

## Critical Assessment and Management of Cancer Pain in a Tertiary Care Centre in India

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### ABSTRACT

**Background:** Pain is one of the most common associated symptoms of cancer. It comprises of not only physical component but psychological, social, emotional, and spiritual components as well. Due to its complex nature, most of the time pain of cancer patients is either neglected or undertreated by the physicians. So the aim of the study is to assess the characteristics of pain in patients of different cancers and to manage it critically using different modalities of pain management while following the principles of WHO analgesic ladder.

**Materials & Methods:** It's a hospital based prospective study in which 693(n) cancer patients who had complaint of pain during a study duration of 1 year(from Jan 2013- Jan 2014) has been assessed critically and managed as per WHO analgesic ladder. The patients who had grade iii pain were randomized consecutively in 2 groups of 40 each to compare the efficacy in pain control and side effect profile between oral morphine and transdermal fentanyl patch after a follow up for a minimum of 3 weeks.

**Results:** The mean age was 52 yrs, 52.5% (364) patients are male and 47.5 % (329) are female. 9.1 % (63) had grade I (mild) pain, 57.4% (398) had grade II (moderate) pain and 33.5% (232) had grade III (severe) pain on Numerical rating scale. Mean pain relief percent was 41.94%, 57.42%, 70.98% after 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> week respectively. With Transdermal fentanyl pain control was better. The frequency

Of breakthrough pain and constipation was less compared to oral morphine.

**Conclusion:** The Numerical rating scale, visual analogue scale and Brief pain inventory are important tools to assess quality and quantity of cancer pain. The WHO 3 step analgesic ladder is a novel and simplistic approach for the management of cancer pain which can provide adequate pain relief in about 70-80% patients. Opioids are the backbone of cancer pain management.

**Keywords:** Cancer Pain, Oral Morphine, Transdermal fentanyl Patch.


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### Article History:

Received: 08-02-2017, Revised: 05-03-2017, Accepted: 23-03-2017

### Access this article online

Website: <a href="http://www.ijmrp.com">www.ijmrp.com</a>	Quick Response code 
DOI: 10.21276/ijmrp.2017.3.2.033	

### INTRODUCTION

Pain is one of the most common associated symptoms of cancer. Today it is included as one of the Five Vital signs by WHO, i.e., in addition to temperature, pulse, respiration and blood pressure.<sup>1</sup>

Cancer pain, which is severe and excruciating, comprises of not only physical component but psychological, social, emotional, and spiritual components as righteously described by Dame Cicely Saunders. She coined the concept of 'total pain' which encompasses all the above mentioned aspects of pain for an individual. Factors like discomfort, fatigue, insomnia, fear, anxiety, anger, sadness, boredom, depression, mental isolation, and social abandonment lower pain threshold. On the other hand, factors like relief of other symptoms, analgesics, proper sleep, sympathy, companionship, understanding, relaxation, creative activity,

reduction in anxiety, and elevation of mood elevate pain threshold.<sup>2</sup>

Untreated cancer pain has become a global pandemic. Pain can affect as many as 64% of patients with metastatic, advanced or terminal phase disease, 59% of patients on anti-cancer treatment and 33% of patients after curative treatment. However, a global survey- conducted between December, 2010 and July, 2012, that came up with 156 reports submitted by experts in 76 countries and 19 Indian states- has revealed that several countries, including India, have failed to ensure adequate access to pain relieving drugs.

According to present estimates about 56% cancer patients require relief of symptoms (palliative care) at any time in India. However,

only 28% are provided some sort of palliative care before they die.<sup>3</sup> There is an immediate need to address this issue at all levels. Therefore, there is a need of assessment of 'total pain' followed by comprehensive pain management in cancer patients.

The aim of the study is to assess the characteristics of pain in patients of different cancers and to manage it critically using different modalities of pain management while following the principles of WHO analgesic ladder.

## MATERIALS & METHODS

The study was initiated after approval of the Institutional Ethics Committee and was carried out in accordance with Good Clinical Practice guidelines and the ethical principles as mentioned in the Declaration of Helsinki. The duration of study was 1 year (i.e. from Jan 2013- Jan 2014) Informed consent was taken from all the patients included in the study. Cancer patients who are associated with Pain were studied. This study involve following aspects.

1. Subjective assessment of Total pain associated with cancer in patients taken consecutively.
2. Management of cancer pain by using WHO's analgesic ladder and Radiotherapy wherever necessary.

All cancer patients who are associated with pain with ECOG 0-III were included. The patients who have known history of Asthma or Hypersensitivity for any pain medication mentioned in WHO pain ladder were excluded. A routine examination of all the patients including general condition, CVS, CNS, and per abdominal examinations were done. All routine investigations including CBC, LFT, KFT, ECG and chest X-ray were done.

The Cancer patients who had any complaint of pain before, during and after anticancer treatment (surgery, chemotherapy & radiotherapy) were assessed prospectively for quantity, quality and intensity by using Visual Analogue scale, Numerical rating scale and Brief Pain inventory. Depending on the Pain score, severity of pain is categorized into Mild (1-3), Moderate (4-6) and Severe pain (7 -10). Pain is treated using WHO analgesic ladder unless contraindicated.

Following drugs have been used in the study in treating pain because of their easy availability. (Fig 1)

### 1. Mild Pain

Tab Diclofenac 50mg 6-8 hrly +/- Acetaminophen 325 – 975mg +/- adjuvant

### 2. Moderate pain

Tab codeine 50mg + diclofenac 50mg or}

Tab Tramadol 50mg + acetaminophen 500mg or } ± adjuvant

Tab Tramadol 50mg+diclofenac 75mg}

### 3. Severe pain

Tab Morphine 10-60 mg 4hrly +/- adjuvant or

Transdermal fentanyl patch in equivalent dose of Morphine after titration.

Radiotherapy has been used in management of cancer as per standard protocol (palliative or curative) which can itself resolve pain in certain scenarios like bone metastasis, brain metastasis, brain tumours etc.

All cancer patients who had complaints of pain (n=693) were also evaluated for presence of any non-physical pain such as social, psychological, emotional etc. Those patients who founded to have such pain were properly counselled and wherever necessary pharmacological treatment (antidepressants, mood stabilizers etc) prescribed after consulting with faculty of Psychiatry department.

## RESULTS

**Table 1: Patient demographics and clinical characteristics.**

	No. of Patients (%)
<b>Sex</b>	
Male	364(52.5)
Female	329(47.5)
<b>Stage of Cancer</b>	
I	7(1)
II	140(20.2)
III	329(47.5)
IV	217(31.3)
<b>WHO grade of Pain</b>	
I (Mild)	63(9.1)
II (Moderate)	398(57.4)
III (Severe)	232(32.5)
<b>Non-physical Pain</b>	
Social	196(28.3)
Psychological	147(21.2)
Psychosocial	231(33.3)
None	119 (17.2)
<b>History of surgery</b>	196(28.3)
<b>History of chemotherapy</b>	679(98)
<b>History of Radiotherapy</b>	518(74.7)
<b>Personal habits of patient</b>	
Smoking	49(7)
Tobacco Chewing	175(25.2)
Alcohol	77(11.11)
ALL	147(21.3)
None	266(38.4)
<b>Sleep pattern</b>	
Disturbed	427(61.6)
Insomnia	21(3)
Normal	245(35.4)

**Table 2: Disease distribution**

Disease	Frequency	Percent
<b>Head &amp; neck cancers</b>	140	20.2
<b>Ca Breast</b>	91	13.2
<b>Ca cervix</b>	77	11.1
<b>GIT cancers</b>	77	11.1
<b>Ca lung</b>	35	5.05
<b>Ca gall bladder</b>	35	5.05
<b>Hepatocellular carcinoma</b>	28	4.04
<b>Renal cell carcinoma</b>	28	4.04
<b>Ovarian tumours</b>	28	4.04
<b>Ca endometrium</b>	21	3.03
<b>Brain tumours</b>	21	3.03
<b>Lymphomas</b>	21	3.03
<b>Ca urinary bladder</b>	21	3.03
<b>Bone &amp; soft tissue tumours</b>	21	3.03
<b>Ca prostate</b>	14	2.02
<b>Plasmacytoma</b>	14	2.02
<b>Testicular tumours</b>	7	1.01
<b>Ca penis</b>	7	1.01
<b>Ca pancreas</b>	7	1.01

Table 3: Character of Pain

Character Of Pain	Frequency	Percent
Total	693	100
Boring	175	25.3
Shooting	147	21.2
Aching	98	14.1
Dull	98	14.1
Stabbing	84	12.1
Throbbing	56	8.1
Squeezing	14	2
Dull Shooting	7	1
Drilling	7	1
Tearing	7	1

Table 4: Duration of pain

Duration of pain	Frequency	Percent
Total	693	100
Intermittent	476	68.7
Continuous	210	30.3
Occasional	7	1

Table 5: Associate Cause of pain

Associate Cause of pain	Frequency	Percent
Dysphagia	7	1
Fibrosis	7	1
Pleural Effusion	7	1
Raised ICT	7	1
Ascites	14	2
Multiple Mets	21	3
Tumour Bulk	35	5.1
Surgical Intervention	70	10.1
Bone Mets	77	11
Disease Infiltration	448	61.6
Total	693	100

Table 6: Pain relieving factors

Pain relieving factors	Frequency	Percent
Drugs	245	35.4
Drugs & Rest	21	3.0
Rest	427	61.6
Total	693	100

Table 7: Pain aggravating factors.

Pain Aggravating Factors	Frequency	Percent
Any Movement	7	1
Head Movements	7	1
Lifting	7	1
Micturition	7	1
None	7	1
Sleeping Rt Decubitus	7	1
Standing	7	1
Defecation	14	2
Movement Of Jaw	28	4
Neck Movements	35	5
Walking	35	5.1
Swallowing	49	7.1
Feeding	70	10.1
Mastication	84	12.1
Walking & Standing	329	47.5
Total	693	100

Table 8: Effect on job of patients.

Job Type	Frequency	Percent
Full Time	14	2.0
Left	490	70.7
Part Time	63	9.1
Unemployed	126	18.2
Total	693	100

Table 9: Pain score on Numerical rating scale

	Statistics	NRS
N	Valid	693
	missing	0
Mean		6.49
Median		6
Mode		6
Standard deviation		1.988
Minimum		2
Maximum		10

Table 10: Mean Pain relief percent.

Weeks	Mean Pain Relief Percent
1 <sup>st</sup> week	41.94
2 <sup>nd</sup> week	57.42
3 <sup>rd</sup> week	70.98

Table 11: Pain medication given

Pain medication given	Frequency	percent
T.Tramadol 50mg + T.Diclofenac 75mg 6-8 hrly +/- adjuvants	36	5.1
Transdermal fentanyl patch 1 patch for 72 hrs +/- adjuvants	50	8.08
T.Diclofenac+ acetaminophen 6-8 hrly +/- adjuvants	57	8.2
T.Tramadol 37.5mg + acetaminophen 325mg 6-8 hrly +/- adjuvants	154	22.22
T.Morphine 10-60mg 4 hrly +/- adjuvants	182	26.2
T.Codiene 50mg + diclofenac 50mg 6-8 hrly +/- adjuvants	234	33.7
Total	693	100

## DISCUSSION

In the Present Study majority of patients were in age group of 55years to 65years i.e., 36.4%. The mean age of the study population was 52 years, whereas maximum and minimum ages of patients were 86 years and 15 years respectively. The male patients were slightly higher than female patients in the study (52.5% vs 47.5%). This finding overlaps with the fact that the incidence of cancer increases with the advanced age and the individuals of this age group are more liable for painful episodes.

The Head & neck cancer patients were the majority group to have cancer associated pain i.e., 20.2%, followed by Breast (13.2), cervical (11.1%) and GIT (11.1%) cancers. Staging wise majority of patients were of stage III (47.5%) and stage IV (31.7%). The tertiary care centre where the study was undertaken situated in Maharashtra, India, caterers majorly patients of rural background plagued by illiteracy, poverty and exuberant personal habits like tobacco consumption, smoking etc., justifies the findings of the

present study. Even though majority of patients belongs to advanced stage, the ECOG performance score of majority of patients was 1 (57.6%). This made them to be avail for different modalities of cancer treatment (i.e., surgery, chemotherapy and radiotherapy). Almost 98% of patients in the study have a history of taking chemotherapy during treatment process. While 74.4% and 28.3% patients have underwent radiotherapy and surgery respectively as their primary cancer treatment. So these treatment processes itself and along with disease involvement has caused pain in majority of patients.

Such was the detrimental effect of pain and disability due to cancer on patients' personal life, it caused around 70.7% patients of the study to quit their job and 9.1% patients could work only as part time.

This would add on to already financial draining situation, bringing more misery. Since cancer is a chronic disease it not only causes physical pain to the patient but also causes social, psychological and financial pain to cancer patients and their families. In the present study also 28.3% patients had social pain, 21.2% had psychological and 33.3% patients are associated with psychosocial pains.

A national survey conducted in 2010 under the auspices of the INCA (National Cancer Institute) in collaboration with the BVA Institute, was<sup>4</sup> conducted among 1507 cancer patients treated as outpatients. Of the 1507 patients surveyed, 28% were in the process of cure, 53% living in advanced cancer, 18% for stage monitoring or remission with for most of them, down more than a year relative to the end of chemotherapy. The reported prevalence of pain in this survey is identical to the data in the literature; pain is present in 53% of patients surveyed. Chronic pain (present for more than three months) is reported by 30% of pain patients experiencing advanced cancer, but also 25% of painful distance of any treatment or in remission patients. The pain is considered severe in 28% of subjects and painful neuropathic pain component dominates in 36% of patients.

The patients with severe pain have been treated with Strong Opioids such as Morphine and Transdermal Fentanyl patch. The reason for selection of these drugs was its easy access inside the campus. Even Morphine was easily available for patient free of cost as the radiotherapy department in the hospital was licensed for prescribing opioid drugs. Apart from Transdermal fentanyl all other pain medications has been tried as far as possible to administer orally as guided norms laden by WHO.

The most common side effect of opioids being constipation, laxatives have been prescribed prophylactically. Depending on the character, site of pain adjuvant drugs like corticosteroids, analgesic antidepressants and analgesic anticonvulsants have been given in the standard doses and schedules. In bone metastasis where pain is most probably due to nerve compression, radiotherapy has been delivered as soon as possible after confirming the site and aetiology of pain by suitable radiological investigations. A dose of 30Gy in 10 fractions in two weeks was the protocol followed while delivering radiotherapy to patient.

After giving appropriate pain medication patients were followed up for a period of 3 weeks. Weekly assessment of pain has been done for percent of pain relief .The mean relief of patients of the study were 41.94% in 1<sup>st</sup> week, 57.42% in 2<sup>nd</sup> week and 70.98% in 3<sup>rd</sup> week.

In the similar study by Breivik et al.,<sup>5</sup> Involving 5084 adult cancer patients contacted between 2006 and 2007 in eleven European countries (France 642) and Israel, the overall prevalence of pain was 84% and 75% in France. Of these patients, 56% had moderate to severe pain and to 573 randomly selected patients, 41% were receiving a strong opioid treatment, 69% reported an impact of pain on quality of life and 50% felt that the quality Life was not a priority for health professionals. The prevalence of pain was particularly high (over 85%) for patients with pancreatic cancer, bone, brain, head and neck and lymphoma patients.

In a similar kind of study by Wen Ling Peng, MD, et al.,<sup>6</sup> in May 2006 conducted in Taiwan, china surveyed 772 patients with advanced cancer. The cumulative prevalence of pain was 87%, including all types of cancer. Mean duration of pain was 6.9 +/- 8.1 months. The prevalence of pain was 28%, 46%, 67%, 75%, and 79% at 6 months, 3 months, 1 month, 1 week, and 1 day before the time of death, respectively. The so-called "strong" opioids had been used in 85% of the 669 patients with pain. Seventy-nine percent of patients with pain received nonsurgical antineoplastic treatment for pain control. No more than 11% of patients ultimately experienced substantial pain in the last 6 months of life (defined as pain score 5-10 on a 0-10 numeric rating scale). They concluded that the application of a multidisciplinary approach to pain management offers effective pain control for most patients with advanced cancer.

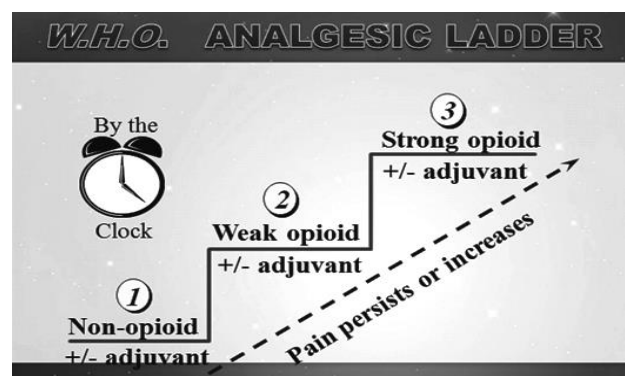
## CONCLUSIONS

Inadequate pain assessment is the most common reason for under-treatment of cancer-related pain. Accurate and regular assessment of patients' pain is essential for effective treatment planning and evaluation. The Numerical rating scale, visual analogue scale and Brief pain inventory can be used as a measure to analysis of quality and quantity of pain. Along with the Physical pain, non-physical pain also has greater impact on cancer patients. So one must give proper care towards that also while assessing pain and if needed should not hesitate to intervene with non-pharmacological management like psychiatric counselling, acupuncture, art therapy and music therapy etc.

The WHO 3 step analgesic ladder is a novel and simplistic approach for the management of cancer pain which can provide adequate pain relief in about 70-80% patients. However, some patients with refractory pain may require interventions or other advanced techniques.

## ACKNOWLEDGMENT

Dr Manish Thakre, Associate Professor, Department of Psychiatry, GMCH Nagpur.



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**Source of Support:** Nil.

**Conflict of Interest:** None Declared.

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**Cite this article as:** Irfan Khan, Ashok Kumar Diwan. Critical Assessment and Management of Cancer Pain in a Tertiary Care Centre in India. *Int J Med Res Prof*. 2017; 3(2):169-73. DOI:10.21276/ijmrp.2017.3.2.033