



# Appropriateness of Cancer Pain Management in Saudi teaching Hospital

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## Abstract

The aim of the study was to assess the appropriateness of pain management in cancer patients by determining the modalities of pain treatment currently provided to cancer patients, comparing this treatment to existing guideline on control of pain in patients with cancer and identifying areas of inappropriate prescribing.

A prospective observational study was carried out in the oncology unit at tertiary-care teaching hospital in Riyadh, Saudi Arabia over a period from May-October 2006 included all adult cancer patients.

Of 160 patients participated in the study, 80 (50%) reported moderate or severe pain.

40% of those with pain were not given any pain medication. Sixty percent of the patients had appropriate pain management. Pain documentation was inappropriate and needs improvement in 57% of the patients. There was under utilization of NSAIDs which were prescribed in 8 (5%) patients only from those on pain medication. Transdermal fentanyl was the most frequently used opioid (21%) for moderate to severe pain.

Therefore, despite published guidelines for pain management, many patients with cancer receive inadequate analgesia.

## Key words

*Cancer pain, pain prescribing, pain management, appropriateness, assessment.*

## Introduction

Cancer is still a highly prevalent disease associated with high mortality rate, despite many therapeutic advances. Over 1 million new cases of cancer are diagnosed every year in the United States, with more than six million worldwide <sup>(1)</sup>. In Saudi Arabia, between January and December 2003, 8,840 cancer incident cases was reported <sup>(2)</sup>. Throughout their clinical course, cancer patients frequently suffer from a variety of symptoms, such as pain, dyspnea and fatigue <sup>(3)</sup>. Palliation of these symptoms has been recognized as crucial to improving the quality of life for cancer patients <sup>(4)</sup>. Pain remains one of the most common and deleterious symptoms suffered by cancer patients. It affects 20% to 50% of patients at the time of initial diagnosis and active treatment, and 55% to 95% of those with advanced cancer <sup>(5,6)</sup>. In patients with moderate or severe pain, interference with sleep,

daily activities, enjoyment of life, work ability, and social interactions have been reported <sup>(5,8)</sup>.

Pain clinical management guidelines such as those proposed by the World Health Organization (WHO) <sup>(4)</sup>, American Agency for Health Care Policy and Research <sup>(9)</sup>, and the Scottish Intercollegiate Guideline Network [SING] <sup>(10)</sup> are simple and pragmatic. When these guidelines are followed, observational studies have consistently shown that adequate pain relief can be obtained in 70% to 97% of patients with advanced cancer <sup>(5-8,11-13)</sup>.

Despite that, a number of international studies that examined adequacy of cancer pain management indicated that the effectiveness of pain treatment is still a major problem. In 1994, a prospective study was conducted by Cleeland et al <sup>(8)</sup> to assess the severity and the impact of pain by using the brief pain inventory. The study involved 1308 outpatients with metastatic cancer. 796 (60%) patients reported experiencing pain, and 475 described it as being substantial pain. In a prospective study by Ripamonti et al, <sup>(14)</sup> 258

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hospitalized cancer patients were interviewed by 9 physicians using a brief structured questionnaire to measure pain intensity. One hundred thirty three patients reported having pain, severe pain at rest was reported in 27%, and pain on movement in 31.6% without analgesic treatment <sup>(14)</sup>. In 2003, a prospective cross-sectional survey on adequacy of pain management in cancer patients was conducted by Hyun et al <sup>(15)</sup>. A total of 823 patients were enrolled in the study, in 29.7% of the patients pain was moderate or severe and only 37% rated pain relief as satisfactory. 41% of the patients with pain received inadequate pain management. In 2004, a prospective study by Okuyama et al <sup>(16)</sup> investigated cancer pain treatment and found that 70% of ambulatory cancer patients with pain received inadequate treatment for their pain.

In spite of increase attention to the treatment of pain, little data is available concerning the frequency and severity of pain, and its treatment in Saudi population. This information is needed to develop strategies enabling better supportive care in this population.

The aim of this study was to assess the appropriateness of pain management in Saudi cancer patients by determining the modalities of pain treatment currently provided to cancer patients, comparing this treatment to evidence based guidelines on pain management in cancer patients and identifying areas of inappropriate prescribing.

### Methods

A prospective observational study was conducted in the oncology unit of King Khalid University Hospital (KKUH), a 850-bed tertiary referral hospital in Riyadh, Saudi Arabia. The study was conducted over a 6 months period from May to October of 2006. All adult cancer patients treated in the oncology unit over the study time frame, either as in-patients or out-patients were eligible for inclusion in the study. If a patient was admitted more than once during the study period, this was counted as a different episode of care.

For each included patient, medical records and nursing notes were reviewed to document

details of all pain medications prescribed (drugs, doses, and routes used). Patient demographic data, including age, gender, and types of cancer were also recorded.

Pain was considered assessed if site, duration, or intensity of pain was documented. If these factors were not mentioned in the medical or nurse notes we considered pain was not assessed.

All participants, following verbal informed consent, were personally interviewed by one of the researchers and asked to rate their pain intensity over 24 hours by applying a 0-10 numeric pain intensity rating scale. The patients were also asked to identify areas on a human figure where they had pain.

Appropriateness of pain management was assessed by comparing the observed practice to evidence based clinical guidelines outlined in the document <Control of Pain in Patients with Cancer> published by SIGN <sup>(10)</sup>.

The data were coded and entered in to a Statistical Package for Social Sciences (SPSS Inc., Chicago. IL) version 11 and descriptive statistical analysis were carried out.

### Results

A potential pool of 175 patients was identified of them 160 patients were included in the study. Sixteen patients refused to participate without

Characteristic	Number Of Patients (%)
<b>Cancer site</b>	
Lymph nodes	46 (28.5)
Breast	39 (24.5)
Colon	25 (16)
Lung	19 (12)
Ovarian	5 (3)
Rectum	5 (3)
Stomach	5 (3)
Thyroid	5 (3)
Prostate	4 (2.5)
Hepatic	3 (2)
Others	4 (2.5)
<b>Metastasis</b>	
Present	47 (29.4)

Table 1 : Characteristics of the sample (n = 160)

Pain intensity	No of patients	%
No pain (0)	60	37.5
Mild pain (1-3)	20	12.5
Moderate pain (4-7)	51	32
Severe pain ( 8-10)	29	18
Total	160	100

**Table 2: Pain severity over 24 hours assessed using Numerical Rating Scale.**

given reasons and 9 underwent procedures (laparoscopic examination, endoscopic sphincterotomy, colectomy) and were not available for inclusion. Male participant accounted for 41% of the sample; the mean age was 52 years (SD± 14.8, range 18-85). The most frequent cancer site was lymph nodes 28% [Table 1].

Pain severity assessed by one of the investigators using pain intensity rating scale, indicates that only 60 (37.5%) patients incurred no pain. [Table 2].

Table 3, shows the association between pain severity over 24 hours and the type of prescribed analgesia. Twenty one percent of patients who reported severe pain were not prescribed any analgesics.

Of the 100 patients who reported to have pain only 60% were prescribed medications. Type of analgesics prescribed is presented in Table 4.

Pain severity*	Prescribed analgesic (%)								Subtotal
	None	Paracetamol	NSAID	Weak Opioid	Strong Opioid	paracetamol + weak opioid	paracetamol + strong opioid	NSAID + weak opioids	
No pain	52 (32.5)	5 (3.12)	-	1 (0.62)	-	-	2 (1.25)	-	60 (37.5)
Mild pain	10 (6.25)	7 (4.37)	1 (0.62)	1 (0.62)	-	1 (0.62)	-	-	20 (12.5)
Moderate pain	24 (15)	6 (3.75)	4 (2.5)	6 (3.75)	5 (3.12)	2 (1.25)	4 (2.5)	-	51 (32)
Severe pain	6 (3.75)	3 (1.87)	2 (1.25)	2 (1.25)	8 (5)	2 (1.25)	5 (3.12)	1 (0.62)	29 (18)
Subtotal	92 (57.5)	21 (13.11)	7 (4.37)	10 (6.25)	13 (8.12)	5 (3.12)	11 (7)	1 (0.62)	160 (100)

**Table 3 : Patient's pain severity and prescribed analgesia(n=160)**

\* Patient reported pain measured by numerical rating scale

Analgesic	Number Of Patients* (%)
Morphine	8 (5)
Fentanyl	18 (11.3)
Pethidine	1 (0.6)
Tylenol	24 (7)
Distalgesic	4 (2.5)
Paracetamol	37 (23)
Ibuprofen	2 (1.3)
Diclofenac	1 (0.6)
Meloxicam	5 (3.2)
Total	98

**Table 4 : Analgesics prescribed**

\* No. of patients do not add to 40 because some patients received more than one drug.

From all patients on pain medication only 13% of patients were prescribed Non-steroidal Anti-inflammatory Drugs (NSAIDs). Analgesics were given orally in 70.5% of the patients, 26.5% were prescribed fentanyl patches, and 3% intravenous morphine.

The level of adherence to SIGN guideline recommendation statements presented in Table 5. The results highlighted several areas of inadequate pain management in the study site. For instance, only 43% of patients had pain documentation and no formal assessment tool was used in the assessment of pain. Only 38%

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Level of evidence	Recommendation statement	N (%)
<b>Assessment of pain in patients with cancer</b>		
B	Prior to treatment an accurate assessment should be performed.	69/160 (43)
B	A simple formal assessment tool should be used in the ongoing assessment of pain.	None
<b>Principles of management of pain in patients with cancer</b>		
B	Patients with mild pain should receive WHO pain ladder step I.	8/20 (40)
B	Patients with mild to moderate pain should receive WHO pain ladder step II.	8/51 (15.6)
B	Patients with moderate to severe pain should receive WHO pain ladder step III.	13/29 (44.8)
B	Analgesia for continuous pain should be prescribed on a regular basis not 'as required'.	46/60 (76.6)
<b>Choice of analgesia for cancer pain</b>		
A	Patients receiving a NSAID who are at risk of GI side effects should be prescribed misoprostol 200 µg two or three times a day or omeprazole 20 mg once a day.*	2/3 (66.6)
B	Morphine or diamorphine should be used to treat moderate to severe pain in patients with cancer.	6/29 (20.6)
c	The oral route is the recommended route of administration and should be used where possible.	48/68 (70.5)
<b>Use of opioids in treatment of moderate to severe cancer pain</b>		
B	Every patient on opioids for moderate to severe pain should have access to breakthrough analgesia, usually in the form of normal release morphine.	2/29 (7)
B	Patients receiving an opioid must have access to regular prophylactic laxatives. A combination of stimulant and softening laxative will be required.	11/29 (38)
B	Transdermal fentanyl is an effective analgesic for severe pain and can be used in patients with stable pain states as an alternative to morphine.	8/11 (72.8)
<b>Adjuvant analgesics for patients with neuropathic pain</b>		
A	Patients with neuropathic pain should have a trial of a tricyclic antidepressant and/or an anticonvulsant.	8/8 (100)
<b>Radiotherapy</b>		
c	Radiotherapy should be considered for painful bone metastases.	4/27 (15)
<b>Bisphosphonates</b>		
A	Bisphosphonate treatment should be considered for all patients with multiple myeloma and breast cancer patients who have pain due to metastatic bone disease.	1/20 (5)
<b>Interventional techniques</b>		
A	In patients with upper abdominal pain, especially secondary to pancreatic cancer, coeliac plexus block should be considered.	1 (1)

**Table 5 : Number of patients who met the SIGN guideline recommendation statements**

of patients receiving an opioid have access to regular prophylactic laxatives.

### Discussion

The proportion of patients indicating moderate or severe pain during the 24 hours before the interview was 50%. This is consistent with the findings of Cleeland et al <sup>(8)</sup> (56%), Ripamonti et al <sup>(14)</sup> (58%), Okuyama et al <sup>(17)</sup> (41%); although there have been studies reporting a

smaller proportion of patients has pain, such as Hyun et al <sup>(15)</sup> 30% and Klepstad et al <sup>(18)</sup> 32% gave possible explanation for such discrepancy could be differences in practice sites policy and the way pain treatment is perceived by the health care team. As it is known some health care centres give pain treatment a priority and consider pain assessment as the fifth vital sign.

Pain management is considered adequate

when there is congruence between patients reported level of pain (intensity) and the potency of the prescribed medication <sup>(10)</sup>. Prior to treatment, pain assessment was documented only in 43% of the patients in the study, and no formal assessment tool was used to measure the intensity of pain. This could result in incongruence between prescribed analgesia and level of pain as health professionals underestimate the level of pain a patient is experiencing <sup>(10,18)</sup>. Furthermore, this discrepancy between estimations widens as the pain increases in severity. The patient, if competent and able to communicate, is the most reliable assessor of pain <sup>(10)</sup>. The assessment last for approximately 5 minutes and we are of the opinion that it should be incorporated within the routine vital sign assessment.

Six patients reported severe pain when assessed by one of the investigators but were not on any prescribed analgesics. Previous research shows that a withholding of pain medication is common. In study by Strohbuecker et al <sup>(19)</sup>. 30% of hospitalized patients, including cancer patients who incurred moderate to severe pain did not receive analgesics. Okuyama et al <sup>(17)</sup>. also reported that 50% of the cancer patients who were in pain and 9% of those with severe pain did not receive any medication at all. A possible explanation for such situation is the fact that some patients do not report their pain unless asked, many of them might consider this a distraction issue for the physician during treatment, others do not want to admit their pain because they associate it with worsening of their disease. It is therefore necessary to make pain assessment standard of care and to adopt a proactive approach to treatment rather than a reactive approach.

According to SIGN guidelines, appropriate use of the WHO analgesic ladder necessitate that analgesics be selected depending upon initial assessment and the dose titrated according to ongoing regular reassessment of response <sup>(10)</sup>. Unfortunately this was not the case in the study sample. For instance, only six out of the 29 patients with severe pain intensity received morphine or diamorphine. Lack of knowledge and misconceptions of both staff

and patients could result in ineffective pain treatment <sup>(20)</sup>. Fear of addiction prevents patients from asking for analgesics and prevents doctors from ordering sufficient analgesics. It is thus mandatory to increase medical staff awareness of symptom management and to incorporate existing knowledge into routine clinical practice.

Only two of patients on opioid received breakthrough analgesia. It is established practice when using morphine for cancer pain to prescribe one sixth of the total daily morphine dose to be taken at any time for breakthrough pain. Breakthrough pain is defined as a transient exacerbation of pain occurring in patients with otherwise stable, baseline persistent pain <sup>(21)</sup>.

In 29.5% of the patients prescribed analgesics there was no oral opioid despite having other medications orally. As the majority of patients tolerate oral morphine well and it is likely that patients will require to use medication chronically, the oral route is preferable to parenteral or rectal administration. Intramuscular administration of drugs should be avoided because this route can be painful, inconvenient, and absorption is not reliable <sup>(22)</sup>.

The majority of patients taking opioids for either mild or moderate to severe pain will develop constipation. The best prophylactic treatment for preventing opioid induced constipation is a combination of stimulant and softening laxatives <sup>(23)</sup>, 38% of patients receiving opioids did not receive prophylactic laxative hence exposing them to mild yet very disturbing side effect <sup>(23,24)</sup>.

In the current study, emergency doctor prescribed fentanyl patches for 8 of 11 patients who reported severe pain when their pain was not stable and without any breakthrough pain medication. Fentanyl patches has a lag time of 6-12 hours to onset of action <sup>(24)</sup> and after initiation of patch usage, any subsequent increase in dose takes 36-48 hours before steady state drug levels are achieved <sup>(25)</sup>. This can subject the patients to unrelieved pain until the drug work. Therefore, fentanyl should be indicated in patients with stable severe pain who have difficulty or pain when swallowing, in patients who have unacceptable toxicity from morphine,

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in patients with persistent nausea or vomiting, and in gastrointestinal obstructions<sup>(10)</sup>.

It has been suggested that a specialist hospital palliative care team can significantly improve pain management<sup>(26,27)</sup>. The availability of such teams can aid physicians in the evaluation and coordination of the treatment program. It also can insure that complex methods of evaluation and management such as opioid infusions and patient-controlled analgesia (PCA) are available to the patient in pain.

### Conclusion

In conclusion, the findings of this study indicate that in cancer patient under-medication or complete withholding of analgesics exist even

in patients with severe pain. Furthermore, pain is not assessed systematically to identify the exact amount of analgesics required and to evaluate outcome. Underestimation of pain intensity is an obstacle to adequate pain treatment.

Another major obstacle in the lack of knowledge of treating healthcare team of pain treatment principles and their many misconceptions about pain drug therapy. Education of all healthcare workers who deal with cancer patients in pain management principles is an essential endeavour to improve the care of such patients. The introduction of a palliative care team can significantly improve pain management in the hospital.

### References

1. Burton A, Cleeland C. Cancer Pain: Progress Since the WHO Guidelines. *Pain Pract* 2001; 1:236-42.
2. Ministry of Health: National Cancer Registry 2003 report; Cancer incidence in Saudi Arabia 2003. Riyadh; *MOH* 2003; 1-96.
3. Morita T, Tsunoda J, Inoue S, et al. Contributing factors to physical symptoms in terminally-ill cancer patients. *J Pain Symptom Manage* 1999; 18:338-46.
4. World Health Organization. Cancer Pain Relief and Palliative Care. Geneva: World Health Organization, 1990.
5. Allard P, Maunsell E, Labbé J, et al. Educational Interventions to Improve Cancer Pain Control: A Systemic Review. *J of Palliat Med* 2001; 4:191-203.
6. Lynch M, Abraham J. Ensuring A Good Death. *Cancer Pract* 2002; 10: 33-8.
7. Bauwens S, Distelmans W, Storme G, Kaufman L. Attitudes And Knowledge About Cancer Pain in Flanders. The Educational Effect of Workshops Regarding Pain and Symptom Control. *Palliat Med* 2001; 15:181-90.
8. Cleeland CS, Gonin R, Hatfield AK, Edmonson JH, Blum RH, Stewart JA, Pandya KJ. Pain and Its Treatment in Outpatients with Metastatic Cancer. *N Engl J Med* 1994; 330:592-6.
9. Joint Commission For Accreditation of Health Care Organizations. Pain Assessment and Management Standards. Available at: [www.jcaho.org/standard/pm](http://www.jcaho.org/standard/pm).
10. Scottish Intercollegiate Guidelines Network. Control of Pain in Patients with Cancer. Edinburgh: *SIGN*, 2000.
11. Du Pen SL, Du Pen AR, Polissar N, Hansberry J, Implementing Guidelines for Cancer Pain Management: Results of a Randomized Controlled Clinical Trial. *J Clin Oncol* 1999; 17:361-70.
12. Elliott TE, Murray DM, Oken MM, et al. Improving Cancer Pain Management in Communities: Main Results from A Randomized Controlled Trial. *J Pain Symptom Manage* 1997; 13:191-203.
13. Grant M, Ferrell BR, Rivera LM, et al. Unscheduled Readmissions for Uncontrolled Symptoms. A Health Care Challenge for Nurses. *Nurs Clin North Am* 1995; 30:673-82.
14. Ripamonti C, Zecca E, Brunelli C, et al. Pain Experienced by Patients Hospitalized at the National Cancer Institute of Milan: Research Project «Towards a Pain-Free Hospital». *Tumori*. 2000; 86(5):412-8.
15. Hyun MS, Lee JL, Lee KH, et al. Pain and its Treatment in Patients with Cancer in Korea. *Oncology* 2003;64:237-44.
16. Okuyama T, Wang X, Akechi T, et al. Adequacy of Cancer Pain Management in a Japanese Cancer Hospital. *Jpn J Clin Oncol* 2004; 34:37-42.
17. Klepstad P, Kaasa S, Cherny N, et al. Research Steering Committee of the EAPC. Pain and pain treatments in European palliative care units. A cross sectional survey from the European Association for Palliative Care Research Network. *Palliat Med*. 2005 Sep;19(6):477-84.

18. Larue F, Colleau SM, Brasseur L, et al. Multicentre study of cancer pain and its treatment in France. *BMJ* 1995;310:1034-7.
19. Strohbuecker B, Mayer H, Evers GC, et al. Pain Prevalence in Hospitalized Patients in a German University Teaching Hospital. *J Pain Symptom Manage* 2005; 29:498-506.
20. Paice J, Toy C, Shott S. Barriers to cancer relief: fear of tolerance and addiction. *J Pain Symptom Manage* 1998;16:1-9.
21. Bennett D, Burton AW, Fishman S, et al. Consensus panel recommendations for the assessment and management of breakthrough pain Part 1 *Assessment. P&T* 2005; 30(5):296-301.
22. Bell T, Annunziata K, Freedman D, et al. Opioid-induced constipation increases healthcare resource use and impairs work productivity: Comparison with other patient groups with and without constipation. *J Pain* 2007; 8(4): S75-S75.
23. Herndon CM, Jackson II KC, Hallin PA. Management of Opioid-Induced Gastrointestinal Effects in Patients Receiving Palliative Care. *Pharmacotherapy* 2002; 22(2):240-50.
24. Portenoy RK, Southam MA, Gupta SK, et al. Transdermal fentanyl for cancer pain. Repeated dose pharmacokinetics. *Anesthesiology* 1993; 78: 36-43.
25. Gourlay GK, Kowalski SR, Plummer JL, et al. The transdermal administration of fentanyl in the treatment of postoperative pain: pharmacokinetics and pharmacodynamic effects. *Pain* 1989;37: 193-202.
26. Higginson I, Finlay I, Goodwin D.M., et al. Do hospital based palliative teams improve care for patients or families at the end of life?. *J Pain and Symptom Manage* 2003; 23: 96-106.
27. Jack H. V, Williams V, Oldham J. Improving cancer patients' pain: the impact of the hospital specialist palliative care team. *Eur J Cancer Care* 2006;15(5):476-80.