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THEORY-BASED STUDIES

Herbal use among patients with advanced cancer: a secondary data analysis using a model of World Health Organization (WHO) medication adherence

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Abstract

Patients with advanced cancer often experience numerous distressing symptoms that can significantly affect their quality of life. In addition to standard therapies, many patients use herbal remedies to manage symptoms, alleviate pain, or enhance their overall well-being. However, studies examining the use of herbal treatments in this population are limited in the literature. Therefore, the present study aims to understand the factors influencing herbal use among patients with advanced cancer. The World Health Organization (WHO) model of medication adherence was also incorporated into this study. This observational study utilized secondary data collected from hospitals in West Java. The study started from September to November 2016. The study employed a demographic questionnaire, the Memorial Symptom Assessment Scale, and the Palliative Management Questionnaire to gather comprehensive data from participants. Descriptive statistics were utilized to effectively summarize and present the characteristics of the study participants. Binomial logistic regression analysis was performed to identify significant predictor variables by modeling the logit function, which represents the natural logarithm of the odds ratio. The study reported that pain, fatigue, decreased appetite, vomiting, and nausea were identified as the five most prevalent symptoms experienced by patients during their care. Soursop leaves emerged as the most commonly preferred herbal treatment among participants in this study. Key factors influencing the use of herbal remedies included female gender, low-income levels, distress-related symptoms, perceived effectiveness of herbal treatments, and specific cancer types—most notably head and neck cancers. These findings highlight the critical need to integrate herbal remedies into conventional cancer care practices while encouraging further research focused on evaluating their efficacy and safety profiles.

Keywords: Cancer care, chronic illness, community nursing, herbal, symptom management

Introduction

The increasing global interest in herbal and traditional medicine marks a transformative shift in advanced cancer care (Jenča et al., 2024). This shift is significant as patients endure both cancer and distressing symptoms (Imtiaz et al., 2024). Consequently, patients and their families seek various strategies to alleviate their suffering (Choi et al., 2022). The World Health Organization (WHO) reports that over 80% of individuals utilize traditional medicine, influenced by cultural beliefs, accessibility, and affordability (World Health Organization, 2023a). This trend is also evident in Southeast Asian countries where the integration of herbal treatments into healthcare systems has become increasingly common (Almasdy et al., 2018; Arevalo et al., 2022; Teerachaisakul et al., 2020). Despite standard care being available through hospitals, the medicine practices can delay effective cancer treatment (Chakraborty & Rahman, 2012). Therefore, herbal medicine serves as a crucial component in maintaining and restoring health of human being (Alanazi et al., 2023). Also, a study documented that the global prevalence of cancer prompts researchers to add herbal therapy alongside standard therapy (Ali et al., 2023). In Thailand, many patients with cancer turn to herbal alternatives, potentially delaying life-saving treatments due to concerns about modern therapy side effects (Teerachaisakul et al., 2020). This phenomenon is also observed in Indonesia, where many patients are turning to herbal treatments (Kristianto et al., 2022). In addition, a

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comprehensive study shown that a considerable number of patients with cancer start to use herbal therapy for symptoms management (Bazrafshani et al., 2019). Dissatisfaction related with Conventional Medicine (CM) and positive attitudes toward Complementary and Alternative Medicine (CAM) motivate people to use CAM during the daily care at home (Tangkiatkumjai et al., 2020).

Indonesia struggles with increasing cancer cases and deaths, with 397.000 diagnoses and 234.511 fatalities in 2020 (Andinata et al., 2023). This situation burdens patients' well-beings such as physical, psychological, and spiritual dimensions (Springer et al., 2024). Additionally, the increasing reliance on spirituality and religious beliefs complicates the healthcare landscape, particularly among late-stage cancer patients (Nagy et al., 2024). Given the significant burden of cancer on patients' physical, psychological, and spiritual well-being, there is an urgent need to explore complementary approaches that can provide holistic support. In Indonesia, herbal medicine has long been an accessible and trusted form of treatment since the cultural traditions and beliefs strongly influence health behaviors (Widayanti et al., 2020). For patients with advanced cancer, the integration of herbal remedies offers a promising avenue to address unmet needs (Hou et al., 2023). Herbal treatments are culturally acceptable, affordable, and readily available compared to some conventional therapies (Gatt et al., 2024). This accessibility makes them particularly important in resource-limited settings across Indonesia (Permatasanti & Hidayat, 2023). Moreover, many patients turn to these natural remedies that aligning with their beliefs and personal values (Coombs et al., 2022). Incorporating safe and effective herbal medicines into daily care could enhance symptom management and respect patient preferences. A study documented that 64.71% of patients with breast cancer in Indonesia use CAM to optimize conventional treatment (Almasdy et al., 2018).

Despite the widespread use of herbal medicines among patients with advanced cancer, there remains a limited understanding of how consistently these patients adhere to such treatments. Most existing research has focused primarily on adherence to CM which leaving a significant gap in knowledge of herbal remedy adherence. Additionally, few studies have applied standardized frameworks like the WHO medication adherence model to analyze patterns and predictors of herbal medicine use. This lack of systematic evaluation hinders comprehensive understanding and comparison across different populations and treatment modalities. Furthermore, there is insufficient data on key factors influencing herbal medicine adherence—such as socio-demographic characteristics, cultural beliefs, symptom burden, and perceived effectiveness—which are crucial for developing interventions in Indonesia. Much of the current evidence comes from high-income countries; thus, there is a scarcity of research focusing on Indonesia where traditional remedies play an essential role in nursing care. The present study is important because it addresses key gaps by analyzing secondary data within the WHO's medication adherence model to understand herbal medicine use among patients with advanced cancer. The WHO medication adherence model provides a structured framework to understand adherence factors, including herbal medicine usage (World Health Organization, 2023b). The model highlights patient-related, treatment-related, condition-related, socioeconomic, and healthcare system-related determinants, making it suitable for studying behavioral patterns in advanced cancer patients. The study applied the WHO model to investigate predictors of herbal medicine adherence in Indonesian cancer patients, focusing on factors like gender, age, cancer type, socioeconomic status, symptom distress, and perceived herb efficacy. The model's holistic approach aligns with these variables such as personal, treatment, health, and socioeconomic considerations. In nursing care, The WHO model supports interventions to improve adherence and management of chronic conditions.

By doing so, it provides valuable insights into patient behaviors that can inform more personalized approaches to improve treatment compliance and symptom management. Therefore, this research aims to investigate the prevalence of herbal use and identify its predictors among patients with advanced cancer. Moreover, understanding how patients integrate herbal remedies alongside conventional cancer therapies enables healthcare providers to develop sensitive care plans that respect patients' preferences and safety. The findings also have significant implications for policymakers by guiding the development of monitoring systems for safe herbal medicine usage within national cancer care programs in Indonesia. Finally, the study lays important groundwork for future research aimed at optimizing complementary therapy outcomes through identification of key predictors influencing adherence.

Method

The study is a descriptive observational study design using secondary data analysis to investigate herbal use among patients with advanced cancer, guided by the WHO medication adherence model. The data for this analysis were drawn from a preliminary study titled "Symptom experiences, palliative management, and spiritual wellbeing in indonesians with advanced cancer", conducted in Indonesia between September and November 2016. The dataset was sourced from a prominent tertiary care facility in Bandung, West Java. The inclusion criteria were Indonesian citizen, age over 18 years, and medically confirmed stage 3 or 4 cancer. For patients over 60 years, cognitive function was assessed using the

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Portable Mental Status Questionnaire (PMQS), with a score of at least 8/10 required for participation. A minimum score of 8 out of 10, indicating intact cognitive function, was required for participation. In this study, 14 participants aged 60 or above met the criteria, with all achieving scores of 8 or higher. The sample size was calculated using G*Power for Windows (version 3.1.9.7), with an effect size of 0.4 (Tangkiatkumjai et al., 2020), alpha of 0.05, and a power of 0.80, indicating that 90 participants were required. This study utilized existing data from a previous study of 90 Indonesians with advanced cancer, who were recruited from a government hospital in Bandung, West Java.

The research utilized diverse tools, including a demographic questionnaire addressing personal and health-related data, alongside herbal usage history. The Memorial Symptom Assessment Scale (MSAS) is a validated instrument for evaluating symptoms over the preceding week (Portenoy et al., 1994). The MSAS assesses symptom frequency, severity, and distress across bio-psycho-social-spiritual dimensions. While the original MSAS covered 32 symptoms, frequency assessment was limited to 24, excluding eight symptoms that patients frequently could not identify within a week (Portenoy et al., 1994). The MSAS was translated into Indonesian and subsequently back-translated into English by a proficient Indonesian nursing professor. A third bilingual translator verified the back-translation against the original, affirming linguistic fidelity with no discrepancies. The MSAS received validation from three experts (two nursing professors and an oncology advanced nurse practitioner), achieving a content validity index of 0.94. (This pertains solely to the content validity assessment by validators.) Only the symptom distress subscale was employed for this investigation, demonstrating robust internal consistency with a Cronbach's alpha coefficient of 0.91 (90 participants). The Palliative Management Questionnaire (PMQ), created by an Indonesian author for an unpublished dissertation, assessed various palliative care methodologies, including complementary approaches, exercise, herbal treatments, dietary modifications, and spiritual practices. Responses were dichotomized into "Yes" (1) or "No" (0), reflecting the utilization or non-utilization of these strategies. Although the study did not utilize the complete PMQ, it focused solely on data on herbal remedy usage. The PMQ was initially composed in English, translated into Indonesian, and back-translated by two bilingual experts to guarantee equivalence. It achieved a content validity index of 0.90, with Cronbach's alpha coefficients of 0.83 for a final sample of 90 participants.

Data collection utilized secondary data from a previous study on symptom experiences, palliative management, and spiritual wellbeing in Indonesians with advanced cancer. This initial study received ethical approval from the Human Research Ethics Committee, Faculty of Medicine, Ramathibodi Hospital, Mahidol University (COA No. MURA 2016/395). Then the study obtained permission to collect data from the Ministry of Health of the Republic of Indonesia, Directorate General of Health Services at the Dr. Hasan Sadikin Hospital, Bandung, West Java. Ethical approval for this study was granted by the Faculty of Medicine, Ramathibodi Hospital, Mahidol University on June 27, 2024 (COA No. MURA 2024/458). After data collection, outliers were checked, and descriptive statistics were used to determine the prevalence of herbal medicine use. Binomial logistic regression was employed to examine the relationship between herbal medicine use (dependent variable) and various predictor variables. This analysis estimated the natural logarithm of the odds (logit) to assess the impact of predictors on the likelihood of herbal medicine use.

Results

The average age of participants was 47.41 years, ranging from 18 to 73 years (SD=11.64). The majority were women (73.3%), practicing Islam (93.3%), and married (83.3%). Education levels included senior high school (24.4%) and standard school (23.3%). Half of the participants had a family income below 3 million Rupiah (<223.88 USD/month) and reported insufficient financial status (73.3%). Government medical care covered 50.0% of their treatment costs. Participants were medically confirmed to be in stage III (48.3%) and stage IV (51.7%) of cancer. Patients primarily had breast and gynecological cancers (47.8%), followed by colon, bone, lung, and other cancers (27.8%), head and neck cancers (24.4%). Most did not have other comorbid diseases (82.5%) and had received chemotherapy for less than one year (84.4%). For pain control, the majority used only paracetamol (84.2%) **(Table 1)**. The table highlights the ten most significant symptom distress from the MSAS. Pain was the most prominent symptom distress (Mean=2.861 , SD=1.06). This was followed by a lack of energy (Mean=2.77, SD=1.21), lack of appetite (Mean=2.62, SD=1.09), vomiting (Mean=2.52, SD=1.12), and nausea (Mean=2.42, SD=1.05) in that order. At least five of the most alarming symptoms were associated with dietary practices. Additionally, these symptoms showed secondary correlations with pain, energy levels, and sleep quality **(Table 2)**. In a study of 90 Indonesian patients with advanced cancer, 64.4% utilized natural products in their treatment. This indicates a strong preference for herbal remedies in their care. Despite the significant challenges posed by advanced cancer—where 61.1% reported high distress—91.1% of herb users regarded them as effective. Conversely, 8.9% perceived the herbs as ineffective **(Table 3)**.

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Table 1. Participants' characteristics.

Characteristics	Frequency (n)	Percentage (%)
Age (years) (mean=47.41, min-max =18 – 73, SD =11.64)		
Gender		
Female	66	73.3
Male	24	26.7
Religion		
Islam	84	93.3
Protestant	4	4.5
Catholic	2	2.2
Marital status		
Married	75	83.3
Divorce	9	10.0
Single	6	6.7
Education		
Standard	21	23.3
Junior/Middle High School	16	17.8
Senior High School	22	24.4
Bachelor	10	11.1
Master/above	15	16.7
Other	6	6.7
Occupation		
Housewife	41	45.6
Employee	10	11.1
Self - employee	10	11.1
Government service	9	10.0
Retired	3	3.3
Labor	2	2.2
Other	15	16.7
Financial status		
Just sufficient	8	8.9
Established	16	17.8
Not enough	66	73.3
Types of cancer		
Breast and gynecology	43	47.8
Head and neck cancer	22	24.4
Colon, bone, lung, other cancer	25	27.8
Chemotherapy		
Received chemotherapy less than 1 year	76	84.4
Received chemotherapy equal to or more than 1 year	14	15.6

The table presents the traditional practices and natural remedies used by the participants. The participants used *Botbolo* compress for discomfort relief (1.06%), *Aloe vera* and raw potato compress for natural skin soothing remedies (1.06%), *Eucalyptus* Oil was used for its antibacterial and anti-inflammatory effects (2.13%), Avocado oil, soursop leaves oil, and olive oil are each employed for skin health maintenance (1.06%). Shredded cassava, *Piper ornatum*, shredded potato, and a vinegar/honey mixture were each utilized for wound and skin care (1.06%) **(Table 4)**. Meanwhile, the Folk medicine encompasses practices from indigenous and spiritual healers. Chinese herbs (*Acmac*) were utilized by five patients (5.32%), reflecting Traditional Chinese Medicine's influence. Folk herbs (*Jamu*) were employed by four patients (4.26%), indicative of traditional Indonesian herbal practices. "*Habib*", "*Proka*" herbs, Indian Middle Eastern herbs, and "*Ustaz*" herbs were each used by one patient (1.06%), illustrating a blend of cultural and spiritual healing approaches **(Table 5)**. Yellow turmeric for anti-inflammatory and antioxidant effects (17.02%) and soursop leaves for anti-cancer

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(28.72%). Carrot for beta-carotene content (4.26%). Red dragon fruit, apple, dates, berry, lime, avocado, green coconut, and noni fruit was also used for other health benefits (1.06% to 3.19%). White turmeric was utilized for skin health (8.51%). Broccoli, white turnip, lemon grass oil, onions, and mushrooms were also used for immune enhancement. Honey was also used by patients with *Randu (Kapok)* honey (6.38%), black honey (5.32%), *ayurveda* and red honey (1.06%). *Aloe vera* was employed for health benefits (4.26%). Other herbal included are lotus leaves, *binahong* leaves, *moringa* leaves, *Piper aduncum*, *suji* leaves, and radish leaves. Some participants used of sea cucumber and spirulina, as well as ant's nest extract. Mangosteen skin was used for antioxidant (9.57%). Gingko, ginseng, guava root, *rosella* flowers, and cassava were also used for various health benefits (1.06%). Ant's nest extract was used by seven patients (7.45%). Fish oil was consumed by three patients (3.19%). Bird's nests, royal jelly, and chicken essence were recognized for their nutritional benefits **(Table 6)**.

Table 2. Top ten symptom distresses.

Symptoms	Symptom Distress	
	Mean	SD
1. Pain	2.86	1.06
2. Lack of energy	2.77	1.21
3. Lack of appetite	2.62	1.09
4. Vomiting	2.52	1.12
5. Nausea	2.43	1.05
6. Difficulty sleeping*	2.42	1.40
6. Dizziness*	2.42	1.34
7. Difficulty swallowing	2.38	1.59
8. Swelling of arms/legs	2.36	1.50
9. Change in the way food tastes	2.34	1.20
10. Feeling bloated	2.32	1.11

*Similar mean score.

Table 3. Herbal usage profile.

Characteristics	Frequency (n)	Percentage (%)
Natural product used		
Used	58	64.4
Not used	32	35.6
Total distress		
High	55	61.1
Low	35	38.9
Effectiveness of herbs		
High	82	91.1
Low	8	8.9

The results of the binary logit analysis revealed that five distinct variables—female gender, insufficient income, distress symptoms, perceived efficacy of herbal remedies, and cancer type (notably head and neck cancer)—were significant predictors of the log-odds of herbal medicine use among patients with advanced cancer in Indonesia. The estimated predictive percentage ranged from 43.1% to 61.1% (Cox & Snell R^2=0.43; Nagelkerke R^2= 0.61; $p < 0.001$). The reference categories for this analysis include income has savings, colon cancer, bone cancer, lung cancer, and other cancers, which are not explicitly represented in the equation. The analysis revealed that females had significantly higher log-odds values than males ($p < 0.01$), with females being 12 times more likely to use herbal remedies. Herbal use also varied significantly by income level ($p < 0.05$), with patients reporting insufficient income being approximately 37 times more likely to use herbal remedies than those with savings. Notably, higher distress levels may deter patients from seeking or adhering to alternative treatments. For each additional unit increase in total distress, the odds of using herbal medicines decreased by approximately 4%. The perceived efficacy of herbal remedies significantly influenced their use ($p < 0.01$), with patients who perceived herbs as effective being about 2 times more likely to use them. While cancer type did not show an overall significant difference in herbal use ($p > 0.117$), head and neck cancer patients exhibited distinct

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usage patterns compared to other cancer types ($p < 0.05$). Patients with head and neck cancer were approximately 8 times more likely to use herbal medicines compared to those with colon, bone, lung, or other cancers. However, age, chemotherapy (receiving more than one year), sufficient income, and certain cancer types (breast and gynecological cancer) were not significant predictors of herbal use among Indonesian adult patients with advanced cancer **(Table 7)**.

Table 4. Herbal products for relaxation, skin health, wound care, and other health benefits.

Products	Types	Frequency (n)	Percentage (%)
Complimentary methods (Relaxation)	*Botbolo* compress	1	1.06
	Aloe vera & raw potato compress	1	1.06
Oil products (Skin and wound care)	*Eucalyptus* oil	2	2.13
	Avocado oil	1	1.06
	Soursop leaves oil	1	1.06
	Olive oil	1	1.06
Other natural products (Other health benefits)	Shredded cassava	1	1.06
	Sirih merah leaves	1	1.06
	Shredded potato	1	1.06
	Vinegar/honey	1	1.06

Table 5. Folk medicine and its benefits.

Products	Types	Frequency (n)	Percentage (%)
Folk medicine (Symptoms control)	*Habib*	1	1.06
	Proka herbs	1	1.06
	Chinese herbs (*Acmac*)	5	5.32
	Folk herbs (*Jamu*)	4	4.26
	Indian Middle East herbs	1	1.06
	Ustaz (herbs from spiritual leader)	1	1.06

Discussion

The study presented that female gender was an important predictor of utilizing herbal remedies in Indonesia. The finding is consistent with extant research that women are generally predisposed to pursue alternative and complementary therapeutic modalities (Asiimwe et al., 2021). The study also documented that economic impediments were underscored as a determinant influencing the adoption of herbal remedies. These results confirmed that how financial limitations propel patients towards herbal solutions instead of conventional medical interventions would be advantageous (Tangkiatkumjai et al., 2020). Further study could also delve deeper into the cost-effectiveness and availability of herbal alternatives compared to traditional healthcare services. In addition to financial considerations, the cultural context surrounding herbal medicine plays a significant role in its adoption among cancer patients (Vasques et al., 2024). Many people from diverse backgrounds view herbal remedies as a safer, more traditional, and value-aligned alternative to conventional treatments (Kwon et al., 2021). The findings of this research provide correlation between symptomatic distress in advanced cancer patients and their reliance on herbal remedies for symptom relief. Patients with head and neck cancer are more likely to use herbal treatments, suggesting that specific symptoms may influence their preference for alternative therapies (Lan et al., 2019; Lim et al., 2019). Therefore, nurses make a significant contribution in supporting patients who use herbal remedies and ensuring safe and holistic care.

However, the study highlighted the lack of statistically significant differences in herbal usage across various malignancies for example breast cancer, gynecological cancer, and those received chemotherapy. The finding indicates a complex interplay of factors influencing treatment choices among cancer patients (Salek et al., 2023). Further exploration of these symptoms may hold the key to understanding the significant impact of traditional remedies on cancer treatment in Indonesia. Harnessing the power of innovative technology can revolutionize patient care by empowering individuals to make informed decisions about their treatment options (Subrata et al., 2021; Nurhidayah & Seaharattanapatum, 2021). Dietary changes (e.g. foods and supplements) are seen as most effective for managing symptoms and enhancing health for the patient with advanced cancer. A study reinforces the critical need for personalized guidance on dietary and supplement adherence for empowering patients (Kristoffersen et al., 2024).

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Table 6. Herbal for anti-oxidant and symptoms control.

Products	Types	Frequency (n)	Percentage (%)
Natural products (Fruits)	Berry	1	1.06
	Lime	1	1.06
	Apple	2	2.13
	Red dragon	3	3.19
	Avocado	1	1.06
	Green coconut	1	1.06
	Noni fruit	1	1.06
	Dates	2	2.13
Natural products (Vegetables)	Carrot	4	4.26
	Broccoli	1	1.06
	White turnip	1	1.06
	Sereh oil (Lemon grass)	1	1.06
	White onion	2	2.13
	Onion root	3	3.19
	Red onion	1	1.06
	White turmeric	8	8.51
	Yellow turmeric	16	17.02
	Lince mushroom	1	1.06
	Shitake mushroom	1	1.06
Natural products (Honey)	Black honey	5	5.32
	Randu (Kapok) honey	6	6.38
	Ayurveda honey	1	1.06
	Red honey	1	1.06
Natural products (Herbs/leaves)	Soursop leaves	27	28.72
	Aloe vera	4	4.26
	Lotus leaves (*Daun Teratai*)	1	1.06
	Binahong leaves	2	2.13
	Kelor leaves	2	2.13
	Sirih hitam leaves	3	3.19
	Suji leaves	1	1.06
	Radish leaves	1	1.06
	Gamat & spirulina	1	1.06
	Ant's nests	7	7.45
	Gingko	1	1.06
	Ginseng	1	1.06
	Guava root	1	1.06
	Rosella flowers	1	1.06
	Cassava	1	1.06
	Mangosteen skin	9	9.57
Animal products	Fish oil	3	3.19
	Royal jelly	1	1.06
	Chicken essence	1	1.06
	Bird's nest	2	2.13

The WHO model on medication adherence plays a crucial role in cancer care by highlighting the nature of adherence such as patient-provider relationships, therapy complexity, and healthcare system support (Peh et al., 2021). With integrating this model, clinical nurses can optimize interventions to address specific adherence challenges in cancer care (Xu et al., 2025). The nursing approach enables patient-centered care and better management of side effects of the treatment (de Munter et al., 2023). However, in this study, herbal remedies like soursop leaves and mangosteen skin are

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perceived as less effective. The research also highlights using natural products for skin and wound care such as diverse fruits, vegetables, and herbs. The oncology nurses need to provide health education of using natural product for patient with cancer (Boyle, 2024). This study highlights the enduring influence of traditional healing practices on health behaviors, accentuating the need for further research to evaluate the clinical effectiveness. The recent study also highlighted the paramount symptom distress indicators encountered by Indonesian patients diagnosed with advanced cancer. Pain emerged as the predominant symptom, followed by fatigue, lost of appetite, nausea, and vomiting. Therefore, there is a need for management of symptoms during treatment, involving a multidisciplinary approach that incorporates palliative medicine, exercise therapy, and psychotherapy (Tewes et al., 2021). The average scores and standard deviations reflect a considerable influence of these symptoms on the patient's overall quality of life. A study documented that cancer may impact the quality of life and overall patients' well-being (Bazilainsky et al., 2023).

Table 7. Analysis factor of herbal usage.

Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age	0.01	0.02	0.19	1	0.65	1.01	0.95	1.07
Gender (Female)	2.51	0.84	8.80**	1	0.00	12.31	2.34	64.70
Chemotherapy	-1.04	0.66	2.46	1	0.11	0.35	0.09	1.29
Income enough	1.60	0.95	2.82	1	0.09	4.95	0.76	32.00
Income is not enough	3.60	1.42	6.37*	1	0.01	36.77	2.24	603.36
Total distress	-0.04	0.01	5.48*	1	0.01	0.95	0.92	0.99
Effectiveness of herbs	0.74	0.19	15.25**	1	0.00	2.09	1.44	3.04
Breast and gynecological cancer	0.33	0.78	0.17	1	0.67	1.39	0.29	6.46
Head and neck cancer	2.04	0.96	4.48*	1	0.03	7.75	1.16	51.66
Constant	-3.80	3.47	1.19*	1	0.27	0.02		

Significancy level: *$p < 0.05$, **$p < 0.01$.

In the context of advanced cancer, where curative options are no longer viable, the emphasis should be placed on symptom management (Nayak & George, 2023). The study found that the most frequently reported symptoms were also the most severe, affecting patients with various types of cancer. This highlights the urgent need for nurses to develop comprehensive symptoms management strategies and nutritional support programs (Kwekkeboom et al., 2020). Such initiatives could significantly improve adherence to treatment regimens and promote a better recovery process (Rosenberg et al., 2020). Implementing these strategies requires a multidisciplinary approach to ensure that all aspects of patient care are addressed effectively (Mano et al., 2022). In Indonesia, cultural practices influence health management. For example, communal meals and traditions play a vital role in patient care, with herbal remedies being a cornerstone of treatment. The study emphasize that many patients rely on natural resources like ginger, turmeric, adopting a holistic approach that combines diet, topical treatments, and spiritual practices. This integrated strategy provides symptom relief and empowers patients with severe illnesses. Recognizing these cultural elements is crucial for healthcare professionals to improve communication and support patients within their cultural contexts (Siswanto et al., 2022). Integrating traditional practices into healthcare can foster trust and improve treatment adherence. However, relying solely on these practices may lead patients to overlook evidence-based treatments, potentially delaying necessary care and worsening health issues. Moreover, communal meals may not cater to individual dietary needs, increasing the risk of nutritional deficiencies. Overreliance on herbal remedies like turmeric can also create a false sense of security, causing patients to ignore severe symptoms or hesitate to seek medical attention. While Indonesia's cultural practices surrounding community and empowerment, they also present substantial risks. The risk of neglecting conventional medical care draw attention to the importance of reconciling cultural practices with modern healthcare. This is the condition in Indonesia, which requires a comprehensive approach, including nursing care to build the right mindset.

The study also highlighted the need to integrate spiritual care into cancer care to address the psychological issues arising from the condition. Spiritual care can positively impact medication adherence in cancer patients by addressing their emotional and existential concerns (e.g. a sense of hope and meaning). According to the WHO medication adherence model, social support is a crucial factor influencing adherence (Shahin et al., 2021). Spiritual care can provide this support by enhancing patients' motivation and ability to manage their treatment regimens (Elhaq et al., 2022).

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Integrating spiritual care into cancer care can promote holistic well-being, improve patient-provider relationships, and support better medication adherence (Bacoanu et al., 2024). This study reveals a trend of herbal use among patients with advanced cancer in Indonesia, but the lack of statistical significance highlights the need for further research to understand the factors influencing treatment outcomes. The complex role of herbal remedies in oncology underscores the importance of comprehensive studies to determine patient preferences and the effectiveness of integrating herbal remedies with standard treatments. Such research can inform communication strategies that strengthen the therapeutic alliance and support patient-centered care along with nursing practice in cancer. However, this study has limitations, including reliance on self-reported data which may introduce bias, a cross-sectional design that prevents determining causal relationships, and limited generalizability due to small sample sizes and cultural context.

Conclusion

The study provides substantial empirical evidence that patients with advanced cancer endure a variety of distressing symptoms. Consequently, there is a clear need for appropriate CAM strategies, particularly herbal medicines, to help alleviate these symptoms. The findings emphasize that community nurses must address patients' symptom distress by integrating CAM approaches alongside standard treatments. Such strategies may offer comfort without causing adverse effects or interactions with conventional therapies. Engaging with family members can also provide emotional support and encouragement that helping individuals stay motivated to adhere to herbal treatment plans. Family members can also assist with reminders and ensure that doses are not missed and schedules are maintained. Furthermore, involving family in the treatment process can help them understand the benefits and potential side effects of herbal remedie s that allowing them to offer informed support. This collective approach can support the best care and better adherence to treatment regimens. With educating and involving family members, individuals are more likely to experience positive outcomes from their herbal treatments. Also, understanding the side effects of herbal treatments should be acknowledged by patients for care optimization. Healthcare providers and the government should establish policies to monitor the use of herbal treatments in patients with advanced cancer. Further research should focus on larger sample sizes and multiple settings to facilitate the generalization of findings to the broader population.

Author's declaration

The authors contributed to the conception, data analysis, interpretation, and manuscript preparation, and approved the final version of the manuscript.

AI statement

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Availability of data and materials

All data are available from the authors.

Competing interests

The authors declare no competing interest.

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Authors' insight

Key points

- The study focuses on the prevalence and patterns of herbal medicine use among patients with advanced cancer in Indonesia.
- This investigation utilizes secondary data analysis, applying a World Health Organization (WHO) model related to medication adherence to understand herbal remedy usage.
- The research aims to explore factors influencing adherence to both conventional and herbal treatments within this patient population.

Emerging nursing avenues

- How does the WHO medication adherence model apply specifically to herbal medicine use among advanced cancer patients in Indonesia?
- What is the main demographic or clinical factors associated with herbal remedy use among patient with advanced cancer?
- How might integrating insights from this study improve patient care and treatment outcomes for advanced cancer patients using both conventional and herbal therapies?

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