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Original research

HERBAL FOOTBATHS FOR INSOMNIA TREATMENT IN CANCER PATIENTS

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ABSTRACT

Background: *Sleep disorders and insomnia are frequent concerns among cancer survivors, presenting a notable challenge. Herbal footbaths are a complementary and alternative medicine that provides good results in managing insomnia, with few adverse effects and low costs. This study aims to assess the effectiveness and safety of herbal footbaths therapy for insomnia treatment in cancer patients.*

Methods: *A cross - sectional descriptive study was carried out on 63 inpatients with cancer undergoing treatment at the Oncology Center in Hue Central Hospital. The primary outcome was the Insomnia Severity Index (ISI). The secondary outcome was adverse therapy reactions.*

Results: *The ISI scale reduced significantly to 4.92 ± 2.55 ($p < 0.01$). No adverse reactions were found during the study.*

Conclusion: *Herbal footbaths are an effective and safe treatment for insomnia in cancer survivors.*

Keywords: *Herbal footbaths, Traditional medicine, Insomnia, Sleep disorders, Palliative care, Cancer patients.*

I. INTRODUCTION

Cancer significantly impacts global health, with millions of new cases diagnosed annually (approximately 19.3 million) [1]. In Vietnam alone, estimates suggest 180,000 new cases and high mortality rates [2]. Cancer survivors are disproportionately affected by insomnia, a major contributor to their reduced quality of life. Studies have shown that a significant portion, ranging from 25% to 59%, experience severe sleep problems - more than double the rate observed in the general population [3]. Sleep disorders encompass a wide range of disturbances in sleep quantity, quality, periodicity, and sleep - wake rhythm [4]. Sleep disorders and insomnia are frequent concerns among cancer survivors, presenting a notable challenge. It's estimated that up to 80% of cancer patients experience sleep disorders spanning from diagnosis through treatment, and persisting for as long as a decade into survivorship. Approximately 25% to 50% of patients with cancer - related insomnia are treated with sedative - hypnotic drugs. However, pharmaceutical treatments often come with adverse effects such as dizziness, residual daytime sedation, fatigue, daytime sleepiness, and headache. The using complementary and alternative medicine is familiar among cancer survivors [5]. A 2018 study conducted at Hai Duong Provincial General Hospital found that a staggering 89.3% of cancer patients suffered from insomnia based on the ISI score [4]. A study conducted at Hue University of Medicine and Pharmacy Hospital found that 79.8% of cancer patients had poor sleep quality. Insomnia affected 52.8% of the patient's quality of life and daily activities [2]. Herbal footbaths involve soaking a body part in a traditional medicine decoction. Herbal footbaths are believed to work by regulating the circulatory, digestive, and nervous systems, strengthening the immune system, promoting

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metabolism, reducing inflammation, alleviating stress, relaxation, reducing stress, improving sleep quality, balancing the body, and relieving pain. Many studies have shown that traditional medicine footbaths provide good results in treating insomnia and pain relief, with few side effects and low costs [6] [7]. The integration of traditional medicine into palliative care has been implemented at the Oncology Center of Hue Central Hospital since 2017, with particularly encouraging results in treating insomnia. Overall, there is currently no research on the use of herbal footbaths therapy to treat sleep disorders in cancer survivors, both globally and in Vietnam. We conducted this study to evaluate the effectiveness of herbal footbaths for insomnia treatment in cancer patients.

II. MATERIALS AND METHODS

A cross-sectional descriptive study was carried out on 63 inpatients with cancer undergoing treatment at the Oncology Center in Hue Central Hospital from January 2024 to April 2024.

Inclusion criteria: (1) Age ≥ 18 years old, (2) with a diagnosis of cancer under treatment and experiencing mild to moderate insomnia according to the Insomnia Severity Index, (3) Patients voluntarily participated in the study.

Exclusion criteria: Patients with severe insomnia according to the ISI scale. Participants who are taking antidepressants or sedatives. Individuals who are in an emergency state. Patients who are allergic to the components of the drug. Open wounds.

Intervention: Participants were treated with herbal footbaths therapy for 15 minutes/session, once a day, for 7 days. Perform the procedure in accordance with the Vietnamese Ministry of Health's guidelines [8].

Research Instruments: Medical records, research questionnaire, blood pressure monitor, stethoscope, tape measure, watch, Beurer foot bath (FB-50), towel, chair. The traditional medicine decoction "Formula 1" was prepared following the standard procedures for decocting herbal medicines established by the Vietnamese Ministry of Health [8] and routinely used in the Department of Traditional Medicine at Hue Central Hospital since 2018. The composition of the herbal formula includes Rhizoma Zingiberis 3 gram, Radix Angelicae Pubescentis 3 gram, Herba Loranthi 10 gram, Rhizoma Atractylodis Macrocephalae 3 gram, Poria cocos 6 gram, Rhizoma Zingiberis Officinalis 3 gram, Ramulus Cinnamomi 6 gram, Radix Ligustici Chuanxiong 3 gram, Radix Achyranthis Bidentatae 6 gram.

We evaluated treatment outcomes twice: before the intervention (D0) and after the intervention (D7).

Outcome indicators: The primary outcome was the Insomnia Severity Index (ISI). The secondary outcome was adverse therapy reactions.

The Insomnia Severity Index: The total score of 7 questions will help assess the insomnia severity. Use the questionnaire to collect personal information. The scale consists of 7 questions. The questions assessed include: 1. Difficulty falling asleep; 2. Difficulty staying asleep; 3. Waking up too early; 4 Satisfaction with sleep; 5. Impact on quality of life; 6. Anxiety due to sleep problems; 7. Impact on daily activities. Each question was assessed on a 5-point Likert scale, ranging from 0 - 4. Total score categories: No clinically significant insomnia (0 - 7); Sub - threshold insomnia (mild severity) (8 - 14); Moderate insomnia (15 - 21), Severe insomnia (22 - 28) [9].

Data were collected by questionnaire, interview, and medical records. Statistical analysis was performed with the use of Statistical Product and Services Solutions SPSS 20.0.

All information was only used for scientific purposes.

III. RESULTS

3.1. General characteristics

Table 1: Sociodemographic details of the participants

Characteristics		**n (number)**	**percentage (%)**
Age	$\overline{X}$ ± SD	57.7 ± 12.3	
Sex	Male	18	28.6
	Female	45	71.4

The average age was 57.7 ± 12.3. Female subjects constituted the majority in our study, accounting for 71.4%

Table 2: Clinical characteristics of the study subjects

Clinical Characteristics		n	percentage (%)
Cancer Type	Head and neck	7	11,1
	Gynecological	8	12.7
	Lung	6	9.5
	Colorectal	8	12.7
	Female Breast	20	31.7
	Esophagus	5	7.9
	Stomach	2	3.2
	Non-Hodgkin	2	3.2
	Other cancers	5	7.9
Cancer Stage	I	1	1.6
	II	38	60.3
	III	12	19
	IV	12	19
Surgery	Yes	33	52.4
	No	30	47.6
Chemotherapy and/or Radiotherapy	Yes	62	98.4
	No	1	1.6

The most prevalent types of cancer in our study were breast (31.7%), gynecological (12.7%), colon-rectal (12.7%), head and neck (11%). The most common cancer stage encountered was stage II (60.3%). Surgery was performed in 52.4% of patients, and 98.4% of patients underwent chemotherapy and/or radiotherapy.

Table 3: Total score categories of insomnia severity according to the ISI scale

Insomnia Severity Categories	n	percentage (%)
Mild severity	30	47.6
Moderate severity	33	52.4
Mean ISI Score ($\overline{X}$ ± SD)	15.87 ± 3.46	

According to the ISI insomnia scale in our study, the mean score was 15.87 ± 3.46, with 52.4% of patients experiencing moderate insomnia and 47.6% experiencing mild insomnia.

Table 4: Insomnia problems according to ISI scores.

Insomnia Problems	Severity (number (%))				
	None	Mild	Moderate	Severe	Very severe
Difficulty falling asleep	0 (0)	1 (1.6)	10 (15.9)	42 (66.7)	10 (15.9)
Difficulty staying asleep	0 (0)	2 (3.2)	19 (30.2)	30 (47.6)	12 (19)
Problems waking up too early	0 (0)	0 (0)	24 (38.1)	29 (46)	10 (15.9)

Insomnia Problems	Severity (number (%))				
	None	Mild	Moderate	Severe	Very severe
Satisfaction with the current sleep pattern	Very Satisfied	Satisfied	Moderately Satisfied	Dissatisfied	Very Dissatisfied
	0 (0)	1 (1.6)	33 (52.4)	24 (38.1)	5 (7.9)
Interference with daily functioning	Not at all noticeable	A Little	Somewhat	Much	Very Much Noticeable
	0 (0)	2 (3.2)	54 (85.7)	7 (11.1)	0 (0)
Noticeability of impairment	Not at all worried	A Little	Somewhat	Much	Very Much Worried
	25 (39.7)	24 (38.1)	10 (15.9)	4 (6.3)	0 (0)
Degree of distress caused by the sleep problem	Not at all interfering	A Little	Somewhat	Much	Very Much Interfering
	5 (7.9)	18 (28.6)	26 (41.3)	12 (19)	2 (3.2)

Common clinical manifestations observed among the 63 subjects in our study were difficulty initiating sleep (66.7%), difficulty maintaining sleep (47.6%), and early morning awakening (46%)

3.2. Results of insomnia treatment

Table 5: Assessment of treatment effectiveness according to the ISI scale

Study Time	ISI Average ($\overline{X}$ ± SD)
D_0	15.87 ± 3.46
D_7	10.95 ± 4.29
Reduction efficiency	4.92 ± 2.55
$p_{(7-0)}$	< 0,01

The reduction efficiency according to the ISI scale after 7 days of treatment intervention was 4.92 ± 2.55, with a statistically significant difference ($p < 0.01$).

During the 7 - day treatment period, no patients experienced adverse effects such as burning sensations, dizziness, or allergic reactions to traditional medicine components.

IV. DISCUSSION

4.1. Study characteristics

Among the 63 patients in our study, the mean age was 57.7 ± 12.3 (range: 35 - 88), with females accounting for the majority at 71.4%. The most common cancer types were female breast (31.7%), gynecological (12.7%), colorectal (12.7%), head and neck (11.0%). Less common were lung (9.5%), esophageal (7.9%), gastric (3.2%), non - Hodgkin lymphoma (3.2%), and other types of cancer (7.9%). The most common cancer stage was stage II, with 52.4% of participants having undergone surgical treatment and 98.4% of patients having received chemotherapy and/or radiotherapy.

The study by Tuong PN (2016) on 204 cancer patients at the Oncology Center in Hue Central Hospital found that male were the majority (58.8%), and the most prevalent cancer types were lung cancer (22.5%), head and neck cancer (15.7%), breast cancer (14.7%), colorectal cancer (10.7%), and esophageal cancer, stomach cancer, and non-Hodgkin lymphoma (each 7.8%) [10]. This difference in cancer distribution could be due to several factors. According to GLOBOCAN 2020 estimates, the coronavirus disease 2019 pandemic may have impacted the distribution of cancer types [1], particularly among patients with lung diseases and cancer in general. GLOCOCAN 2020 also shows that breast cancer in women has surpassed lung cancer to become the most commonly diagnosed cancer, with 2.3 million new cases, along

with higher mortality rates in men and lower rates in women [1]. Female cancer patients generally demonstrate a more positive attitude toward traditional medicine therapies, including yoga, herbal footbaths, acupressure, and acupuncture in "palliative care with traditional medicine room" at the Oncology Center in Hue Central Hospital. Our findings align with those of Tuyen NT's (2023) study on 51 cancer patients, which investigated the effectiveness of Nguyen Van Huong's four-phase breathing exercise in improving sleep quality. In Tuyen's study, 90.2% of participants were female, with an average age of 51 ± 9.53. Cervical cancer was the most prevalent type (74.5%), followed by lung and colorectal cancers (both 7.8%), and most patients were in stage II (74.5%). [11].

Our study illustrates that the distribution of insomnia severity according to the ISI scale was 52.4% moderate and 47.6% mild, with an average ISI score of 15.87 ± 3.46. The most common symptoms were severe difficulty falling asleep (66.7%), severe difficulty staying asleep (47.6%), and severe early morning awakenings (46%). 52.4% of patients were moderately satisfied with their current sleep. Insomnia primarily affected the quality of life (85.7%) and daily activities (41.3%) to a moderate degree. Insomnia affected 60.3% of patients, with severity ranging from mild to severe.

Our findings are consistent with those of Mui NT (2018), who studied 320 cancer patients at Hai Duong Provincial General Hospital and found an average ISI score of 15.8 (points) with similar proportions of moderate (32.8%) and mild (30%) insomnia [4]. However, the results of Tuyen NT (2023) indicate a more severe sleep disorder profile in cancer patients compared to our study, with an average ISI score of 23.65 ± 3.89, 15.7% mild insomnia, 70.6% moderate insomnia, and 13.7% severe insomnia [11]. These differences may be attributable to variations in study settings and patient selection criteria across the three severity levels (mild, moderate, and severe).

4.2. Results of insomnia treatment

Our study findings indicate a significant reduction in ISI score of 4.92 ± 2.55 after seven days of treatment intervention. This difference between pre-and post - treatment scores was statistically significant ($p < 0.01$). Throughout the intervention period, no adverse therapy effects associated with the herbal footbaths were observed.

Our results show a lower efficacy compared to Tuyen NT's (2023) study on 51 cancer patients at the Vietnamese National Hospital of Traditional Medicine, which employed Nguyen Van Huong's four-phase breathing exercise and demonstrated a 5.64-point reduction (from 23.65 ± 3.89 to 18.01 ± 3.68 points) after 30 days of treatment [11]. This difference could be attributed to the variation in intervention duration (30 days of continuous intervention with the breathing exercise method).

Growing concerns about sleep and a shift towards complementary therapies have fueled the use of herbal footbath therapy for insomnia. This practice is particularly popular in Oriental countries due to its affordability, convenience, and potential for fewer side effects compared to pharmacological treatments, which can cause serious health problems. Traditional medicine theory posits that active ingredients from herbs penetrate the skin and reach acupoints and meridians, exerting therapeutic effects. Research suggests warm footbaths alone can improve sleep quality by increasing blood flow in the limbs and regulating body temperature. Additionally, prior reviews have shown that herbal medicine, possibly through its impact on the GABAergic system, can enhance sleep quality and improve mental well-being in insomniacs. Based on these findings, it's reasonable to hypothesize that combining bath therapy with traditional medicine could be an effective treatment for insomnia [6]. Herbal footbath therapy goes beyond mere relaxation. It offers a multifaceted approach that combines the power of reflection, thermal effects, and the pharmacological properties of the herbs. Oriental theory posits that the feet hold channels and acupoints connected to internal organs and other body parts. Herbs absorbed through the skin and mucous membranes can target these pathways and organs to alleviate the pain of cancer survivors. Extensive research supports the pharmacological benefits of these herbs, including pain relief, muscle relaxation, improved microcirculation, anti - inflammatory effects, vasodilation (blood vessel widening), and

neuroprotection. Footbaths themselves contribute by enhancing microcirculation and skin permeability, ultimately facilitating better absorption of herbal formulas and their active ingredients. [7].

V. CONCLUSION

Based on high - quality evidence, we conclude that herbal footbath therapy is an effective and safe treatment for insomnia in cancer survivors.

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