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Original Research Article

Analgesic Prescribing Patterns and Effectiveness of Pain Management among Advanced Cancer Patients receiving Palliative Care, at a Tertiary Care Teaching Hospital

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Abstract

Background: Pain is one of the most common and distressing symptoms experienced by patients with advanced cancer. Despite the availability of effective analgesic therapies and established guidelines such as the WHO analgesic ladder, cancer pain often remains inadequately controlled. Appropriate analgesic prescribing and regular pain assessment are essential components of palliative care aimed at improving patient comfort and quality of life.

Aim and Objectives: To analyze the prescribing patterns of analgesic drugs and assess the effectiveness of pain management among advanced cancer patients receiving inpatient palliative care at a tertiary care teaching hospital.

Materials and Methods: A cross-sectional observational study was conducted over a period of one year after obtaining Institutional Ethics Committee approval. A total of 200 patients diagnosed with advanced cancer and receiving inpatient palliative care in the oncology ward of a tertiary care teaching hospital were enrolled. Data regarding analgesic usage, WHO analgesic ladder utilization, pain intensity, pain relief scores, and patient experiences were collected using patient interviews, self-designed questionnaires, and review of medical records. Pain intensity was assessed using the Numeric Rating Scale (NRS).

Results: Among 200 patients included in the study, opioid analgesics were prescribed in 87% of patients, while non-opioid analgesics were used in 13% of cases. Morphine was the most commonly prescribed opioid followed by tramadol. Adjuvant analgesics such as pregabalin, were also prescribes to the patients for neuropathic pain management. According to the WHO analgesic ladder, 52% of patients received Step III medications. Despite widespread analgesic use, nearly 30% of patients reported inadequate pain relief. Delayed pain assessment, inadequate dose titration, and fear of opioid side effects were identified as major barriers to effective pain control.

Conclusion: The study demonstrated that opioid analgesics constitute the mainstay of cancer pain management in palliative care settings, with morphine being the most frequently prescribed drug. Although adequate pain relief was achieved in the majority of patients, a substantial proportion continued to experience uncontrolled pain. Regular pain assessment, individualized treatment strategies, appropriate opioid titration, and multidisciplinary interventions are essential for improving pain management outcomes in advanced cancer patients.

Keywords: Advanced cancer, Pain, WHO Analgesic ladder, Analgesic drugs, Opioids, Morphine, Palliative care.

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Introduction

Cancer remains one of the leading causes of morbidity and mortality worldwide and represents a major global health burden. According to global estimates, cancer incidence and mortality continue to rise, particularly in low- and middle-income countries where access to early diagnosis and treatment remains limited [1].Advanced cancer patients frequently experience a high symptom burden, with pain being the most common and distressing symptom that significantly affects

quality of life [2] & this pain usually is multi-factorial in origin [3]. Evidence suggests that nearly 70–80% of patients with advanced malignancy suffer from moderate to severe pain during the course of illness [2]. This high symptom burden highlights the clinical importance of effective pain control in cancer care. Effective pain management is a fundamental component of palliative care. The three-step analgesic ladder given by the World Health Organization (WHO), still remains the cornerstone of cancer pain management worldwide [4]. This approach recommends non-opioids for mild pain, weak opioids for moderate pain, and strong opioids for severe pain, with or without adjuvant medications [4].

Morphine continues to be the gold standard opioid for moderate to severe cancer pain due to its proven efficacy, affordability, and ease of titration [5]. Evidence-based recommendations from international palliative care organizations further support opioid-based regimens as the backbone of cancer pain management strategies [6].

Despite the availability of effective guidelines, cancer pain remains inadequately controlled in many clinical settings. Multiple studies have demonstrated that barriers such as poor pain assessment, opioid-related fears, inadequate dose titration, and limited access to essential analgesics significantly contribute to under treatment of cancer pain [7].

In addition to these clinical and systemic barriers, organizational and healthcare delivery factors also play an important role in suboptimal pain control. Inadequate training of healthcare professionals, irregular pain assessment practices, and limited integration of palliative care services into routine oncology care further contribute to persistent gaps in effective pain management [8]. A large body of evidence has consistently shown that under treatment of cancer pain remains a widespread global problem, despite the availability of effective analgesic therapies and established guidelines. This gap between evidence-based recommendations and actual clinical practice highlights the need for improved implementation strategies, better patient education, and strengthened healthcare systems for pain management in cancer care [9].

Early integration of palliative care into oncology has been shown to significantly improve symptom control, patient satisfaction, and quality of life, while also reducing psychological distress in advanced cancer patients [10]. Such integration ensures timely escalation of analgesic therapy and holistic management of total pain. Therefore, the present study was conducted to evaluate analgesic prescribing patterns and assess the effectiveness of pain management among advanced cancer patients receiving inpatient palliative care.

Aim and Objectives

- To analyze the prescribing patterns of analgesic drugs among advanced cancer patients receiving palliative care.
- To evaluate the utilization of drugs according to the WHO analgesic ladder.
- To assess the effectiveness of pain management strategies.
- To identify barriers associated with inadequate pain relief.

Materials and Methods

A cross-sectional observational study was conducted after obtaining Institutional Ethics Committee approval over a period of one year, in the oncology ward of a tertiary care teaching hospital. A total of 200 patients diagnosed with advanced cancer and receiving inpatient palliative care after taking IEC clearance were enrolled in the study.

Inclusion Criteria

- Patients diagnosed with advanced cancer
- Patients admitted to in patient palliative care services
- Patients willing to participate in the study
- Patients of both gender

Exclusion Criteria

- Patients unwilling to participate
- Patients unable to communicate effectively
- Patients less than 18 years
- Pregnant & lactating females

Data Collection

Data were collected through:

- Review of patient medical records
- Patient interviews using a self-designed questionnaire
- Pain assessment using Numeric Rating Scale (NRS)

Pain intensity was categorized as:

- Mild pain: NRS 1–3
- Moderate pain: NRS 4–6
- Severe pain: NRS 7–10

Statistical Analysis: The collected data were tabulated and expressed in numbers and percentages. Mean ± SD was calculated for continuous variables. P-values <0.05 were considered to be statistically significance.

Results

Sociodemographic Profile: Out of 200 patients included in the study, 126 (63%) were males and 74 (37%) were females. The majority of patients belonged to the age group of 51–60 years, with a mean age of 54.17 ± 14.79 years. Most patients

belonged to rural backgrounds and low socioeconomic status. Genitourinary cancers were the most commonly observed malignancies, followed by carcinoma breast & others as seen in fig no 1.

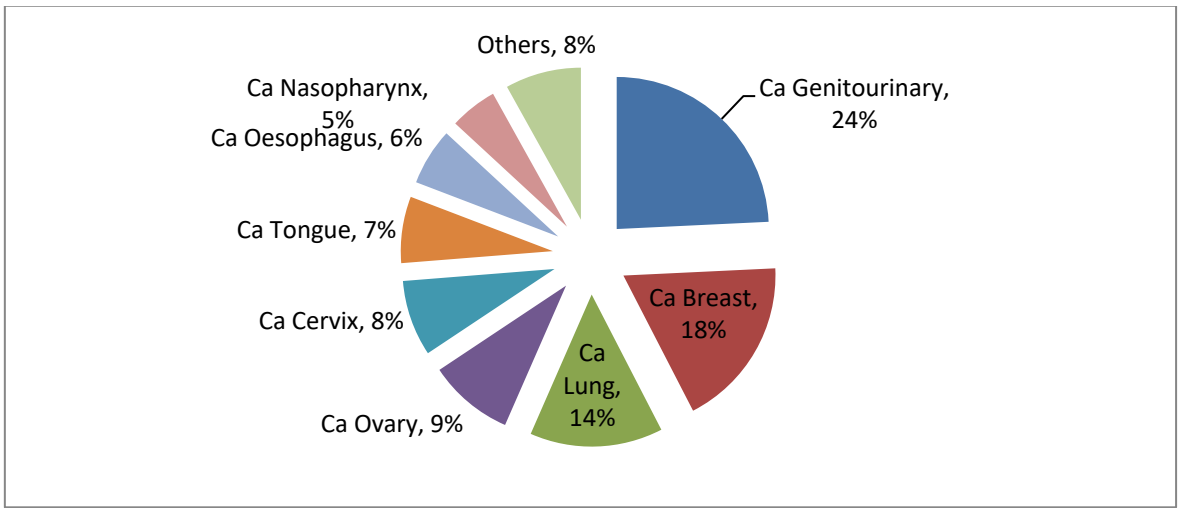

Figure 1: Most common type of cancer in the study population (n=200)

Pain Severity among Study Population: Pain was the most common symptom reported among patients admitted to the palliative care unit.

Among 200 study participants, majority of patients (63%) were having severe pain (NRS scores 6-10) followed by 32.5% moderate and 4.5% mild pain.

Analgesic Prescribing Pattern

- **Non-Opioid Analgesics**: Non-opioid analgesics such as paracetamol and NSAIDs were prescribed in 26 patients (13%).
- **Opioid Analgesics:** A total of 174 patients (87%) received opioid analgesics. Morphine was the most commonly prescribed opioid, especially for severe pain, followed by tramadol for moderate to severe pain. Fentanyl patches were used in selected patients requiring long-acting opioid therapy.
- **Adjuvant Analgesics**: Adjuvant analgesics were prescribed in 60 patients (30%). Commonly used adjuvants included: Pregabalin, Amitriptyline, Nortriptyline & few others. These drugs were mainly used for neuropathic pain management (fig no 2).

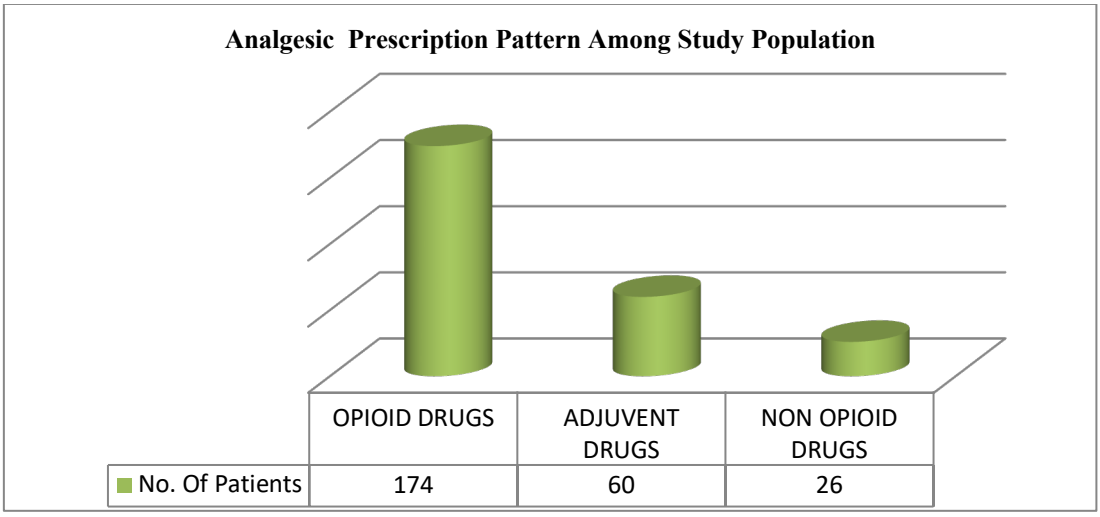

Figure 2: Analgesic Prescribing Pattern among the study population

WHO Analgesic Ladder Utilization Pattern of Drugs

Table 1: Distribution of Drugs According to WHO Analgesic Ladder (n=200)

WHO LADDER	Number (n =200)	Percentage (%)
Step I	26	13%
Step II	70	35%
Step III	104	52%
Total	200	100%

The majority of patients received Step III analgesics, indicating a high prevalence of severe pain among advanced cancer patient followed by Step II(35%) then step I (13%), as seen in table no 1.

Effectiveness of Pain Management

Approximately 70% of patients achieved satisfactory pain relief following the implementation of round-the-clock analgesic therapy along with adjuvant medications. However, around 30% of patients continued to report inadequate pain control despite ongoing treatment; as shown in fig no 3.

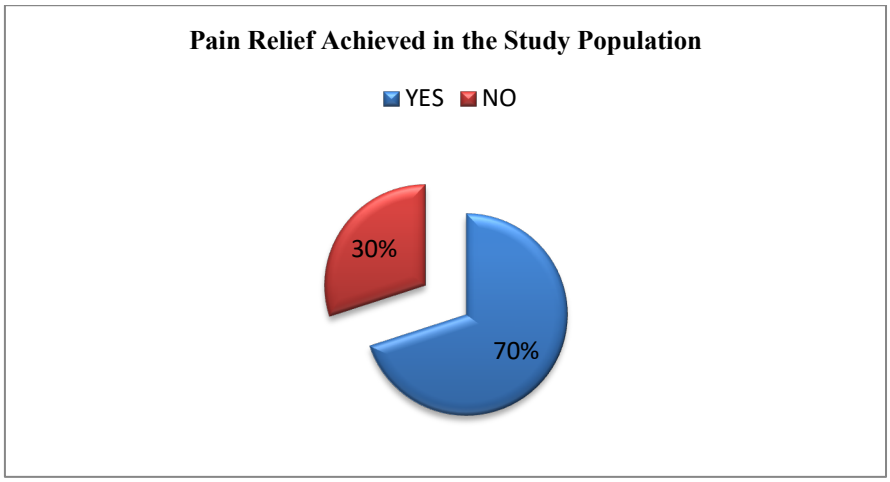

Fig 3: Pain Relief Achieved in the Study population:

Several factors were identified as contributing to suboptimal pain management, including delayed pain assessment, insufficient opioid dose titration, irregular monitoring of pain scores, fear of opioid addiction and adverse effects, and inadequate communication regarding pain management plans. Patients commonly reported that the duration of pain relief lasted approximately 4–8 hours after each dose of medication.

Patient Experiences: The study findings indicated that patients generally appreciated the compassionate and supportive care provided by the palliative care team. However, many expressed a need for more timely and effective pain relief interventions. Concerns were also raised regarding potential opioid-related side effects, particularly addiction, along with a desire for clearer and more detailed communication about pain management strategies. In addition, patients emphasized the importance of integrating psychological support alongside pharmacological pain management to improve overall care outcomes.

Discussion

Burden of Cancer Pain in Study Population: The present study demonstrated a high burden of pain among patients with advanced malignancy, with most experiencing moderate to severe pain requiring active pharmacological intervention. This finding is consistent with many studies done globally, indicating that cancer pain remains highly prevalent in advanced disease stages and significantly contributes to overall symptom burden [8,14,18,19]. The persistence of severe pain reflects both disease progression and challenges in achieving optimal symptom control in palliative care settings.

Severity Pattern and Clinical Implications: A substantial proportion of patients reported severe pain, indicating advanced disease status and high analgesic requirement. Similar observations have been reported in large population-based and multinational studies, where cancer pain was frequently under-recognized and inadequately controlled [11,19].

Persistent pain has profound implications, including impaired physical functioning, sleep disturbance, psychological distress, and reduced quality of life.

Opioid Utilization and Adherence to WHO Guidelines: Opioid analgesics, particularly morphine, formed the cornerstone of pain management in the present study. This aligns with

WHO recommendations and established evidence supporting opioids as the most effective agents for moderate to severe cancer pain [4,5,6,12]. The predominance of Step III analgesics reflects both disease severity and appropriate escalation of therapy according to the WHO analgesic ladder [4,21]. Similar prescribing trends have been reported in international studies evaluating cancer pain management practices [8,20].

Role of Weak Opioids and Step-wise Escalation: Weak opioids such as tramadol were used for moderate pain; however, their role remains limited in rapidly progressing cancer pain. Literature suggests that delayed escalation from weak to strong opioids may contribute to prolonged suffering and inadequate pain control [22,23]. These findings highlight the importance of timely reassessment and individualized titration of analgesics.

Use of Adjuvant Analgesics and Neuropathic Pain Management: Adjuvant medications were used in patients presenting with neuropathic pain features, commonly resulting from tumor infiltration or treatment-induced nerve injury. Neuropathic cancer pain is complex and often requires multimodal therapy for optimal control [13,24]. The use of adjuvant analgesics in this study reflects adherence to recommended multimodal pain management strategies.

Under treatment of Cancer Pain: Despite guideline-based therapy, a large proportion of patients continued to experience inadequate pain relief. This finding is consistent with many of the studies global where persistent undertreatment of cancer pain across healthcare systems was reported [7,9,10]. The gap between recommended and actual pain control remains a major clinical challenge in oncology and palliative care.

Barriers to Effective Pain Management: Multiple barriers contribute to inadequate cancer pain control. These include poor pain assessment, insufficient dose titration, limited opioid availability, and communication gaps between patients and healthcare providers [15,16]. In addition, fear of opioid dependence, sedation, and adverse effects remains a major patient-related barrier affecting adherence to therapy [16].

System-Level and Service Delivery Challenges: Healthcare system-related issues such as inadequate training of healthcare professionals, irregular pain monitoring, and suboptimal integration of palliative care services further contribute to poor pain outcomes [8]. These structural limitations highlight the need for standardized protocols and capacity building in cancer pain management.

Importance of Early Palliative Care Integration: Early integration of palliative care into oncology practice has been shown to significantly improve symptom control, quality of life, and psychological wellbeing [25,26]. Early referral allows timely escalation of analgesics, better symptom monitoring, and holistic management of cancer-related distress.

Need for Regular Pain Assessment and Multidisciplinary Approach: Regular assessment of pain using standardized tools like the Numeric Rating Scale (NRS) is essential for effective pain management [27]. A multidisciplinary approach involving physicians, nurses, pharmacists, and mental health professionals is crucial for comprehensive cancer pain control [28].

Overall Clinical Implications: Overall, the findings emphasize the importance of rational opioid use, timely escalation of analgesics, structured pain assessment, and early palliative care integration. Strengthening healthcare provider training and implementing standardized pain management protocols can significantly improve outcomes in advanced cancer patients [29].

Recommendations: Regular pain assessment using standardized pain scales should be implemented.

Healthcare professionals should receive training regarding opioid use and pain management protocols.

Patient counseling regarding opioid safety and side effects should be strengthened.

Multidisciplinary approaches including psychological support should be incorporated into routine palliative care.

Limitations

This study was conducted at a single tertiary care center, which may limit the generalizability of the findings. The relatively small sample size further restricts external validity. In addition, the absence of long-term follow-up of patients limits assessment of sustained outcomes over time.

Conclusion

The present study evaluated analgesic prescribing patterns and effectiveness of pain management among advanced cancer patients receiving palliative care. The findings demonstrate that opioid analgesics, particularly morphine, remain the mainstay of treatment for moderate to severe cancer-related pain, in accordance with WHO guidelines. The majority of patients received Step II and Step III analgesics under the WHO analgesic ladder, reflecting a high burden of advanced disease and significant pain severity in this population.

Although adequate pain relief was achieved in most patients through regular opioid administration, adjuvant therapy, and structured analgesic use, a considerable proportion of patients continued to experience suboptimal pain control. Factors such as delayed pain assessment, inadequate dose titration, fear of opioid-related side effects, and insufficient patient communication were identified as key barriers to effective pain management.

The study highlights that while current prescribing practices largely follow established guidelines, there remains a need for more individualized and timely pain management strategies. Regular pain assessment using standardized tools, appropriate dose adjustment, patient education regarding opioid safety, and a multidisciplinary approach involving palliative care specialists are essential to improve pain outcomes.

In conclusion, strengthening systematic pain assessment protocols and optimizing analgesic prescribing practices can significantly enhance the effectiveness of pain management and improve the quality of life of advanced cancer patients receiving palliative care.

References

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018;68(6):394-424.
2. van den Beuken-van Everdingen MHJ, Hochstenbach LMJ, Joosten EAJ, Tjan-Heijnen VCG, Janssen DJA. Update on prevalence of pain in patients with cancer: systematic review and meta-analysis. J Pain Symptom Manage. 2016;51(6):1070-1090.
3. Fallon M, Giusti R, Aielli F, et al. Management of cancer pain in adult patients: ESMO Clinical Practice Guidelines. Ann Oncol. 2018;29(Suppl 4):iv166-iv191.
4. World Health Organization. Cancer Pain Relief and Palliative Care. Geneva: WHO; 1990.
5. Wiffen PJ, Wee B, Derry S, Bell RF, Moore RA. Opioids for cancer pain – an overview of Cochrane reviews. Cochrane Database Syst Rev. 2017;7:CD012592.
6. Paice JA, Ferrell B. The management of cancer pain. CA Cancer J Clin. 2011;61(3):157-182.
7. Greco MT, Roberto A, Corli O, et al. Quality of cancer pain management: an update of a systematic review of undertreatment of patients with cancer. J Clin Oncol. 2014;32 (36):4149-4154.
8. Mystakidou K, Tsilika E, Parpa E, et al. Pain management of advanced cancer patients in Greece. Pain Physician. 2004;7(4):455-460.
9. Deandrea S, Montanari M, Moja L, Apolone G. Prevalence of undertreatment in cancer pain: a review of published literature. Ann Oncol. 2008;19(12):1985-1991.
10. Breivik H, Cherny N, Collett B, et al. Cancer-related pain: a pan-European survey of prevalence, treatment, and patient attitudes. Ann Oncol. 2009;20(8):1420-1433.
11. Caraceni A, Hanks G, Kaasa S, et al. Use of opioid analgesics in the treatment of cancer pain: evidence-based recommendations from EAPC. Lancet Oncol. 2012;13(2):e58-e68.
12. Mercadante S. Opioid titration in cancer pain: a critical review. Eur J Pain. 2007;11(8):823-830.
13. Bennett MI, Rayment C, Hjermstad M, et al. Prevalence and aetiology of neuropathic pain in cancer patients: a systematic review. Pain. 2012;153(2):359-365.
14. van den Beuken-van Everdingen MHJ, de Rijke JM, Kessels AG, et al. High prevalence of pain in patients with cancer in a large population-based study in The Netherlands. Pain. 2007;132(3):312-320.
15. Oldenmenger WH, Sillevis Smitt PAE, van Dooren S, Stoter G, van der Rijt CCD. A systematic review on barriers hindering adequate cancer pain management and interventions to reduce them. Ann Oncol. 2009;20(6):990-999.
16. Jacobsen R, Moldrup C, Christrup L, Sjøgren P. Patient-related barriers to cancer pain management: a systematic exploratory review. Scand J Caring Sci. 2009;23(1):190-208.
17. Hui D, Bruera E. Integrating palliative care into the trajectory of cancer care. Nat Rev Clin Oncol. 2016;13(3):159-171.
18. Portenoy RK. Cancer pain. Epidemiology and syndromes. Cancer. 1989;63(11 Suppl):2298-2307.
19. Teunissen SCCM, Wesker W, Kruitwagen C, et al. Symptom prevalence in patients with incurable cancer: a systematic review. J Pain Symptom Manage. 2007;34(1):94-104.
20. Ripamonti CI, Santini D, Maranzano E, et al. Management of cancer pain: ESMO Clinical Practice Guidelines. Ann Oncol. 2012;23(Suppl 7):vii139-vii154.
21. Mercadante S, Fulfaro F. World Health Organization guidelines for cancer pain: a reappraisal. Ann Oncol. 2005;16(Suppl 4):iv132-iv135.
22. Grond S, Sablotzki A. Clinical pharmacology of tramadol. Clin Pharmacokinet. 2004;43(13):879-923.
23. Ventafridda V, Tamburini M, Caraceni A, et al. A validation study of the WHO method for cancer pain relief. Cancer. 1987;59(4):850-856.

24. Fallon MT. Neuropathic pain in cancer. Br J Anaesth. 2013;111(1):105-111.
25. Zimmermann C, Swami N, Krzyzanowska M, et al. Early palliative care for patients with advanced cancer: a cluster-randomised contro lled trial. Lancet. 2014;383(9930):1721-1730.
26. Temel JS, Greer JA, Muzikansky A, et al. Early palliative care for patients with metastatic non-small-cell lung cancer. N Engl J Med. 2010;363(8):733-742.
27. Gordon DB, Dahl JL, Phillips P, et al. The use of "as-needed" range orders for opioid analgesics in the management of pain. J Pain. 2004;5(2):53-58.
28. Syrjala KL, Jensen MP, Mendoza ME, et al. Psychological and behavioral approaches to cancer pain management. J Clin Oncol. 2014;32(16):1703-1711.
29. Mehta A, Chan LS. Understanding of the concept of "total pain": a prerequisite for pain control. J Hosp Palliat Nurs. 2008;10(1):26-32.