

# Pain Severity and Adequacy of Pain Management in Terminally Ill Patients with Cancer: An Experience from North Palestine

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## Abstract

**Aim:** Chronic pain is common in terminally ill patients with cancer and affects their quality of life. In this study, we wanted to evaluate pain severity and the adequacy of prescribed analgesics in terminally ill patients with cancer in North Palestine. **Methods:** We conducted a cross-sectional descriptive study in North Palestine on 77 terminally ill patients with cancer. Pain experience was evaluated with Brief Pain Inventory-Short Form (BPI-SF). Pain management index (PMI) was calculated to determine the adequacy of interventions. The relationships between adequacy of pain management and socioeconomic and clinical factors were analyzed by the covariance method. Statistical analyses were performed using Statistical Package for the Social Sciences (SPSS version 15.0 [SPSS Inc., Chicago, USA]). **Results:** Fifty-nine patients (76.6%) reported moderate-to-severe pain. According to the PMI, only 64.9% of the patients received adequate pain management. Thirty-five patients (45%) wanted additional treatment or an increase in the dose of pain medications. Although men and women reported similar pain severities, women were more likely to be inadequately treated ( $P = 0.027$ ). Pain severity was significantly less in patients who received health-care services at least once in the last month before the interview, compared to those without recent access to health care ( $P = 0.024$ ). **Conclusion:** There is substantial inadequacy in pain management in patients with cancer. The BPI-SF should be routinely used to evaluate pain severity, and analgesics should be prescribed equitably without discrimination with regard to gender and socioeconomic status of patients.

**Keywords:** Attitudes, cancer pain, observational study, pain management, practice patterns

## INTRODUCTION

A terminal illness is defined as a life-limiting disease with an irreversible decline and an expected survival of months or less.<sup>[1]</sup> One of the main concerns in these patients is pain, which is a cardinal indicator of their quality of life.<sup>[2]</sup> Cancer pain is extremely common in all stages of disease in all cancer types.<sup>[3,4]</sup> The prevalence of pain at the time of cancer diagnosis and early in the course of the disease is approximately 50% and increases to 75% in advanced stages.<sup>[5]</sup> Unrelieved pain continues to be an important public health issue worldwide, despite the recommendations for adequate pain control in the World Health Organization (WHO) guidelines.<sup>[4,6]</sup> One tool to grade pain severity is the Brief Pain Inventory-Short Form (BPI-SF), a shorter version of the BPI originally developed from the Wisconsin Brief Pain Questionnaire.<sup>[7]</sup> The pain management index (PMI) is a well-validated tool for assessing the adequacy of pain control using WHO guidelines.<sup>[8,9]</sup>

In Palestine, cancer is the third leading cause of death. Recent statistics revealed 8106 new cancer cases (2000–2005) in the West Bank with 3471 deaths.<sup>[10]</sup> This implies that a high percentage of cancer patients are diagnosed late in terminal stages, which indicates that these patients are beyond curative therapy and need optimal palliative care to live their remaining months with minimal suffering.<sup>[11]</sup> The Ministry of Health (MOH) has limited palliative care services for oncology patients, and we could find no information on the approach to pain management of terminally ill cancer patients in Palestine. Therefore, we undertook this project to study terminally ill cancer patients

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to determine the severity of their pain and the adequacy of pain management.

## METHODS

### Study design

We conducted a cross-sectional, noninterventional, descriptive study on terminally ill cancer patients in North Palestine. After the institutional review board approval and obtaining all the necessary permissions from An-Najah National University, the MOH, and Al-Watani Hospital, we reviewed the charts of the patients in the cancer registry in Al-Watani Hospital (which provides medical services for cancer patients in the North West Bank) from June 2010 to January 2013.

### Patient selection

Any cancer patient between the ages of 18 and 85 years who was a resident of North West Bank, with an estimated survival of <6 months, was considered for inclusion. We excluded patients with an altered sensorium or a diagnosis of a brain tumor or a psychiatric disorder. Figure 1 depicts an overview of the selection process of the study population.

### Tools

Written informed consent was obtained from all participants for face-to-face interviews. Pain was measured using the BPI-SF, which is a validated, widely used questionnaire, developed to assess pain severity and the impact of pain on daily activities of individuals. It measures the presence, the location, and the severity of pain; pain relief from treatment; and its impact on various aspects of life in a 9-point questionnaire.<sup>[7,12]</sup> The BPI-SF was translated into Arabic in 2001 and validated in Moroccan cancer patients.<sup>[13]</sup>

Pain severity was determined as none, mild, moderate, or severe with scores of 0, 1, 2, and 3, respectively, based on the third question of the BPI-SF that rates the pain at its worst in the last 24 h, with 0 being no pain at all and 10 being the worst pain imagined. A worst pain score of 1–4 correlated with mild pain, a worst pain score of 5–6 correlated with moderate pain, and a worst pain score of 7–10 correlated with severe pain. The score of the analgesic drug therapy was determined for each patient according to the most potent one

used, based on the WHO ladder of pain, with 0: no analgesic drug, 1: nonopioid (e.g., a nonsteroidal anti-inflammatory drug or acetaminophen), 2: weak opioid (e.g., codeine and tramadol), and 3: strong opioid (e.g., morphine). The PMI was calculated for each patient by subtracting the pain level from the analgesic level. It ranges from –3 (a patient having severe pain receiving no analgesic drugs) to +3 (a patient receiving strong opioids and reporting no pain). Negative scores indicate inadequate use of analgesic drugs and positive or zero scores indicate adequate pain management.<sup>[8,14]</sup> The researchers were trained to approach and interview patients in the same way with the exact phrases and words used every time to eliminate bias.

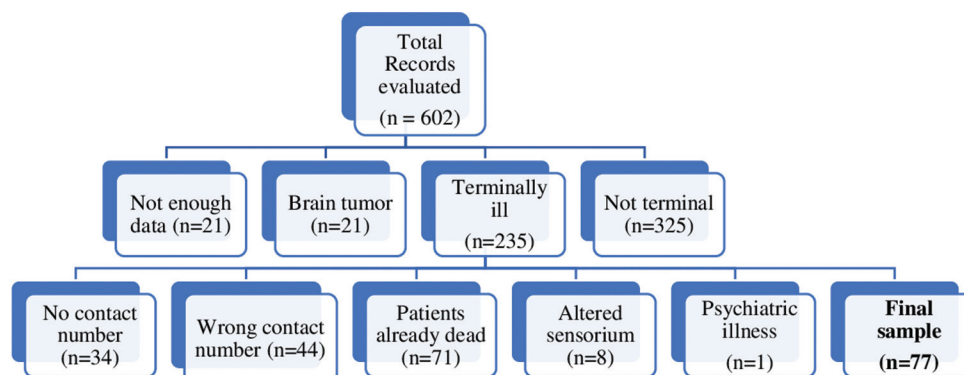
### Statistical analysis

All statistical analyses were performed by using Statistical Package for the Social Sciences (SPSS version 15.0 [SPSS Inc. Chicago, IL, USA]). Descriptive tests were performed to calculate frequencies, percentages, and means for all the variables. Relationships were assessed by the covariance method. Data were tested by Chi-square and Fisher's exact tests. The *P* value was considered significant if it was < 0.05.

## RESULTS

A total of 602 patient charts were reviewed; 21 (3.5%) charts were excluded because they did not contain enough clinical information to stage the disease. Another 21 (3.5%) charts were excluded because those patients had a diagnosis of brain tumor. Of the remaining 560 patients (93%), 325 (54%) patients were not terminally ill. Of the 235 labeled as terminally ill, 159 (68%) patients were excluded as follows: 34 (21%) charts without phone numbers, 44 (28%) charts without a correct or working phone number, 71 (45%) charts with deceased patients, and 8 (6%) charts of patients with an altered sensorium. One was excluded because the patient had a psychiatric disorder. This left a sample of 77 patients for our study.

Table 1 reports the sociodemographic factors and health profile of the patients. The mean age of the participants was 59 years. The percentage of women (44 patients, 57%) was greater than men (33 patients, 43%). Patients more commonly lived



**Figure 1:** Overview of selection process of the study population

**Table 1: Socioeconomic and clinical profile of the study population**

Characteristics	Number of participants (n=77), n (%)
Age* (years)	
≤60	40 (51.9)
>60	37 (48.1)
Gender	
Male	33 (42.9)
Female	44 (57.1)
Education	
Illiterate	13 (16.9)
Intermediate	33 (42.9)
High school	19 (24.7)
Higher education	12 (15.6)
Marital status	
Single	7 (9.1)
Married	49 (63.6)
Widowed	14 (18.2)
Divorced	7 (9.1)
Residency	
Urban	32 (41.5)
Rural	45 (58.5)
Income*	
≤1450	24 (31.2)
>1450	42 (54.5)
Declined to answer	11 (14.3)
City	
Nablus	47 (61)
Outside Nablus	30 (39)
Primary caregiver	
Self-care	27 (35.1)
Relative	50 (64.9)
Nursing home personnel	0
Relative caregivers	
Spouse	24 (48)
Son or daughter	10 (20)
Sibling	8 (16)
Others	8 (16)
Awareness of cancer diagnosis	
Yes	62 (80.5)
No	15 (19.5)
Physical function	
Bedridden (≤50% of time)	32 (41.6)
Bedridden (>50% of time)	45 (58.4)
Insurance	
Governmental	48 (62.3)
Social	21 (27.3)
Green line	2 (2.6)
Private	1 (1.3)
Others	5 (6.5)
Site of cancer	
Lung	14 (18.2)
Pancreas	6 (7.8)
Colorectal	21 (27.3)

Contd...

**Table 1: Contd...**

Characteristics	Number of participants (n=77), n (%)
Breast	9 (11.7)
Others	27 (35.1)
Duration since diagnosis	
6 months or less	18 (23.4)
6-12 months	27 (35.1)
>1 year	32 (41.6)
Surgery done for the tumor	
Yes	36 (46.8)
No	41 (53.2)
Medical care patient got in the last month	
Physician visits	
No	17 (22.1)
Yes	60 (78)
Hospital admissions	
No	31 (40.3)
Yes	46 (59.8)
Nursing care at home	
No	65 (84.4)
Yes	12 (15.6)
ICU admission since diagnosis	
No	54 (70.1)
Yes	23 (29.9)

\*The income is monthly in NIS currency, \*The age is in years. NIS: New Israeli Shekel, ICU: Intensive care unit

in rural areas than urban areas. The primary caregiver of fifty patients (64.9% of the participants) was a relative. Fifteen patients (19.5%) were unaware of their malignancy. More than half of the patients (45 patients, 58.4%) were bedridden >50% of the time. Colorectal cancer (21 patients, 27.3%) and lung cancer (14 patients, 18.2%) were the two most common types of malignancy. Sixty patients (78%) had attended medical clinics and 46 (59.8%) patients had been admitted to the hospital within 1 month of inclusion into our study.

Based on the BPI-SF scores, 59 participants (76.6%) reported moderate-to-severe pain. Based on pain management using the PMI scale, 50 patients (64.9%) received adequate pain management and 27 patients (35.1%) did not. Thirty-five patients (45%) wanted better management of their pain. Thirty-six patients (46.8%) were managed with strong opioids and eight were on weak opioids. Thirty-five patients (45.5%) wanted an increase in pain medication. Thirteen patients (23.2%) admitted that they were not taking the analgesic medications as prescribed. Fear of addiction and concerns about possible adverse effects were cited as common reasons for noncompliance.

We analyzed the relationship between the severity of pain and multiple socioeconomic and clinical factors [Table 2]. None of the socioeconomic factors had a statistically significant association with the severity of pain. The only significant factor was access to health care. Patients who received some form of health care in the last 1 month before inclusion in the study

**Table 2: Relationship between pain severity (Brief Pain Inventory-short form) and socioeconomic and clinical factors**

Characteristics	Moderate-to-severe pain, <i>n</i> (%)	Mild or no pain, <i>n</i> (%)	Chi-square test	<i>P</i>
Age				
≤60	34 (85)	6 (15)	3.261	0.071
>60	26 (70)	11 (30)		
Gender				
Male	23 (70)	10 (30)	1.547	0.214
Female	36 (82)	8 (18)		
Education				
Illiterate	10 (77)	3 (23)	0.001	0.978
Any education	49 (77)	15 (23)		
Income*				
≤1450	19 (79)	5 (21)	0.142	0.706
>1450	30 (73)	11 (27)		
Insurance				
Governmental	35 (73)	13 (27)	0.978	0.323
Nongovernmental	24 (83)	5 (17)		
Residence				
Urban	25 (78)	7 (22)	0.069	0.793
Rural	34 (76)	11 (24)		
City				
Nablus	35 (74)	12 (26)	0.313	0.576
Other cities	24 (80)	6 (20)		
Health care during the last month				
Once or more	2 (33)	4 (67)		0.024 <sup>^</sup>
No health care	47 (20)	14 (80)		
Tumor site				
Pancreas, breast, and lung <sup>†</sup>	25 (86)	4 (14)		0.167 <sup>^</sup>
Others	34 (71)	14 (29)		
Awareness of cancer diagnosis				
Yes	50 (81)	12 (19)	2.873	0.09
No	9 (60)	6 (40)		
Physical function				
Bedridden (≤50% of the time)	21 (66)	11 (34)	3.698	0.054
Bedridden (>50% of the time)	38 (84)	7 (26)		
Duration since cancer diagnosis (year)				
≤1	36 (80)	9 (20)	0.689	0.406
>1	23 (72)	9 (28)		

\*Income is monthly in NIS currency, <sup>^</sup>Test was done by the Fisher's exact test due to low cell count (<5), <sup>†</sup>These sites were the most common. So, they were combined during analysis. NIS: New Israeli Shekel

were significantly more likely to have less pain than those with no recent health-care visits ( $P = 0.024$ ).

We also analyzed the relationship between the adequacy of pain management and multiple socioeconomic and clinical factors [Table 3]. No clinical factors were significantly associated with adequate pain management. The only significant socioeconomic factor was gender; inadequate pain management was significantly more common in women ( $P = 0.027$ ).

## DISCUSSION

In our study, 87.8% of terminally ill cancer patients reported pain, and 62.3% of patients reported severe pain. These percentages are comparable to results in studies from other countries, including the United States (US).<sup>[8,15]</sup> None of the

socioeconomic factors we tested were significantly associated with pain severity. A study using the BPI scale in American patients of Chinese origin found that age, gender, education level, and insurance status were not significantly associated with pain.<sup>[16]</sup> Another study conducted on terminally ill patients in the US using the BPI concluded that age and gender were not significantly associated with pain severity, but education and income were.<sup>[17]</sup> In Palestine, income and education level had no apparent association with pain severity, but this result could reflect the small sample size in our study. Upon testing the association between clinical factors and pain severity, we found that patients who received health care at least once during the past month reported less severe pain than those who did not. In another study consisting of 988 terminally ill patients with different diseases from

**Table 3: Relationship between adequacy of pain management (pain management index) and socioeconomic and clinical factors**

Characteristics	Adequate pain management, <i>n</i> (%)	Inadequate pain management, <i>n</i> (%)	Chi-square test	<i>P</i>
Age (years)				
≤60	24 (60)	16 (40)	0.890	0.345
>60	26 (70)	11 (30)		
Gender				
Male	26 (79)	7 (21)	4.867	0.027
Female	24 (54)	20 (44)		
Education				
Illiterate	7 (54)	6 (46)	0.845	0.358
Any education	43 (67)	21 (33)		
Income*				
≤1450	13 (54)	11 (44)	2.442	0.118
>1450	30 (73)	11 (27)		
Residency				
Urban	22 (69)	10 (31)	0.35	0.554
Rural	28 (62)	17 (38)		
City				
Nablus	31 (65)	16 (35)	0.055	0.814
Other cities	19 (63)	11 (37)		
Health care				
Once or more health care	45 (63)	26 (37)	0.967	0.325
No health care	5 (83)	1 (17)		
Tumor site				
Lung, pancreatic, and breast cancer	21 (72)	8 (28)	1.143	0.285
Others	29 (60)	19 (40)		
Awareness of cancer diagnosis				
Yes	39 (63)	23 (37)	0.577	0.447
No	11 (73)	4 (27)		
Physical function				
Bedridden (≤50% of the time)	18 (56)	14 (44)	1.814	0.178
Bedridden (>50% of the time)	32 (71)	13 (29)		
Duration since cancer diagnosis				
≤1 year	29 (64)	16 (36)	0.011	0.915
>1 year	21 (66)	11 (34)		
Pain severity				
Mild or no pain	15 (83)	3 (17)	3.492	0.062
Moderate-to-severe pain	35 (59)	24 (41)		

\*Income is monthly in NIS currency. NIS: New Israeli Shekel

six randomly selected US sites, the time since the cancer diagnosis was not significantly associated with pain severity, which is consistent with the results in our study, but the level of physical function was a significant factor in the severity of pain. Patients who were bedridden for >50% of the time reported more pain than patients who spent <50% of their time bedridden.<sup>[17]</sup> The pain management interventions available in Palestine are pharmacological and palliative radiotherapy. In our study population, 46.8% were using strong opioids for their pain management. Palliative radiotherapy was used in 6.5% for bone pain. In the US, palliative radiotherapy is used in 15%–50% of patients.<sup>[15,18,19]</sup>

In our study, only 64.9% of patients received adequate pain management. In a systematic review of 26 studies from

Asia, Europe, and North America, the rate of inadequate pain management varied from 8% to 82%, with a weighted mean value of 43%.<sup>[20]</sup> Studies in Italy and Europe showed that pain was inadequately managed in 56.0%–82.3% of patients.<sup>[21,22]</sup> The adequacy of pain control using the PMI scale in patients with metastatic solid tumor enrolled in centers specifically devoted to cancer and/or pain management indicated that 25.3% of the patients (range, 9.8%–55.3%) were potentially undertreated.<sup>[22]</sup> Similar studies have shown that analgesic treatment was inadequate in nearly 42% of patients.<sup>[23,24]</sup> Recent studies in developing countries report serious undertreatment of pain in cancer patients, with a frequent lack of prescriptions for opioids despite obvious indications.<sup>[25,26]</sup> Therefore, inadequate pain management in cancer patients is a global issue, and its

magnitude varies considerably across health-care settings in different continents.

In our study, the only significant socioeconomic factor affecting the adequacy of pain management was gender. In the US and Japan, gender is a significant factor in pain management, and females are more likely to be inadequately managed.<sup>[8,27,28]</sup> Women were at greater risk for underprescription of analgesics, a finding that may be related to the inadequate assessment of pain in them. The age of our patients was not significantly associated with the adequacy of pain management. However, some studies have found that age may be a significant predictor.<sup>[8,29]</sup> Lower education level was not a significant predictor in our study, but other studies have found lower education to be a significant factor, more so in developing nations.<sup>[30,31]</sup>

To our knowledge, this is the first study describing the pain experience in cancer patients in Palestine. With the internationally accepted tool to estimate pain, we collected information about pain and its management which provides a foundation for future studies. Limitations of this study include the small sample size that might not be geographically representative of all terminal patients in Palestine. Due to the retrospective nature of our study, many charts lacked the required information to enroll patients, which decreased our sample size.

## CONCLUSION

Approximately three-quarters of all the terminally ill cancer patients in Palestine reported moderate-to-severe pain. Despite the WHO recommendations stressing optimal pain relief, more than one-third of these patients, especially women, received inadequate pain management. We recommend the mandatory use of the BPI for every patient with pain to ensure proper assessment of pain severity and adequate pain management to improve the standard of palliative care in north Palestine.

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## Conflicts of interest

There are no conflicts of interest.

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