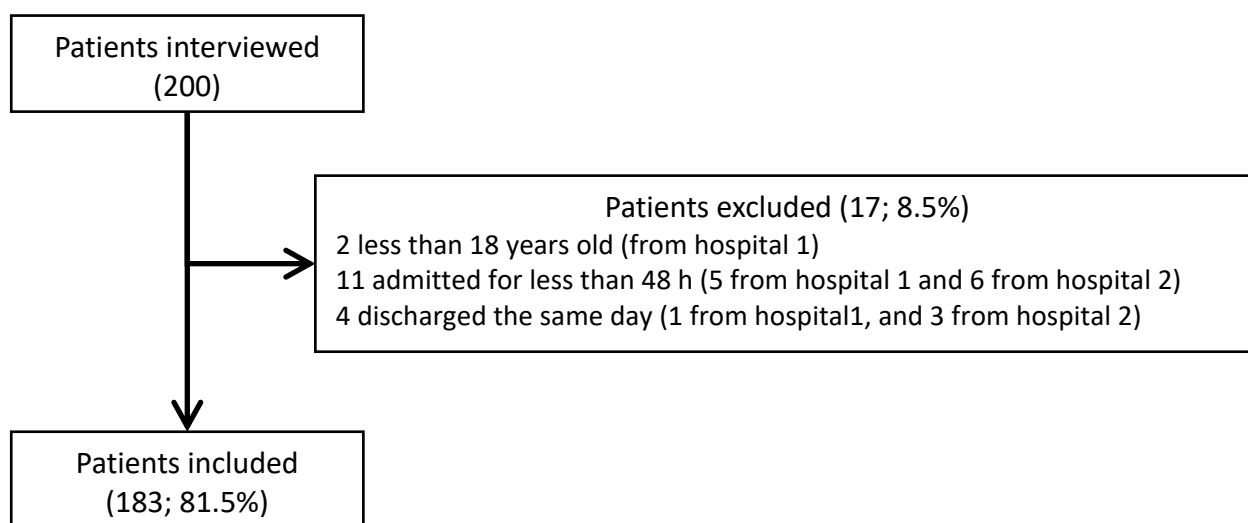


Figure 1. Patient inclusion procedure.

	N (%)
Gender	
Male	74 (40.4)
Female	109 (59.6)
Age	
19-30	35 (19.1)
31-40	30 (16.4)
41-50	22 (12.0)
>50	96 (52.5)
Health coverage	
Self-payer	23 (12.6)
NSSF and/or insurance	139 (76.0)
MOH coverage	12 (6.6)
Others	9 (4.9)
Medical class	
First	40 (21.9)
Second	117 (63.9)
Third	24 (13.1)
Highest level of education	
Not completed	68 (37.2)
High school degree	73 (39.9)
University degree	42 (23.0)
Income Status	
Poor	22 (12.0)
Fair	57 (31.1)
Good	17 (9.3)
Marital Status	
Single	34 (18.6)
Married or divorced	139 (76.0)
Widowed	10 (5.5)
Unit	
IM	127 (69.4)
Obstetrics	29 (15.8)
CCU	15 (8.2)
Orthopedics	12 (6.6)
Surgery	
No	83 (45.4)
Yes	97 (53.0)
Smokers	78 (42.6)
Allergies	
NSAIDs	4 (7.0)
Acetaminophen	2 (1.1)
NSSF= National Social Security Fund; MOH= Ministry of Health; IM= Internal Medicine; CCU= Cardiac Care Unit; NSAIDs= Non-Steroidal Anti-inflammatory Drugs.	

(3.3%). Acetaminophen, ketoprofen and meperidine were the most frequently reported drug used (95.1%, 34.4%, and 15.3% respectively). Side effects were detected in 34 participants (18.6%). Common side effects were constipation (6%, n=11), nausea/vomiting (4.9%, n=9), heartburn (4.4%, n=8), and dizziness (4.4%, n=8). As for the non-pharmacologic methods for pain relief, they were practiced by 37 patients (20.2%). The most commonly used were distraction (6.6%, n=12), bed rest (6%, n=11), deep breathing (5.5%, n=10), and exercises like walking (4.4%, n=8). Of noteworthy findings, these methods were useful in alleviating pain only in 7.1% of cases. More details about pain characteristics are listed in Table 2.

Results have shown that pain scores significantly decreased from an average of 8.34 (SD=1.884) on the first day of treatment to 3.24 (SD=1.611) after 48 hours of follow-up (p<0.001). In general, the majority of patients reported to be satisfied (68.3%, n=125) and 30 patients strongly satisfied (16.4%) regarding pain management therapy. Only 28 patients (15.3%) were either dissatisfied or strongly

	N (%)
Worst pain severity	
Mild to moderate <sup>a</sup>	26 (14.2)
Severe <sup>b</sup>	156 (85.2)
Scale used to measure pain	
Verbal	23 (12.6)
Numeric	3 (1.6)
Pattern of pain	
Continuous	58 (31.7)
Comes and goes	113 (61.7)
Gets worse in the evening	8 (4.4)
Pain makes the patient feel	
Anxious	82 (44.8)
Depressed	41 (22.4)
Frightened	56 (30.6)
Insomnia	53 (29.0)
Weak	45 (24.6)
Nausea and vomiting	53 (29.0)
Pain severely interferes with <sup>c</sup>	
Turning and repositioning in bed	84 (46.0)
Daily activities out of bed	90 (49.1)
Falling asleep	69 (37.7)
Staying asleep	64 (35.0)
Breathing	49 (26.8)
<sup>a</sup> Pain score of 0 to 6; <sup>b</sup> Pain score of 7 to 10 (according to the World Health Organization's three-step ladder for pain management); <sup>c</sup> Scores of 7 to 10	

dissatisfied. When comparing between categories of pain severity, it was shown that 25 patients (16.2%) with mild to moderate pain were satisfied or strongly satisfied versus 129 (83.8%) with severe pain. Again, only one patient with mild to moderate pain was either dissatisfied or strongly dissatisfied when compared to 27 patients (96.4%) with severe pain. This trend failed to show any statistical significance (p=0.078).

### Secondary endpoints

Several unfavorable management practices related to pain assessment and management were reported in both medical and surgical services. These included the following findings: (1) pain status not being discussed with a HCP prior to analgesic administration [76 patients (41.5%) were properly assessed versus 39.9% (n=73) not sufficiently assessed and 11.5% (n=21) not assessed at all]; (2) pain score was not recorded on medical files (54.6%, n=100); (3) patients not being provided with sufficient education regarding the importance of pain reporting and management (53.6%, n=98) nor followed-up appropriately in the next 48 hours (75.4%, n= 138); (4) patients having to wait for more than 30 minutes before getting the pain medication when requested (7.7%, n=14); and (5) patients asked about pain medications but were not given (10.9%, n=20). Among the cases in which pain assessment was done before initiation of pain treatment, pain score was recorded only in 14.2% of the medical files with the NRS being the most frequently used scale (12.6%). Nurses were the most involved HCPs to report pain since 16.9% of pain cases were assessed by nurses solely versus 2.7% by physicians.

When asked about their perceptions regarding pain management in hospitals, patients' opinions were classified as follows: (1) with regards to addiction, 69 patients (37.7%) either agree or strongly agree about its influence on pain assessment; (2) when it comes to fear of the side



Table 3. Sociodemographic predictive factors associated with patient's satisfaction with pain management				
		Strongly dissatisfied or dissatisfied	Strongly satisfied or satisfied	p-value
Gender	Male	14 (18.9%)	60(81.1%)	0.311
	Female	14 (12.8%)	95 (87.2%)	
Age		87 (69.6%)	38 (30.4%)	0.035
	19-65	19 (12.7%)	131 (87.3%)	
	>65	9 (27.3%)	24 (72.7%)	
Health coverage	Self-payer	4(17.4%)	19 (82.6%)	0.685*
	NSSF or/and insurance	20 (14.4%)	119 (85.6%)	
	MOH coverage	3(25.0%)	9 (75.0%)	
	Others	1 (11.1%)	8 (88.9%)	
First class coverage	No	21 (14.6%)	123 (85.4%)	0.515
	Yes	7 (18.9%)	30 (81.1%)	
Highest level of education	Not completed	9 (13.2%)	59 (86.8%)	0.24
	High school degree	15 (20.5%)	58 (79.5%)	
	University degree	4 (9.5%)	38 (90.5%)	
Income status	Poor	3 (13.6%)	19 (86.4%)	0.82*
	Fair	7 (12.3%)	50 (87.7%)	
	Good	1 (5.9%)	16 (94.1%)	
Marital status	Single	4 (11.8%)	30 (88.2%)	0.28
	Married or divorced	24 (17.3%)	115 (22.7%)	
	Widowed	0 (0.0%)	10 (100.0%)	

\*Fisher's exact test

effects, 58 (31.7%) reported that they are afraid of them such as constipation (15.8%), drowsiness (10.9%), confusion (8.2%) and nausea (13.6%); (3) 91 patients (49.7%) were afraid from receiving more injections and 62 (33.9%) were afraid from additional costs; (4) regarding cultural beliefs, 78 patients (42.6%) report that pain medication should be saved for more severe pain, 103 (56.3%) are afraid that step-up therapy may be associated with more severe illnesses, and 57 (31.1%) are convinced that good people should avoid talking about pain; (5) regarding the HCP-patient relationship, 71 (38.8%) agree that complaining may distract the physician on focusing on the main health problem whereas 101 (55.2%) report that miscommunication between the HCP and the patient may lead to inadequate assessment.

Results detailing the socio-demographic factors and their association with patients' satisfaction are presented in Table 3. Both genders were equally satisfied (81.1% males vs. 87.2% females,  $p=0.263$ ). Patient satisfaction failed also to show any statistically significant difference between those who had first class coverage or not ( $p=0.515$ ). However, being an elderly which is defined by an age over 65 years was associated with more dissatisfaction when compared to a younger age group (27.3% versus 12.7%;  $p=0.035$ ).

Patients who had proper pain assessment were more satisfied when compared to those who were not properly assessed (27.1% versus 20.1%,  $p<0.001$ ). A total of 137 patients (91.3%) who think that their pain treatment was helpful were significantly satisfied ( $p<0.001$ ). Those who did not receive timely medication administration (<30 minutes) and those who asked for pain medication but were not provided were more dissatisfied (71.4% versus 10.9% and 65.0% versus 7.7% respectively;  $p<0.001$ ). More details

about pain assessment conditions and their relationship with patient satisfaction are listed in Table 4.

As for patients' perceptions, fear of addiction and side effects such as constipation or drowsiness were significantly associated with patient dissatisfaction ( $p<0.001$ ). Again, 66.1% and 76.9% of those who were afraid of additional costs and injections were considered satisfied or strongly satisfied when compared to those who were not afraid [90 (97.8%) and 74 (91.4%);  $p<0.001$  and  $p=0.001$  respectively]. Moreover, only 64.2% who believed that complaining about pain may lead to distraction of the HCP were satisfied versus 96.8% with no such belief ( $p<0.001$ ). The same trend was shown with the patients who believed that good communication between the patient and the HCP is important for appropriate pain management ( $p<0.001$ ).

#### Multivariable analysis

A multivariable analysis for patients' satisfaction with all variables with  $p<0.001$  was done: (1) Patients perceptions and opinions such as fear of addiction, additional costs and side effects, in addition to lack of communication between HCPs and the patients as well as fear of distracting HCPs by complaining about pain were also taken into consideration. (2) Pain assessment methods such as proper assessment of pain by a HCP, waiting more than 30 minutes before receiving pain medications and asking for analgesics but not being provided. The stepwise forward approach was adopted. Five models were obtained; the Omnibus Tests of Model Coefficients was found significant ( $<0.001$ ) suggesting that the model is fit and suitable to the data. The Hosmer and Lemeshow goodness-of-fit test was found to be non-significant (0.175) emphasizing that the model is fit with its data. The overall percentage from the classification table was 95.8% suggesting that the entered

Table 4. Pain management predictive factors associated with patient's satisfaction				
		Strongly dissatisfied or dissatisfied	Strongly satisfied or satisfied	p-value
Fear of addiction	No	4 (4.3%)	89 (95.7%)	<0.001
	Yes	21 (30.4%)	48 (69.6%)	
Fear of side effects	No	6 (5.8%)	97 (94.2%)	<0.001
	Yes	22 (37.9%)	36 (62.1%)	
Fear of constipation	No	14 (11.4%)	109 (88.6%)	0.002
	Yes	10 (34.5%)	19 (65.5%)	
Fear of drowsiness	No	23 (17.3%)	110 (82.7%)	0.044
	Yes	0 (0.0%)	20 (0.0%)	
Fear of additional costs	No	2 (2.2%)	90 (97.8%)	<0.001
	Yes	21 (33.9%)	41 (66.1%)	
Fear of more injections	No	7 (8.6%)	74 (91.4%)	0.01
	Yes	21 (23.1%)	70 (76.9%)	
Do you think miscommunication with a HCP may be a cause of pain mismanagement?	No	1 (1.4%)	71(98.6%)	<0.001
	Yes	26 (25.7%)	75 (74.3%)	
Do you think that complaining about pain may distract the HCP from the main problem?	No	3 (3.2%)	90 (96.8%)	<0.001
	Yes	24 (33.8%)	47 (64.2%)	
Do you think that good people avoid talking about their pain?	No	19 (15.4%)	104 (84.6%)	0.953
	Yes	9 (15.8%)	48 (84.2%)	
Do you think that pain builds the character?	No	21(15.8%)	112 (84.2%)	0.787
	Yes	4 (13.8%)	25 (86.2%)	
Do you think that pain medications should be spared for more severe diseases?	No	10 (10.6%)	84 (89.4%)	0.072
	Yes	16 (20.5%)	62 (79.5%)	
Do you think that pain is a type of punishment?	No	17 (16.5%)	86 (83.5%)	0.768
	Yes	11 (14.9%)	63 (85.1%)	
Was your pain properly assessed prior to pain medication administration?	No	8(38.1%)	13 (61.9%)	<0.001
	Insufficiently	3(4.1%)	70(95.9%)	
	Yes	15 (19.7%)	61 (80.3%)	
What was the longest time you had to wait to get a pain medication?	<30 min	17(10.9%)	(89.1%)	<0.001
	>30min	10 (71.4%)	4 (28.6%)	
Did any HCP follow-up on your pain?	No	10 (11.6%)	75 (88.4%)	0.249
	Inconsistently	11 (22.4%)	38 (77.6%)	
	Yes	7 (15.6%)	38 (84.4%)	
Did a HCP educate you about pain treatment?	No	16 (15.2%)	89 (84.8%)	0.767
	Yes	12 (16.9%)	59 (83.1%)	
Did you ask about pain medication but were not given?	No	11(7.7%)	131(92.3%)	<0.001
	Yes	13 (65.0%)	7 (35.0%)	
Do you think that pain management was helpful?	No	15 (60.0%)	10 (40.0%)	<0.001
	Yes	13 (8.7%)	137 (91.3%)	

variables could explain more than 50% of the variability of the dependent variable. The Nagelkerke R square was 0.762 indicating that 76.2% of the variation of patient satisfaction is due to the variation of the independent variables included. Results of both significant and non-significant variables in the equation are presented in Table 5. Results have shown that patients' satisfaction significantly decreased because of some prejudgments such as patients' fear of side effects (aOR=0.098) and additional

treatment costs (aOR=0.007). When it comes to the involvement of HCPs in the therapy, it was shown that satisfaction significantly decreased when the patient had to wait for more than 30 minutes before getting the analgesic (aOR=0.006) or if he/she asked for additional therapy but were was not given (aOR=0.024). Proper pain assessment and asking about pain intensity by a HCP significantly increased patient's satisfaction (aOR=30.403).

Independent variables in logistic regression model	ORa	95%CI	p-value
Did you ask for pain medication but were not given?	0.024	0.003 – 0.208	0.001
Was your pain properly assessed prior to pain medication administration?	30.403	1.587 – 82.603	0.23
Did you have to wait more than 30 minutes before receiving a pain medication?	0.006	0.000 – 0.291	0.009
Fear of side effects	0.098	0.011 – 0.848	0.035
Fear of additional costs	0.007	0.000 – 0.375	0.015

(Dependent variable is patient satisfaction). ORa= Adjusted odds ratio; CI= Confidence interval

## DISCUSSION

Our results have shown that pain was prevalent and consistently experienced by hospitalized patients in varying intensities (71.6%). These results are comparable with many other studies which demonstrated that pain is present in more than 40% of hospitalized patients.<sup>26</sup> Around 86% of the patients in our study were categorized to have severe pain on their first day of hospitalization. This is in congruence with the definition of pain by the International Association for the Study of Pain whereby 'pain' is referred to as an emotional experience that is highly subjective.<sup>27</sup>

An intervention-necessitating finding in our current study is the lack of documentation of pain scores in 54.6% of surveyed patients. When compared to Zeitoun *et al.*, it was shown that 49.1% of the patients who were interviewed were undertreated based on the subjective pain scales they were provided, which deprived them from proper treatment.<sup>19</sup> Moreover, in the study conducted by Ramia *et al.*, documentation of pain was not consistently done for the majority of patients.<sup>15</sup>

On the other hand, inadequate follow-up by a HCP was one of the major concerns of this study. In fact, only 24.6% of the hospitalized cases were followed up during the first 48 hours whereas the majority of them did not receive proper follow-up or were inconsistently followed up. These results are consistent with Zeitoun *et al.* in which it was shown that 22% of the patients had adequate follow-up.<sup>19</sup>

As for the patients' opinions and perceptions regarding therapy, their satisfaction was highly dependent on adequate pain assessment by HCPs and their involvement in therapy. Fear of side effects and treatment costs were barriers that affected patients' satisfaction negatively. This lack of patients' knowledge and involvement in pain treatment was also identified by the First National Pain Medicine Summit as one of the top barriers to receiving adequate patient care.<sup>28</sup> Similarly, Ramia *et al.* reported that an average of 92% of surveyed patients were either satisfied or strongly satisfied with their pain management and identified patient satisfaction to be higher when doctors and nurses were more involved in pain intensity assessment and immediate provision of treatment.<sup>15</sup> Our findings are also supported by Bourdillon *et al.* and Thorson *et al.* reporting that pain assessment prior to administration of pain medications as well as timely administration of analgesics leads to better pain relief.<sup>29-30</sup>

This study provided optimistic data that 84.7% of the patients were either satisfied or strongly satisfied; this is in congruence with previous literature on patient engagement and satisfaction with care<sup>31-33</sup> and which can be explained by the fact that only 7.7% of the patients had to wait for more than 30 minutes before getting the pain medication

when requested and only 10.9% of them did not get any additional analgesic for their increasing pain. Moreover, almost half of the recruited participants were provided with sufficient education regarding their pain status and therapy. Accordingly, such favorable practices involving patient engagement in the care process could explain our positive findings of patient satisfaction despite the substantial pain that was still being experienced.

Another finding in our study was the statistically significant association of older age with dissatisfaction in regards to pain management; this can be explained by the fact that elderly have lower pain threshold and tend to have more medical and cognitive problems that may affect negatively their satisfaction. In addition, older adults are more likely to experience adverse reactions from pharmacologic agents which might modify the treatment. This finding, supported by Cavalieri was also addressed in published literature where it has been speculated that pain perception may be different in older adults because of an atypical presentation of diseases. It was stated that physicians need to be skillful in pain assessment and knowledgeable of both pharmacologic and non-pharmacologic approaches to providing optimal analgesia.<sup>34</sup>

To our knowledge, this study is among the few epidemiological studies conducted in the region to assess patients' satisfaction regarding pain management and evaluate the obstacles that may affect their satisfaction. Moreover, this is the first study to statistically evaluate patients' related barriers to adequate pain control during hospital stay. It addressed an essential clinical problem that remains suboptimally managed. In fact, Daher *et al.* identified potential impediments to adequate pain control in Lebanon including national policy (restrictive laws and regulations that govern the medical use of opioids) and barriers in the provision of health services<sup>11</sup>, but only mentioned some of the patient-related concerns without statistical evaluation. Furthermore, in the study conducted by Nasser *et al.*, the aim was to evaluate physicians' assessments of their own competency in pain management and identify physician-related barriers to effective pain control<sup>20</sup> whereas barriers to adequate pain management from patients' perspective were not mentioned. In addition, this study's tool for data collection is based on a validated questionnaire which significantly high Cronbach alpha scores to evaluate pain management during hospitalization. However, some limitations must be underlined. First of all, many participants might not recall previous medical actions and decisions regarding their pain which might introduce a recall bias; in this case, investigators were encouraged to collect missing information from patient medical charts, physician orders and nurses' progress notes. Another limitation is the presence of many interviewers with face-to-face questionnaires which may lead to interviewer bias. For this

sake, prior training and the use of a single translated version of questionnaire were applied to limit this type of bias. Moreover, the existence of contraindications or precautions that may influence the choice of pharmacologic medications and the preference of one drug over another may play the role of confounding factors that may also affect negatively the external validity of our study. To add, many underlying conditions such as chronic comorbidities or other mental or psychiatric disorders like depression or anxiety may reduce patients' satisfaction regarding pain treatment which might affect negatively the generalizability of the results. Aside from being a descriptive, non-interventional study with voluntary convenience sampling method at a limited number of sites, a follow-up of pain was done after 48 hours from the beginning of pain therapy which strengthens our findings.

## CONCLUSIONS

Despite the growing evidence on pain management, pain is still a prevalent problem that needs more attention and evaluation. Identified patient barriers that hamper pain management must be overcome and active patient participation in their care might be an effective way to improve pain management. Thus, institutions should place their money and effort on continually evaluating the quality of pain management, educating both the patients and health care professionals and stressing on adherence to clinical guidelines which are paramount for effective pain management. A prompt evaluation of pain should be

warranted as soon as possible in order to limit patients' suffering.

Our findings may help build the national database on pain management from the perspective of the patients and help regional authorities to better understand their patient needs and improve the implementation of acute pain management services.

## ACKNOWLEDGMENTS

The Chief Pharmacists of two Lebanese Hospitals: Libano-Canadian hospital and Sacre-Coeur hospital as well as third pharmacy students from Lebanese American University and Lebanese University for data collection.

## CONFLICT OF INTEREST

We declare that the corresponding is full-time employee at the Lebanese Order of Pharmacists, Drug Information Center Department. Katia Iskandar is the chief pharmacist of the Lebanese Canadian Hospital and a professor at the Lebanese University and Beirut Arab University. Pascale Salameh is a full-time Professor at the Lebanese University and the chair (non-profit position) of the scientific committee at the Lebanese Order of Pharmacists. We have no other conflict of interest to declare.

## FUNDING

None.

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