



Implementing Kolcaba's comfort theory for pain management in a patient with tongue cancer: A case report

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ABSTRACT

Background: Tongue cancer is often associated with severe pain, further complicated when accompanied by comorbidities such as pulmonary tuberculosis. Persistent pain, worsened by continuous coughing, contributes to swallowing and speech difficulties, ultimately diminishing quality of life and resulting in poor prognosis.

Objective: This case report aimed to explore the effectiveness of nursing care guided by Kolcaba's Comfort Theory in alleviating pain in a patient with tongue cancer.

Case Presentation: A 58-year-old man with tongue cancer, suspected lung metastasis, and pulmonary tuberculosis experienced severe chronic pain (VAS 9/10). Nursing care was structured according to Kolcaba's framework, addressing physical, psychospiritual, environmental, and sociocultural comfort needs across the stages of relief, ease, and transcendence. Interventions included pharmacological therapy with morphine and non-pharmacological strategies such as foot massage and local honey application to the wound site. Pain was regularly assessed using the visual analog scale. Following interventions, the patient reported reduced pain intensity (VAS 7/10). Comfort levels improved, with physical comfort progressing from relief to ease, psychospiritual comfort from ease to transcendence, and environmental and sociocultural aspects maintained at the transcendence stage.

Conclusion: Nursing care based on Kolcaba's Comfort Theory effectively contributed to pain reduction and enhanced comfort in this patient with tongue cancer. Integrating pharmacological and non-pharmacological interventions within a holistic nursing framework may offer practical strategies for managing complex cancer-related pain and improving quality of life.

Keywords: comfortness; comfort theory; nursing care; tongue cancer

INTRODUCTION

Tongue cancer is a malignant carcinoma, with approximately 95% classified as squamous cell carcinoma. Although considered relatively rare worldwide ([National Institute of Health, 2023](#)), its morbidity and mortality rates vary across countries, largely influenced by specific regional risk factors ([Salian et al., 2016](#)). In Indonesia, tongue cancer accounts for about 14% of

Nursing and Healthcare Practices

- *Integrate pharmacological and non-pharmacological therapies (e.g., morphine, foot massage, honey application) to manage the multidimensional aspects of pain, including physical, psychospiritual, environmental, and sociocultural factors.*
- *Apply Kolcaba's Comfort Theory to assess and guide interventions across the stages of relief, ease, and transcendence, with the goal of enhancing patient comfort, well-being, and quality of life during cancer treatment.*
- *Regularly assessing pain levels using a visual analog scale and adjusting interventions based on patient responses to ensure effective pain management and comfort improvement over time.*

all cancer cases (Kemenkes RI, 2015). The disease is characterized by rapid progression and high recurrence rates, resulting in poor prognosis and elevated mortality among affected patients (Myers et al., 2020).

Pain is one of the most common and distressing symptoms in cancer, often presenting at moderate to severe levels and significantly impairing quality of life (Zhang et al., 2023). Accordingly, the primary aim of pain management in tongue cancer is not only to provide curative treatment but also to alleviate symptoms, enhance patient adaptation, and improve overall well-being. In this case, the presence of pulmonary tuberculosis further aggravated the patient's discomfort, as persistent coughing intensified the pain. Comprehensive nursing care should therefore focus on promoting comfort in physical, psychological, environmental, and spiritual domains (Zhang et al., 2023).

Despite ongoing advancements in pain management strategies for cancer patients, the survival rate of individuals with tongue cancer remains below 50%, largely due to the rapid progression of cancer cells within a short period (Sathiasekar et al., 2017). This

reality underscores the critical role of nurses in delivering care that not only addresses physical symptoms but also enhances patient comfort. Integrating comfort-based care guided by Kolcaba's Theory provides a holistic framework to support patients with tongue cancer, as meaningful improvements in their condition cannot be achieved without adequately meeting comfort needs (Lin et al., 2023).

Kolcaba's Comfort Theory plays a pivotal role in enhancing comfort for patients experiencing chronic pain. Through this theoretical approach, nursing care can be delivered comprehensively, encompassing physical, psychospiritual, sociocultural, and environmental dimensions. Patient conditions are classified into three stages of comfort: relief, when specific needs for comfort are addressed; ease, reflecting a state of calmness or contentment; and transcendence, when individuals are able to rise above their difficulties. Interventions are further organized into three categories: standard comfort measures to maintain physiological stability, coaching interventions to reduce anxiety and provide education, and comfort food for the soul to promote inner peace and emotional well-being. Collectively, these strategies enable nurses to foster holistic comfort across all aspects of patient care (Kolcaba, 2010).

Previous studies have demonstrated the effectiveness of Kolcaba's Comfort Theory in enhancing patient outcomes. Nuraini et al. (2018) reported that its application in breast cancer patients increased comfort by reducing anxiety and depression. Similarly, Ingrid (2019) and Sulistyawati et al. (2023) found improvements in comfort through the reduction of pain and fatigue among cancer patients. Moreover, the theory's implementation has been shown to positively influence the holistic well-being of both patients and families, particularly when interventions are adapted to cultural contexts (Lin et al., 2023). Integrating non-pharmacological therapies within Kolcaba's theoretical framework offers a promising approach to alleviating cancer-related pain. Accordingly, the present study aimed to examine the effect of applying nursing care guided by Kolcaba's Comfort Theory in reducing pain in a patient with tongue cancer.

CASE

A 58-year-old man, weighing 40 kg and

measuring 170 cm in height, was diagnosed with tongue cancer with suspected pulmonary metastasis, complicated by active pulmonary tuberculosis (TB) that had been present for approximately two months before admission. His past medical history included hypertension and type 2 diabetes mellitus, both of which were under control. He reported a long history of heavy smoking and alcohol consumption since early adulthood. The patient had previously received treatment for the same malignancy and was managed with paracetamol 500 mg three times daily, metformin 500 mg three times daily, anti-tuberculosis drugs once daily in the morning, and amlodipine 10 mg once daily. Chemotherapy was postponed until completion of two months of TB treatment. Despite this, his condition deteriorated, with worsening chronic pain, increasing shortness of breath, and massive oral bleeding that persisted for two consecutive days, prompting referral to the Emergency Department.

All clinical information, including history, examination findings, and treatment details, was obtained with the patient's consent. Written informed consent was also secured from the patient and his family for the publication of this case report and the use of anonymized clinical data

Clinical Findings

The patient's primary complaint was persistent, severe pain localized to the tongue, described as continuous and throbbing, with an intensity of 9/10 on the visual analog scale (VAS). The pain was exacerbated by frequent coughing episodes associated with pulmonary tuberculosis. On clinical assessment, notable findings included marked swelling in the oral cavity, with an enlarged tongue extending outward beyond the mouth. The tongue surface showed white plaques that were difficult to remove and multiple erythematous ulcerative lesions. Palpation revealed firm, enlarged lymph nodes in the right superficial cervical region. At the time of evaluation, the patient was being managed collaboratively by a head and neck oncologist and a pulmonary specialist.

A head and neck CT scan conducted on August 4, 2023, revealed a solid mass with indistinct margins and irregular edges, measuring 5.85 × 9.26 × 2.82 cm, originating from the tongue (glossus) and extending superiorly with partial destruction of the maxillary bone. A subsequent chest CT scan

on September 7, 2023, demonstrated findings consistent with active pulmonary tuberculosis, along with a suspicious mass in the left lung, raising concern for intrapulmonary metastasis. The patient also presented with signs of severe malnutrition. Clinically, he appeared weak, easily fatigued, and had experienced significant weight loss. On examination, he was cachectic, with visible bony prominences and complaints of persistent nausea. Anthropometric and laboratory assessments confirmed malnutrition: body weight was 40 kg with a height of 165 cm (BMI 14.6), mid-upper arm circumference was 13 cm, serum albumin was reduced at 3.2 g/dL, and swallowing ability was markedly decreased, necessitating the placement of a nasogastric tube (NGT).

On physical examination, the respiratory assessment revealed a symmetrical chest shape bilaterally with a regular but rapid breathing pattern. However, chest wall movement on the left side was visibly reduced compared to the right. Tactile fremitus was increased on the left lung, with auscultation detecting diminished breath sounds in the left upper intercostal spaces (ICS 2–3), decreased vesicular sounds, and the presence of wheezing. The patient also reported sensations of chest tightness and fullness. Additionally, conjunctival pallor was noted, suggestive of anemia.

The psychospiritual assessment indicated that the patient had largely accepted his condition and expressed hope that God would grant him a miracle. Despite this acceptance, he reported feelings of boredom and frustration due to prolonged immobility and being confined to bed. He also voiced concern about his family's future financial security should he pass away. Spiritually, however, he expressed satisfaction, believing that his illness was part of God's destiny, and he found comfort in being able to continue worship despite his limitations. The environmental assessment revealed that the patient generally perceived his surroundings as supportive of rest and recovery. The hospital room provided adequate lighting, comfortable temperature, and a relatively quiet atmosphere. However, he reported feeling disturbed during visiting hours when the presence of many visitors created noise and reduced his sense of comfort. The sociocultural assessment showed that the patient was receptive to all recommended therapies, with no conflict between his health care plan and cultural beliefs. His relationship with his family was strong and supportive,

although he expressed missing his coworkers since being hospitalized. Financially, the patient's treatment costs were fully covered by Class 3 national health insurance provided by the government, ensuring that there were no economic barriers to accessing care.

During hospitalization, the patient received supportive and pharmacological therapy, including intravenous infusion of NaCl 0.9% at 1000 cc/24 hours, omeprazole 20 mg twice daily via intravenous route, and sucralfate 2 × 10 ml. Standard anti-tuberculosis medications were administered every morning at 6 a.m. To address nutritional deficiencies, the patient was given Vivalbumin 500 mg three times daily. For pain management, morphine sustained-release tablets (MST) 20 mg twice daily were administered via a nasogastric tube (NGT). In addition, the patient received nebulization therapy with N-acetylcysteine inhalation, 100 mg three times daily at six-hour intervals. The results of laboratory examinations conducted during admission are presented in [Table 1](#).

Therapeutic Intervention

Nursing interventions in this case report are adjusted to the level of comfort. Pain management in the physical aspect was carried out by foot massage therapy. Foot massage therapy was performed for 15 minutes with a frequency of twice a day. A recent meta-analysis study stated that foot massage therapy is effective for 10-30 minutes with a duration of ≥1 week ([Zhang et al., 2023](#)).

The foot massage therapy was administered for 15 minutes per session. At the beginning of each session, the patient was positioned comfortably in a supine position with legs extended, and encouraged to relax in order to ease muscle tension. Olive oil was applied to the therapist's palms before initiating the massage and reapplied as needed throughout the procedure. The therapy was performed alternately on the right and left legs, with each side receiving approximately three minutes of massage. The intervention consisted of five standardized techniques: effleurage (gentle rubbing and light pressing with the thumbs above the shin), petrissage (kneading and squeezing the soles of the feet from the inside outward), tapotement (light rhythmic tapping on the instep and sole with both hands), friction (firm rubbing of the sole using a closed fist in a back-and-forth motion), and vibration (application of oscillating movements to induce relaxation). These structured techniques were

intended to stimulate circulation, promote relaxation, and reduce pain perception.

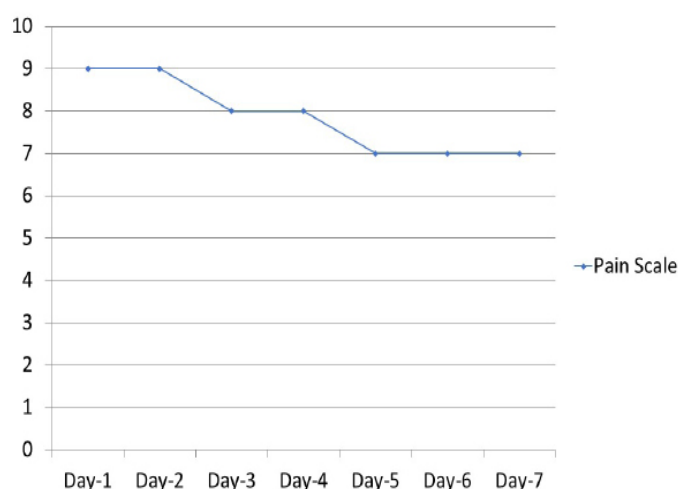
In addressing the psychospiritual aspect, nursing care focused on providing emotional support and motivation while actively involving the patient's family in daily care activities. Social support was strengthened by facilitating virtual communication with relatives through video calls, arranged with family permission, to reduce feelings of isolation. Spiritual care was provided by encouraging the patient and family to engage in prayer together, fostering a sense of peace and acceptance. For the environmental aspect, efforts were made to optimize the patient's comfort by adjusting the room setting—ensuring lighting was not excessively bright, maintaining a warm and stable temperature, and minimizing noise by closing curtains or doors according to the patient's preference. Regarding the sociocultural aspect, interventions included respecting and fulfilling the patient's cultural and health-related beliefs, ensuring that nursing care was aligned with his values and traditions, and providing clear information in a culturally sensitive manner.

Follow-up and Outcomes

All nursing care interventions for pain management in this case were guided by Kolcaba's Comfort Theory. The assessment revealed varying levels of comfort across different dimensions. In the physical domain, the patient experienced severe chronic pain, categorized at the relief level, as he required continuous interventions to address specific discomforts. In the psychospiritual domain, although the patient expressed worry about his illness, he had begun to demonstrate acceptance, placing him at the ease stage. For the environmental domain, the patient reported being able to adapt to his surroundings without significant disturbance, which reflected a state of transcendence. Similarly, in the sociocultural domain, the patient experienced no conflict between health care and cultural beliefs and maintained strong family and social relationships, also corresponding to the transcendence stage. Overall, the most pressing problem influencing multiple aspects of comfort was chronic pain related to cancer cell infiltration, which served as the primary nursing diagnosis. Addressing this diagnosis through both pharmacological and non-pharmacological interventions was therefore prioritized to optimize the patient's comfort and

Table 1. Laboratory examination results

Examination	Referral Value	1/09/2023 (Admission)	7/09/2023
Urine Protein	Negative	+ 1	-
Urine Glucose	Negative	+4	-
Urine Ketones	Negative	Negative	-
Hemoglobin	14-17.8 g/dL	10,7 g/dL	12,1 g/dL
Hematocrit	40-52%	28.8%	30.2%
Platelets	150.000-450.000/ mm3	308.000/mm3	348.000/mm3
Leukocytes	4.500-10.000/mm3	6.700/mm3	7.200/mm3
Real-time Blood Sugar	100-150 mg/dL	140 mg/dL	145 mg/dL
Calsium	8.1-10.4 mg/dL	8.73 mg/dL	8.73 mg/dL
Sodium	135-148 mmol/L	124 mmol/L	135 mmol/L
Potassium	3.5 – 5.1 mmol/L	4.1 mmol/L	4.1 mmol/L
Albumin	3.4-4.8 g/dL	3.2 g/dl	3.5 g/dL

**Figure 1.** Pain scale reduction chart

quality of life.

The intervention results demonstrated improvement in the patient's comfort levels. In the physical domain, comfort progressed from the relief stage to the ease stage, reflecting a reduction in pain intensity. In the psychospiritual domain, the patient advanced from ease to transcendence, showing greater acceptance and inner strength. The environmental and sociocultural domains remained at the transcendence stage, indicating stability and sustained adaptation. Vital signs also showed improvement, with blood pressure measured at 150/82 mmHg and heart rate at 82 beats

per minute. The patient reported feeling more comfortable during foot massage therapy, which allowed him to rest more peacefully and experience a reduction in pain. These outcomes are further illustrated in the pain reduction graph (Figure 1).

DISCUSSION

Pain has a profound impact on the quality of life of patients with cancer, influencing both physical functioning and psychological well-being. Addressing comfort needs is therefore an essential component of holistic nursing care. The findings of this case illustrate that enhancing

comfort and providing a sense of security can significantly improve patient outcomes by promoting calmness, strengthening motivation to continue treatment, and reducing feelings of guilt and anxiety. Nonetheless, the challenge for nurses lies in selecting and implementing the most appropriate interventions and approaches that effectively alleviate pain while also addressing individual patient needs across physical, emotional, environmental, and spiritual domains.

In this study, foot massage therapy was implemented to address the patient's physical comfort needs. Following the intervention, the patient reported reduced pain, improved rest, and greater comfort, which was also reflected in stabilization of vital signs, although they remained slightly above normal limits. The analgesic effects of foot massage can be explained by several mechanisms. Biochemically, massage induces local changes in soft tissues through modulation circuits, enhancing oxygenation and blood flow while stimulating the release of hormones associated with analgesia, including oxytocin, vasopressin, adenosine, endorphins, and serotonin (Demirci et al., 2022). From a neurological perspective, tactile stimulation of nerve fibers and pressure receptors in the dermatomes activates inhibitory interneurons, thereby engaging the gate control mechanism and reducing the transmission of pain impulses to the brain (Abdelaziz & Mohammed, 2014). In addition, increased production of endorphins and serotonin suppresses cortisol secretion, promoting both physical and psychological relaxation. These physiological effects improve blood and lymphatic circulation, enhance oxygen and energy delivery, and accelerate the clearance of metabolic waste products, thereby alleviating fatigue (Nourmohammadi et al., 2019). Moreover, massage reduces tension and improves circulation by stimulating receptors in the feet, which may help eliminate neurotoxic compounds in the peripheral nervous system and decrease symptoms such as numbness and tingling in the extremities (Fitri et al., 2021; Rambod et al., 2019).

In this case, the patient experienced continuous and severe cancer-related pain, indicating that foot massage therapy alone was insufficient as a primary intervention. For pain of this intensity, pharmacological management is essential, with non-pharmacological approaches serving as complementary therapies to enhance outcomes. Morphine remains the gold standard for cancer pain

management (Ho et al., 2020); however, several barriers complicated its use in this patient. The family expressed concerns about potential side effects, while nurses reported hesitancy due to fears of opioid dependence, tolerance, and adverse effects, consistent with findings in previous studies (Kim et al., 2015; Ho et al., 2020). Cultural and psychosocial perceptions also contributed to reluctance: as noted by Nai-Ching et al. (2022), many patients and families view morphine as a last resort, symbolizing terminal illness and impending death, which can discourage timely use. Despite these barriers, the administration of morphine in this case was effective in reducing pain. However, the presence of pulmonary tuberculosis further exacerbated the patient's discomfort, as continuous coughing aggravated the tongue lesion, leading to bleeding, injury, and prolonged pain (Cheng et al., 2017). Careful dose adjustment of morphine according to patient needs is therefore critical to balancing analgesia and safety (Ho et al., 2020). Evidence also suggests that lower doses of morphine may provide significant pain relief while minimizing risks, as demonstrated by Bandieri et al. (2016), who reported superior outcomes in patients receiving low-dose morphine compared to those receiving higher doses ($P < 0.001$).

CONCLUSIONS

The application of Kolcaba's Comfort Theory proved effective in reducing pain and enhancing overall comfort in a patient with tongue cancer. By addressing multidimensional needs, the intervention not only alleviated physical suffering but also promoted a sense of peace and well-being. Pain intensity decreased from a score of 9 to 7 on the visual analog scale following the intervention, demonstrating measurable improvement. Nonetheless, ongoing management of cancer pain remains a challenge, particularly as patients transition from hospital to home care. Nurses therefore play a critical role in educating and empowering families to continue providing comfort-focused care, ensuring that the principles of Kolcaba's theory are sustained to support patient quality of life beyond the clinical setting.

Declaration of Interest

The authors declare no competing interest.

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Data Availability

The datasets used and analyzed in the current study are available from the corresponding author (PK) upon reasonable request

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