JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472
Journal of Holistic Nursing Science

Article journey
Submitted
14/2/2025
Revised
15/3/2025
Accepted
14/4/2025
Online first
16/7/2025

THEORY-BASED STUDIES

Quantitative analysis of infection prevention behaviors among patients receiving chemotherapy in Thailand: Predictors through the Bandura's Self-efficacy Theory

Wenika Srisoithongsug[1], Tiraporn Junda[2], Bualuang Sumdaengrit[3]

Author information

[1] Master of Nursing Science Program in Adult and Gerontological Nursing, Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand

[2,3] Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand

tiraporn.jun@mahidol.ac.th

https://doi.org/10.31603/jhns.v12i2.13178

Abstract

Patients with advanced-stage cancer undergoing chemotherapy are highly susceptible to infections due to immunosuppression. Inappropriate behaviors further increase their risk of infection and severe complications such as not washing hands, consuming unsafe food, or exposure to contaminated environments. Consequently, nursing interventions are essential in promoting preventive behaviors and reducing infection risks. This study, therefore, examined the predictive power of infection prevention knowledge, distress, perceived self-efficacy, and social support on infection prevention behaviors in patients with advanced-stage cancer receiving chemotherapy. Bandura's Self-efficacy Theory was also integrated into the study's framework. This predictive study used a cross-sectional design that included 100 patients with advanced solid malignancy receiving outpatient chemotherapy at the King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Thailand. Participants were selected through purposive sampling. Data were collected using the Knowledge of Infection Prevention in Cancer Patients Receiving Chemotherapy Questionnaire, the Thai version of the Distress Thermometer, the Thai Version of the General Self-Efficacy Questionnaire, the Social Support Questionnaire, and the Infection Prevention Behaviors in Cancer Patients Receiving Chemotherapy Questionnaire. Descriptive and multiple regression statistics with the Enter method were used for data analysis. Notably, this study received Institutional Review Board approval from two university hospitals in Bangkok, Thailand. The participants showed a high mean infection prevention knowledge score of 17.09 (SD=2.49), low distress (M=3.17, SD=2.78), moderate self-efficacy (M=30.40, SD=6.99), high social support (M=56.24, SD=6.71), and high infection prevention behaviors (M=105.85, SD=7.89). Regression analysis indicated that self-efficacy (β=0.244, p<0.05), distress (β=-0.233, p<0.05), knowledge (β=0.212, p<0.05), and social support (β=0.192, p<0.05) significantly predicted infection prevention behaviors, explaining 30.6% of the variance (p<0.05). These findings underscore that infection prevention behaviors are influenced by self-efficacy, distress, knowledge, and social support. Specifically, higher self-efficacy improves adherence to prevention and greater knowledge equips patients for effective infection control. Additionally, strong social support reinforces healthy behaviors. Conversely, high distress negatively impacts compliance with preventive behaviors. These insights can guide nurses in promoting effective infection prevention strategies for reducing infection risks.

Keywords: Advanced-stage cancer, cancer care, chemotherapy, infection prevention behaviors, nursing care

Introduction

Cancer represents a substantial proportion of the global health burden, with 19.9 million new cases and 9.7 million fatalities documented in 2022 (International Agency for Research on Cancer, 2022). In Thailand, Cancer is a significant public health concern with approximately 180,000 new cases diagnosed and a fatality rate of 127.9 per 100,000 individuals in 2022 (Ministry of Public Health, 2023). The top 5 cancers (solid tumor) in Thailand are liver and or bile duct, lung, breast, colorectal, and cervical, often diagnosed at late stages (National Cancer Institute of Thailand, 2022). In early-stage oncology, the emphasis is placed on curative outcomes in clinical care (Rodin et al., 2024). In contrast, the management of advanced-stage cases focuses on relieving symptoms and improving quality of life (American Society of Clinical Oncology, 2021). Chemotherapy commonly used in advanced cases can cause severe side effects like

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

myelosuppression and neutropenia which increases infection risk (American Society of Clinical Oncology, 2021). The risks of infection are heightened in individuals with hematological malignancies and those with solid tumors in advanced stages (Prasertsri & Phanthusart, 2018). Contributing determinants encompass the specific chemotherapy protocol, high-dose interventions, extended treatment duration, previous therapies, no prophylactic antibiotics, lack of granulocyte colony-stimulating factors and patient-related aspects hold critical importance such as age, performance status, comorbidities, and previous infection history (Ba et al., 2020; Kim et al., 2021; Kubeček et al., 2021). Impact of infections in patients with cancer undergoing chemotherapy encompass extended hospitalization, elevated treatment expenditures, and increased mortality rates (Cupp et al., 2018). Psychological repercussions comprise anxiety, apprehension, despondency, and modified life aspirations, contributing to overall distress (Thapanakulsuk et al., 2020). Social repercussions include alterations in familial responsibilities and diminished quality of life for both patients and caregivers (Morgan et al., 2022).

Previous studies highlight the importance of infection prevention for patients transitioning to self-care at home. For example, studies emphasize personal hygiene, dietary considerations, environmental infection prevention, activity-rest balance, and monitoring infection symptoms (Centers for Disease Control and Prevention, 2022). Adhering to these practices effectively manages chemotherapy-induced neutropenia (Al Qadire et al., 2023). However, several studies below have found that patients with cancer do not adhere to recommended infection prevention guidelines. The study found that patient hand hygiene compliance was initially very low at just 0.2% and 5.0% after installing pressure sensors on alcohol-based hand rub bottles and introducing a robot to promote hand hygiene, highlighting persistently poor adherence among patients in the chemotherapy day center (Wong et al., 2024). Additionally, a study documented that patients with leukemia had a low attention of mouth care (Han & Choi, 2018). Empirical evidence indicates that patient behavior is essential for preventing infections caused by chemotherapy-induced immunosuppression. Social Cognitive Theory highlighted that individual behavior is shaped by the interaction of personal, behavioral, and environmental factors (Bandura, 1997). Therefore, personal factors influence prevention behavior among patients such as knowledge, distress, self-efficacy, and the environmental factor of social support. Knowledge is essential for the cognitive processing of personal factors and behavior (Klein et al., 2022). Patients' knowledge of infection prevention affects their self-care behaviors in cancer care (Han & Choi, 2018). Study found that knowledge of infection prevention was a significant predictor of practice among cancer patients receiving chemotherapy (Suwan et al., 2024). Health literacy in caregivers of children with leukemia receiving chemotherapy predicted infection-preventive behaviors (Klaisuban et al., 2024).

Distress is another internal personal factor linked to increase disease progression and symptom exacerbation in patients with cancer. Bandura noted that physiological and affective states influence self-perception through cognitive processing that affecting behavior (Bandura, 1997). A review of 39 articles on emotions in cancer patients showed that affective states such as anxiety, fear, and worry significantly influence patients' decision-making and health behaviors, with moderate anxiety can improve decision-making by motivating problem-solving, but excessive distress hindering actions (Mazzocco et al., 2019). These findings underscore the critical role of emotional states in influencing cognitive appraisal and behavioral responses in cancer care. Additional studies confirm that psychological distress can impair patients' engagement with care, communication, and adherence to recommended health behaviors in cancer survivors (Abdelhadi, 2023). Perceived self-efficacy is crucial for decision-making and behavior management. Previous studies in cancer patients found that high self-efficacy is strongly associated with greater behavioral effort in performing challenging self-care tasks, such as symptom management and adherence to treatment (Kırca & Kutlutürkan, 2021). Similarly, a study among patients with cancer receiving chemotherapy found that attitude significantly predicted infection prevention practices (Suwan et al., 2024). Social support also serves as an essential environmental factor. Bandura emphasized learning through societal observation and environmental interactions (Bandura, 1997). Numerous studies have shown a positive correlation between social support and self-care behaviors in preventing infections among patients with cancer (Han & Choi, 2018; Roy et al., 2020). Furthermore, studies among patients with chronic disease also indicate that social support significantly predicts self-care behaviors (Kim & Cho, 2021).

Although there has been extensive research on infection prevention among cancer patients receiving chemotherapy—covering aspects such as knowledge, distress, self-efficacy, and social support—past studies have rarely integrated these factors together under Bandura's Social Cognitive Theory. In other words, most existing research has examined these variables in isolation rather than as interconnected predictors. This limits the overall understanding of their combined impact on infection prevention behaviors, particularly among patients with solid tumors undergoing chemotherapy. Therefore, addressing these gaps is essential for developing comprehensive patient care plans and diverse, evidence-based care approaches. As conveyed in the aforementioned publications, Bandura's theory is highly suitable for this study to capture the phenomenon of infection prevention behavior among patients with cancer. This

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

theory emphasizes reciprocal interactions among personal, environmental, and behavioral factors. Moreover, self-efficacy and reciprocal determinism show how beliefs and personal, behavioral, and environmental factors influence actions. In this study, understanding patients' capabilities and effective preventive behaviors against infections is crucial, particularly for those undergoing chemotherapy. Moreover, perceived self-efficacy determines problem-solving behaviors and adaptation to challenging situations during treatment (Kırca & Kutlutürkan, 2021). Therefore, assessing patients' knowledge, infection prevention practices, and self-perception of efficacy will help for mitigating infection risks during chemotherapy. This study aims to examine the predictive power of infection prevention knowledge, distress, perceived self-efficacy, and social support among patients with advanced-stage cancer receiving chemotherapy. It is likely that the outcomes of the study will facilitate clinical nurses in refining nursing care associated with infection prevention behaviors in patients with cancer.

Method

This study employs an observational design with cross-sectional approach to investigate how knowledge of infection prevention, levels of distress, perceived self-efficacy, and social support predict infection prevention behaviors. The research cohort comprises individuals diagnosed with cancer who receive outpatient chemotherapy at the King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Thailand. This research was conducted from October to December 2023. The participants were selected using purposive sampling by considering inclusion and exclusion criteria. The inclusion criteria were patients with advanced-stage cancer who were aged 18 years or older, had undergone at least one cycle of outpatient chemotherapy, and could read, write, and communicate in Thai. Additionally, patients aged 60 years and above were required to score 7 or less on the Thai version of the 6-item Cognitive Impairment Test (Aree-Ue & Youngcharoen, 2020). Furthermore, patients were required to have an Eastern Cooperative Oncology Group Performance Status score of 2 or below (Oken et al., 1982). In contrast, the exclusion criteria included patients undergoing concurrent chemoradiation therapy, those who had experienced severe adverse drug reactions rated above level 3 according to the Common Terminology Criteria for Adverse Events version 5.0 (National Cancer Institute, 2017), and individuals diagnosed with severe psychiatric disorders (e.g., major depression, schizophrenia, panic disorder, or bipolar disorder) that could compromise their ability to provide accurate and consistent responses, potentially introducing cognitive bias into the data collection process.

The sample size calculation utilized G*Power 3.1.9.7 software (Faul et al., 2009) to achieve a statistical power of 0.90 and a significance level of 0.05 that adhering to the guidelines (Cohen, 1988). The analytical framework was based on how physiological, psychological, and situational factors predict symptom experiences in chemotherapy patients, with factors similar to those examined in this study (Kim et al., 2015). Their findings indicated an effect size with a minimum adjusted R^2 of 0.181 that requiring 90 participants. A 10% buffer was added for potential attrition that bringing the target sample size to 100 participants. The Thai version of the 6-Item Cognitive Impairment Test was initially conceptualized by Brooke and Bullock (1999) and later translated by Aree-Ue and Youngcharoen (2020) with permission. This instrument evaluates early cognitive impairment among older adults such as awareness, intention, and memory. Scores on this test range from 0 to 28, with scores from 0 to 7 indicative of no impairment. Whereas scores exceeding 8 signify impairment that serving as a criterion for exclusion. The instrument demonstrates an excellent Scale Content Validity Index (S-CVI) and Item Content Validity Index (I-CVI) of 1 and exhibits a moderate negative correlation with the Thai Mini-Cog (r=-0.42, p<0.001), and has shown high test-retest reliability (r=0.64, p<0.001) (Aree-Ue & Youngcharoen, 2020).

The demographic questionnaire was developed based on literature reviews to ensure relevance and included variables such as gender, age, education, occupation, income sufficiency, healthcare entitlement, caregiver, illness duration, treatment side effects, and supplement use. It used multiple-choice and short-answer formats. The medical history form was also informed by literature and included the Eastern Cooperative Oncology Group (ECOG) performance status, comorbidities, cancer type and stage, metastasis sites, treatment and Granulocyte-Colony Stimulating Factor (G-CSF) history, chemotherapy classification, and baseline labs, using multiple-choice and fill-in-the-blank questions. The Knowledge of Infection Prevention in Cancer Patients Undergoing Chemotherapy Questionnaire was constructed in alignment with guidelines from the Centers for Disease Control and Prevention (2022) and the American Cancer Society (2022). The tool encompasses six domains: neutropenia and infection, personal hygiene care, dietary consumption, environmental infection prevention, activity and rest, and assessing signs and symptoms of infection. The questionnaire utilized single-choice inquiries categorized as "no/not sure" (0 points) and "yes" (1 point) that yielding a scoring range from 0 to 20. The interpretation of scores adhered to Bloom's criteria (Bloom et al., 1971), with classifications of 0-11 (below 60%), 12-16 (60-80%), and 17-20 (above 80%). The instrument was validated by three oncology experts: Dr.

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

Nattaya Teeyapun, M.D. is a medical oncologist in the Division of Medical Oncology, Department of Medicine, Faculty of Medicine, Chulalongkorn University, and King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Thailand; Dr. Piyawan Pokpalagon is an Assistant Professor and nurse educator in the Adult and Gerontological Nursing Program at the Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand; and Ms. Kaewtah Meecharoen, R.N., is an advanced practice oncology nurse at King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Thailand. All experts contributed to instrument validation but are not listed as co-authors in this study. The result is in a high level of S-CVI and I-CVI at 0.98. Internal consistency reliability (Kuder-Richardson 20) was 0.72 in a 20-sample pilot test and 0.70 in a 100-participant study.

The Thai adaptation of the Distress Thermometer constitutes a screening instrument initially established by an expert (Roth et al.,1998). Subsequently, the tool was refined by the National Comprehensive Cancer Network (Jacobsen & Ransom, 2007). A study from Thailand then performs a translation into Thai with proper permissions (Laurujisawat & Jetiyanuwat, 2013). This tool evaluates distress through a numeric rating scale ranging from 0 to 10, alongside a 35-item checklist addressing practical, familial, emotional, spiritual/religious, and physical challenges leukemia patients face. Scores of 4 or higher indicate moderate to high distress that necessitating mental health support or palliative care referral. The quality assessment yielded the following screening performance metrics: distress (sensitivity 70%, specificity 86%), anxiety (sensitivity 91%, specificity 79%), and depression (sensitivity 43%, specificity 72%). Test-retest reliability within one day yielded a 0.99 correlation coefficient in a 20-sample pilot study and 0.99 in a 100-participant study. The Thai adaptation of the General Self-Efficacy Questionnaire, conceived by Schwarzer and Jerusalem (1995) and subsequently translated by Sukmak et al. (2001), assesses individuals' ability to manage daily challenges. This instrument comprises 10 items structured on a 4-point Likert scale, with total scores ranging from 10 to 40, classified as low (10-28), moderate (29-34), and high (35-40) self-efficacy. Validation demonstrated a CVI of 1.00 and a Cronbach's alpha of 0.93 (Phoosuwan & Chaimongkol, 2020). The instrument's reliability was pilot-tested in 20 samples that yielding a Cronbach's alpha of 0.93 and 0.95 among 100 participants.

The Social Support Questionnaire (Lortrakul, 2000) that originally derived from the tool developed by for elderly patients with coronary heart disease is grounded in the framework (House, 1981). This instrument was adapted specifically for breast cancer patients and employed with appropriate permission (Pongpradit et al., 2011). It encompasses 16 items distributed across four dimensions: emotional, informational, appraisal, and instrumental support that utilizing a 4-point Likert scale with a scoring range of 16 to 64 points. Scores are categorized as low (16-32), moderate (33-48), and high (49-64) levels of social support. That study conducted affirmed a high CVI of 1.00 and Cronbach's alpha of 0.89. The instrument's reliability was pilot-tested in 20 samples that yielding a Cronbach's alpha of 0.83 and 0.83 among 100 participants. The Infection Prevention Behaviors in Cancer Patients Receiving Chemotherapy Questionnaire was developed using guidelines from the Centers for Disease Control and Prevention (2022), the American Cancer Society (2022), and pertinent academic literature (Jamjumrus & Chanpho, 2021; Rungruang & Siritientong, 2020; Yuphet et al., 2020). This instrument consists of 30 items across five dimensions: personal hygiene care, dietary consumption, environmental infection prevention, activity and rest, and assessing signs and symptoms of infection. Responses use a 4-point Likert scale, with total scores ranging from 30 to 120, classified as low (30-60), moderate (61-90), or high (91-120) infection prevention behaviors. Validation conducted by a panel of three experts (an oncology physician, an oncology nurse educator, and an advanced practice oncology nurse) yielded an S-CVI and I-CVI of 1.00 alongside a Cronbach's alpha coefficient of 0.71 in a 20-sample pilot study and 0.71 in 100 participants. The list of experts who evaluated the instruments is mentioned in this section or paragraph above.

Data were collected at King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Thailand, after receiving ethical approval from two Institutional Review Boards (IRB): Ramathibodi Hospital, Faculty of Medicine, Mahidol University and Faculty of Medicine, Chulalongkorn University. Upon receiving these approvals, the researcher submitted documents to the director and head nurse of the Outpatient Chemotherapy Center at King Chulalongkorn Memorial Hospital to request data collection permission. The researcher accessed patient medical records and presented the study to eligible participants who had been pre-screened by the nursing staff of the Outpatient Chemotherapy Center. Participants were selected based on predefined inclusion and exclusion criteria. Before acquiring informed consent, participants were apprised of the study's aims, confidentiality provisions, and rights. Data was gathered confidentially during chemotherapy appointments utilizing the Thai adaptation of the 6-Item Cognitive Impairment Test. The researcher facilitated the participants in completing seven questionnaires and medical history documentation, which required approximately 40-60 minutes. Support was extended to individuals experiencing reading or visual impairments. Following the evaluation of the questionnaires, the researcher addressed inquiries, reassured participants regarding confidentiality measures, and provided souvenirs as tokens of gratitude. The investigator engaged in the data entry process and

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

subsequently confirmed the precision of the data utilizing SPSS statistical software version 25. The analytical procedure encompassed a comprehensive examination of demographic information that reflect as descriptive statistics and included frequency distribution, percentage, range, mean, and standard deviation. Evaluating the predictive capabilities of the study variables via multiple regression analysis employing the Enter method, with a significance threshold established at 0.05. Initial assessments indicated deviations from the assumptions of normality and linearity, thereby necessitating a further evaluation of residuals for normality and homoscedasticity using scatter plots. The presence of autocorrelation was scrutinized utilizing the Durbin-Watson statistic, and the phenomenon of multicollinearity was assessed by examining tolerance (p>0.1) and Variance Inflation Factors (VIF < 5).

The ethical endorsement was secured from the Institutional Review Board of Ramathibodi Hospital, Faculty of Medicine Ramathibodi Hospital (COA. MURA2023/443). Authorization was also obtained from the Institutional Review Board of the Faculty of Medicine, Chulalongkorn University (COA No.1165/2023). The research adhered to the principles delineated in the Declaration of Helsinki whereby the investigators elucidated the study's aims, methodologies, and rights to participants. Data acquisition commenced after obtaining written informed consent which permitted participants to withdraw without repercussions on their access to services. All collected data were maintained confidentially and are presented in an anonymous format.

Results

The study involved a cohort of 100 participants that comprising 55% females, with a mean age of 57.60 years (SD=11.98), aged 18 to 82 years. The participants were married counted to 54%, and 43% possessed at least a bachelor's degree. 42% were unemployed or retired, 56% had sufficient income, and 51% reported comprehensive health insurance coverage. Over half of the participants (54%) had been ill for over a year, with 39% self-care, 28% received support from a spouse and 18% from their children **(Table 1)**. A significant 85% reported experiencing adverse treatment effects that including symptoms such as numbness (15.4%) and fatigue (12.7%). Furthermore, 64% of the participants utilized dietary supplements, with 91% selecting options for medical dietary supplements **(Table 2)**. 40% of participants exhibited an Eastern Cooperative Oncology Group Performance Status of 1. Half of the participants had comorbidities, predominantly hypertension (36.5%), diabetes mellitus (18.8%), and dyslipidemia (18.8%) **(Table 3)**. The most frequently observed malignancies included colorectal (34%), breast (23%), and lung cancers (12%). A substantial majority (83%) were diagnosed with metastatic cancer, primarily involving the lungs (37%), lymph nodes (35%), and liver (26%). An analysis of the treatment history revealed that 36% had received both surgical intervention and chemotherapy, with 84% lacking any prior prophylactic administration of granulocyte colony-stimulating factor. The leading chemotherapy agents employed were platinum analogs (55%), taxanes (35%), and antimetabolites (22%) **(Table 4)**. Current laboratory evaluations indicated a slightly subnormal mean hemoglobin level of 11.14 g/dl (SD=1.56), with white blood cell count at 6.21 x 10^3 cells/mm^3 (SD=2.99), absolute neutrophil count at 4.04 x 10^3 cells/mm^3 (SD=2.78), and platelet count at 252.82 x 10^3 cells/mm^3 (SD=100.61) **(Table 5)**.

The mean score for infection prevention knowledge was 17.09 (SD=2.49) out of 20, indicating knowledge level exceeding 80%. The scores across various domains included neutropenia and infection (M=2.73, SD=1.35), personal hygiene care (M=2.81, SD=0.39), dietary consumption (M=2.65, SD=0.56), environmental infection prevention (M=3.49, SD=0.69), activities and rest (M=2.97, SD=0.17), and assessing signs and symptoms of infection (M=2.44, SD=0.72). The mean distress score was 3.17 (SD=2.78), indicating low levels of distress, with emotional problems affecting 60% of participants. The mean perceived self-efficacy score was 30.4 (SD=6.99), indicating moderate self-efficacy. The mean social support score was 56.24 (SD=6.71), suggesting a high level of support. Domain scores encompassed emotional support (M=14.23, SD=2.18), informational support (M=14.66, SD=1.63), appraisal support (M=10.10, SD=1.88), and instrumental support (M=17.25, SD=3.05) **(Table 6)**. The mean score of infection prevention behaviors was 105.85 (SD=7.89) that indicating high adherence. The detailed scores are as follows: personal hygiene care 17.16 (SD=2.32) out of 20, dietary consumption 25.60 (SD=2.27) out of 28, environmental infection prevention 28.47 (SD=2.98) out of 32, activity and rest 12.45 (SD=2.04) out of 16, and assessing signs and symptoms of infection 21.43 (SD=2.52) out of 24 **(Table 7)**. The Pearson correlation analysis revealed significant positive correlations between infection prevention behaviors and knowledge of infection prevention (r=0.248, p<0.01), perceived self-efficacy (r=0.397, p<0.01), and social support (r=0.355, p<0.01). Conversely, distress exhibited a significant negative correlation with infection prevention behaviors (r=-0.377, p<0.01) **(Table 8)**. The study indicated that knowledge of infection prevention, distress, perceived self-efficacy, and social support significantly predict infection prevention behaviors among advanced-stage cancer patients receiving chemotherapy (F=10.459, p<0.01). Perceived self-efficacy exhibited the most significant influence

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

(β=0.244, p<0.05), followed by distress (β =-0.233, p<0.05), knowledge (β=0.212, p<0.05), and social support (β=0.192, p<0.05) **(Table 9)**.

Table 1. The descriptive statistics of demographic and non-clinical characteristics.

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	45	45
Female	55	55
Age		
< 60 years	51	51
≥ 60 years	49	49
(Min=18, Max=82, Mean=57.60, SD=11.98)		
Marital status		
Married	54	54
Single	31	31
Widowed/divorced/separated	15	15
Education level		
Elementary school or less	26	26
Secondary education/Vocational certificate	27	27
Associate degree/Higher vocational certificate	4	4
Bachelor's degree or higher	43	43
Occupation		
Unemployed	42	42
General worker/Company employee	22	22
Self-employed/Trading	21	21
Government employee/State enterprise employee	8	8
Agriculture	7	7
Income sufficiency status		
Sufficient income with savings	56	56
Sufficient income but no savings	29	29
Insufficient income but debt-free	5	5
Inadequate income and indebted	10	10
Healthcare entitlement		
Universal Coverage	51	51
Government officer	29	29
Social security scheme	13	13
Self-pay	7	7
Caregiver		
Self-care	39	39
Spouse	28	28
Children	18	18
Parents/ Relatives	13	13
Friend/ Hired caregiver	2	2

Discussion

The study encompassed a cohort of 100 patients diagnosed with advanced-stage cancer who were receiving outpatient chemotherapy, predominantly female, with an average age of 57.60 years. This demographic profile aligns with a study of advanced Non-Small Cell Lung Cancer (NSCLC) patients receiving chemotherapy which reported a mean age of 60 and a high proportion of female patients as it reflected trends in outpatient oncology populations (Pessanha et al., 2024). The study found that participants exhibited exemplary infection prevention behaviors that excelling in domains such as personal hygiene care, dietary consumption, and environmental precautions. A systematic review of infection-control

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

measures in cancer centers emphasizes core prevention strategies including rigorous hand hygiene, dietary precautions, environmental barriers, and mask usage as essential in reducing nosocomial infections (Ariza-Heredia & Chemaly, 2018). Predominant behaviors included regular handwashing, adherence to a balanced diet, consistent mask usage, and participation in vaccination programs. A Hong Kong study at a chemotherapy day center reported that patient hand hygiene compliance increased significantly from just 0.2% to 5.0% after introducing prompts and enhanced monitoring (Wong et al., 2024). A review of infection prevention practices in oncology emphasized key strategies like hand hygiene, mask use, dietary precautions, and vaccination as fundamental to protecting immunocompromised patients (Thom et al., 2013). In a survey of 635 cancer patients (80% female), 73.7% reported a positive attitude toward vaccination and 60.3% expressed willingness to receive the COVID-19 vaccine (Brodziak et al., 2021).

Table 2. The descriptive statistics of demographic and clinical characteristics.

Characteristics	Frequency (n)	Percentage (%)
Duration of illness		
< 3 month	11	11
3 - 6 month	18	18
> 6 month - 1 year	17	17
> 1 year	54	54
Adverse treatment effects		
No	15	15
Yes*	85	85
Peripheral neuropathy	45	15.4
Fatigue	37	12.7
Nausea/Vomiting	33	11.3
Loss of appetite	33	11.3
Constipation	25	8.6
Skin and nail changes	24	8.2
Alopecia	20	6.8
Mucositis	15	5.1
Diarrhea	15	5.1
Myalgia	14	4.8
Insomnia	11	3.8
Weight loss	10	3.4
Mood changes	6	2.1
Dizziness	4	1.4
Supplement consumption		
No	36	36
Yes*	64	64
Medical dietary supplements	61	91
Herbal supplements	6	9

*More than one answer.

Furthermore, light physical activities, engagement in relaxation techniques, and vigilant monitoring of infection symptoms were also widespread. A study by Yang et al. (2024) in the Physical Activity and Cancer Care framework update emphasized that even low- to moderate-intensity exercise such as walking, yoga, and Tai Chi is prevalent among cancer patients and significantly improves fatigue, mood, and quality of life, consistent with Sun et al. (2025). Carlson and Garland (2005) demonstrated that relaxation techniques, including mindfulness and guided imagery, reduce stress and enhance symptom management in oncology populations. Addition, Basch et al. (2017) showed that systematic symptom monitoring leads to earlier detection of complications and better clinical outcomes in cancer patients. The presence of normal baseline laboratory results and an absence of previous infection history suggested adequate physical preparedness for treatment. The cohort's capacity to effectively manage infection risks can be attributed to their educational background, health knowledge, and commitment to following medical guidance (Holden et al., 2021). Compared to earlier studies, a study reported moderate infection prevention behaviors among patients with

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

hematological malignancies, highlighting risky behaviors such as consumption of street food, raw products, and inconsistent mask usage (Nucci & Anaissie, 2017). This disparity indicates that the current cohort was better positioned to mitigate infection risks due to their education and health knowledge. These behaviors are congruent with public health initiatives and medical recommendations, promoting proactive health strategies despite the lack of granulocyte colony-stimulating factor prophylaxis (Wu et al., 2022; Thom et al., 2013).

The findings align with a study reported high overall infection prevention behaviors among lung cancer patients receiving chemotherapy particularly in food and water safety, personal hygiene, environment, and stress management (Boonsri et al., 2023). These results reflect consistent and comprehensive infection prevention practices across various daily life aspects. This study found that knowledge of infection prevention, distress levels, perceived self-efficacy, and social support emerged as significant predictors explaining 30.6% of the variance in infection prevention behaviors. This aligns with Bandura's Theory highlights the interplay of personal factors, encompassing knowledge, distress, and perceived self-efficacy, alongside environmental factors such as social support (Bandura, 1997). Within these variables, perceived self-efficacy exhibited the most substantial influence, followed by distress, knowledge of infection prevention, and social support. Within these variables, perceived self-efficacy exhibited the most substantial influence, followed by distress, knowledge of infection prevention, and social support with family members and nurses playing essential roles in fostering self-efficacy and providing emotional, informational, and practical support that reinforces patients' confidence and engagement in preventive behaviors. For instance, research shows that strong social support is significantly correlated with self-efficacy in cancer patients, with family being a major source of practical and emotional support (Qian & Yuan, 2012). Furthermore, nurses facilitate self-management by offering psychological and informational support, which effectively enhances patients' self-efficacy (Jongerden et al., 2019).

Table 3. Eastern Cooperative Oncology Group Performance Status and comorbidities.

Medical history	Frequency (n)	Percentage (%)
Eastern Cooperative Oncology Group Performance Status		
Grade 0	23	23
Grade 1	40	40
Grade 2	37	37
Comorbidities		
No	50	50
Yes*	50	50
Hypertension	35	36.5
Diabetes Mellitus	18	18.8
Dyslipidemia	18	18.8
Urinary tract disease	8	8.3
Chronic hepatitis/Cirrhosis	5	5.2
Musculoskeletal disease	5	5.2
Cardiovascular disease	3	3.1
Hematological diseases	2	2.1
Respiratory diseases	1	1
Immune system disorders	1	1

*More than one answer.

The study revealed a moderate level of perceived self-efficacy among participants, primarily working-age females experiencing physical limitations yet capable of light activities. The enhancement of self-efficacy was attributed to factors such as higher educational attainment, prolonged illness exceeding one year, and guidance from healthcare professionals (Alhofaian et al., 2024). Moreover, social support and previous educational experiences contributed to reinforcing self-efficacy, which is consistent with Bandura's Theory (Bandura, 1997). The participants enhanced self-efficacy through mastery experiences in managing their health conditions which strengthened self-efficacy. Bandura emphasizes that emotional and physiological wellness directly impacts self-efficacy and behavior (Bandura, 1997). The present investigation found a significant positive correlation between perceived self-efficacy and infection prevention behavior, with self-efficacy emerging as the most prominent predictor. This finding highlights the critical role of self-efficacy in health management (Merluzzi et al., 2019), consistent with Self-Efficacy Theory (Bandura, 1997).

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

Table 4. Cancer and its treatment.

Medical history	Frequency (n)	Percentage (%)
Types of primary cancer		
Colorectal cancer	34	34
Breast cancer	23	23
Lung cancer	12	12
Head and neck cancer	8	8
Gastric/Pancreatic/Gallbladder cancer	7	7
Cervical/Ovarian cancer	6	6
Liver cancer	4	4
Prostate cancer	4	4
Bladder cancer	2	2
Stage of cancer		
Locally advanced cancer	17	17
Metastatic cancer	83	83
Sites of metastasis cancer*		
Lungs	37	27.6
Lymph nodes	35	26.1
Liver	26	19.4
Bone	15	11.2
Peritoneum	12	9
Brain	5	3.7
Adrenal gland	2	1.5
Ovary	1	0.7
Spleen	1	0.7
Treatment history		
Surgery and chemotherapy	36	36
Surgery and concurrent chemoradiotherapy	27	27
Only chemotherapy	27	27
Other	10	10
Granulocyte colony stimulating factor prophylaxis history		
None	84	84
1 time	3	3
2 times	3	3
3 times	5	5
> 3 times	5	5
Chemotherapy classification in the current regimen*		
Platinum analogs	55	42.6
Taxanes	35	27.1
Antimetabolites	22	17.1
Anthracyclines/Other antitumor antibiotics	6	4.7
Alkylating agents	5	3.9
Camptothecins	5	3.9
Other antimicrotubule inhibitor	1	0.8

*More than one answer.

Despite participants' confidence, external factors such as advanced cancer progression and pandemic-related uncertainties posed emotional challenges (Podbury et al., 2024; Toquero et al., 2021). However, consistent support from healthcare teams likely mitigated these challenges and maintained adherence to infection prevention practices (Thom et al., 2013). Similar findings were reported in women with breast cancer, where self-care acted as a mediator between symptom-management self-efficacy and quality of life, highlighting the important role of self-efficacy in influencing

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

health behaviors and outcomes (Chin et al., 2021). The findings emphasize the role of self-efficacy in supporting positive health behaviors among patients with chemotherapy. It also underscores the need for interventions such as mastery experiences, supportive environments, and verbal encouragement (Bandura, 1997). A study support this by demonstrating that self-efficacy interventions improved self-management and reduced infection rates in patients with peripherally inserted central catheters (Liu et al., 2021). Perceived self-efficacy strongly predicts self-care behaviors in cancer patients, with nurses playing a vital role by providing education, encouragement, and ongoing support (Merluzzi et al., 2019). Meanwhile, family members contribute essential emotional and practical assistance, together fostering patients' confidence and adherence to self-care practices (Zhou et al., 2024).

Table 5. Baseline laboratory test results.

Baseline laboratory test results	Min	Max	Mean	SD
Hemoglobin (g/dl)	8.30	15.30	11.14	1.56
White blood cell count (x10^3 cells/mm^3)	2.85	24.02	6.21	2.99
Absolute neutrophils count (x10^3 cells/mm^3)	1.45	21.88	4.04	2.78
Platelets count (x10^3 cells/mm^3)	75.00	518.00	252.82	100.61

Table 6. Independent variables profiles.

Independent variables	Frequency (%)	Min-Max	Mean (SD)	Level
Knowledge of infection prevention		11 - 20	17.09 (2.49)	> 80%
Neutropenia and infection		0 - 4	2.73 (1.35)	
Personal hygiene care		2 - 3	2.81 (.39)	
Dietary consumption		1 - 3	2.65 (.56)	
Environmental infection prevention		1 - 4	3.49 (.69)	
Activities and rest		2 - 3	2.97 (.17)	
Assessing signs and symptoms of infection		1 - 3	2.44 (.72)	
Distress score		0 - 10	3.17 (2.78)	Low
Distress problem*				
Emotional problems	60 (60%)			
Physical problems	56 (56%)			
Practical problems	54 (54%)			
Family problems	22 (22%)			
Spiritual/religious concerns	0			
Perceived self-efficacy		13 - 40	30.4 (6.99)	Moderate
Social support		31 - 64	56.24 (6.71)	High
Emotional support		7 - 16	14.23 (2.18)	
Informational support		8 - 16	14.66 (1.63)	
Appraisal support		3 - 12	10.10 (1.88)	
Instrumental support		7 - 20	17.25 (3.05)	

*Dichotomous data answers.

Table 7. Dependent variables profiles.

Variables	Min - Max	Mean (SD)	Level
Infection Prevention Behaviors	81 - 120	105.85 (7.89)	High
Personal hygiene care	10 - 20	17.16 (2.32)	
Dietary consumption	18 - 28	25.60 (2.27)	
Environmental infection prevention	15 - 32	28.47 (2.98)	
Activity and rest	7 - 16	12.45 (2.04)	
Assessing signs and symptoms of infection	13 - 24	21.43 (2.52)	

The study also emphasizes a relatively low mean distress score among middle-aged individuals who have metastatic cancer alongside comorbid conditions such as hypertension and diabetes. Similarly, previous research

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

reported moderate distress levels that primarily associated with physical symptoms (Kim et al., 2016; Temel et al., 2010). Distress emerged as the predominant factor affected by the advancement of cancer and the uncertainty of prolonged treatments that resulting in anxiety and depression (Hung et al., 2020). The lower distress in this study may be due to the patients' good performance status that allowing them to engage in light activities despite mild chemotherapy side effects. Distress also exhibited a negative correlation with infection prevention behaviors and predicted these behaviors. This finding indicated that lower levels of distress enhanced the capacity for infection prevention among patients who had previous experiences with chemotherapy and good performance status. Furthermore, support from family caregivers also contributed to emotional coping during treatment. Bandura supported that emotional distress affects behavior by reducing self-efficacy, disrupting decision-making processes, amplifying perceived barriers, and reducing motivation for health-promoting actions (Bandura, 1997). Supporting investigations corroborate that distress has a significant effect on self-care (Abdelhadi, 2023; Shahsavar & Choudhury, 2023). For example, existential distress was identified as a predictor of self-management among Chinese breast cancer patients (Wu et al., 2020). Patients with chronic hepatitis B demonstrated that distress and depressive symptoms were substantial predictors (Kong et al., 2021). In both contexts, family members and nurses played a crucial role in supporting patients' emotional adjustment and encouraging self-management behaviors by providing practical care, emotional reassurance, and consistent health education (Becqué et al., 2023; Coyne et al., 2020; Griffin et al., 2014).

Table 8. Correlations among variables.

Variables	1	2	3	4	5
Knowledge of infection prevention	1				
Distress	-0.01	1			
Perceived self-efficacy	0.08	-0.33**	1		
Social support	0.06	-0.31**	0.30**	1	
Infection prevention behaviors	0.24**	-0.37**	0.39**	0.35**	1

**p<0.01.

Table 9. Multiple regression analysis with Enter method.

Variables	b	S.E.	β	t	p
Knowledge of infection prevention (X_1)	0.67	0.27	0.21	2.47	0.01
Distress (X_2)	-0.66	0.26	-0.23	-2.49	0.01
Perceived self-efficacy (X_3)	0.27	0.10	0.24	2.62	0.01
Social support (X_4)	0.22	0.10	0.19	2.07	0.04

R=0.553, R^2=0.306, Adjusted R^2=0.277, Overall F=10.459, p<0.01, Constant=75.453.

The study demonstrated an average infection prevention knowledge score that reflecting over 80% comprehension across various domains, including neutropenia, personal hygiene practices, dietary practices, environmental precautions, activity and rest, and infection symptom assessment. A predominant proportion of participants consisted of working-age females afflicted with chronic illnesses that possessing at least a bachelor's degree (Berger et al., 2018). Notwithstanding, antecedent inquiries have revealed diminished knowledge about cancer, the side effects of chemotherapy, and self-management undergoing chemotherapy treatment (Abu El-Kass et al., 2021). The differing results may be due to variations in sample characteristics, such as diverse demographics and potentially lower baseline knowledge about cancer and chemotherapy. A study on post-discharge hematologic cancer patients found that the average score for infection prevention knowledge was 68.8 out of 100 (Han & Choi, 2018). The differing results may be due to variations in sample characteristics, such as diverse demographics and potentially lower baseline knowledge about cancer and chemotherapy. Variations in data collection tools and healthcare support also play a role in shaping these differences. This study revealed a positive correlation between knowledge of infection prevention and infection prevention behaviors and served as a significant predictor for these behaviors. The results are congruent with Bandura's theory which posits that knowledge acquired through personal experiences and social learning fosters enhanced self-efficacy and preventive conduct (Bandura, 1997).

This finding underscores the notion that comprehensive knowledge empowers patients to implement efficacious preventive strategies against infections, an aspect of paramount importance during chemotherapy. Moreover, the involvement of family members and nurses plays a crucial role in reinforcing this knowledge through emotional support, practical guidance, and continuous education, thereby enhancing patients' adherence to preventive behaviors

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

(Jearranaipreprame et al., 2023; Ruiz-Rodríguez et al., 2022). The analysis indicated a notable average score for social support with the support encompassing emotional, informational, appraisal, and instrumental dimensions following House's framework (House, 1981). The results can be explained by the strong support from primary caregivers, mostly spouses or family members, who provided emotional and practical assistance (Ahn et al., 2020; van Roij et al., 2021). Regardless of a substantial number being out of work or retired, over half possessed sufficient financial resources and healthcare benefits to address expenditures including medical dietary supplements during chemotherapy. This comprehensive social support enhanced confidence and participation in infection prevention behaviors (Yin et al., 2022). Social support exhibited a positive correlation with infection prevention behaviors and served as a significant predictor of these behaviors. Albeit its influence was comparatively less than that of knowledge and distress. The study underscored the significance of external support systems in alleviating treatment-related complications and infection risks (Han & Choi, 2018; Ruiz-Rodríguez et al., 2022). These results are consistent with Bandura's theory which underscores the interplay between cognitive factors and environmental influences in determining behavior (Bandura, 1997). Social support augments individuals' determination and motivation to engage in positive behaviors (Ma et al., 2024). Social support facilitates the adaptation of cancer patients to their illness and encourages behaviors that may alleviate treatment-related complications (Ajmera et al., 2025). The analysis explained that knowledge, distress, perceived self-efficacy, and social support collectively predicted infection prevention behaviors among patients with advanced-stage cancer receiving chemotherapy, with family support, particularly from caregivers strongly influencing self-care practices and nurses playing a pivotal role by providing continuous education, reinforcement of health behaviors, and monitoring adherence to infection prevention protocols (Oncology Nursing Society, 2021; Palung & Nunuan, 2020; van Roij et al., 2021).

Although this study has strengths in investigating infection prevention behaviors, it also has several limitations. Although this study has strengths in investigating infection prevention behaviors, it also has several limitations. Firstly, purposive sampling may limit the findings' generalizability to the broader cancer patient population undergoing chemotherapy. Secondly, the study's focus on outpatient chemotherapy patients at a university hospital in Bangkok restricts the applicability of findings to other settings. Finally, the Thai version of the General Self-Efficacy Questionnaire may have limitations in assessing self-efficacy across diverse patient experiences, highlighting the need for context-specific instruments in health research. Although there are these limitations, the insights obtained from this research yield valuable recommendations for nursing practice. For example, provide educational activities on infection assessment and prevention to guide patients in self-care practices (Jearranaipreprame et al., 2023; Viseskul et al., 2025). This should include creating instructional materials for home management. Facilitate patient group discussions to share experiences and advice on effective infection prevention behaviors (Hendrix et al., 2016; Ruiz-Rodríguez et al., 2022). This can enhance perceived self-efficacy through vicarious learning. Conduct distress assessments before treatment and screen for high levels of distress to offer appropriate support based on guidelines (Fu et al., 2022; McCarter et al., 2020). Nurses must also continuously monitor outcomes and involve caregivers and family members in receiving guidance from nurses (Shahrestanaki et al., 2023). This will enable them to collaboratively develop care plans and recommend suitable resources for each patient.

Conclusion

This study explains critical factors that affect infection prevention behaviors among patients with advanced-stage cancer undergoing chemotherapy. From these findings, healthcare practitioners (including oncology nurses) can formulate effective methodologies to mitigate infection risks within this at-risk demographic. This can be achieved by augmenting self-efficacy, addressing psychological distress, and enhancing awareness of infection prevention strategies and social support mechanisms. To this end, healthcare practitioners can also establish educational initiatives, supportive networks, and systematic evaluations. Future research endeavors will facilitate the refinement of these interventions to adapt to the changing needs of patients. It is also important to develop programs promoting infection prevention in patients undergoing chemotherapy that comprehensively address knowledge, distress management, self-efficacy, social support, and infection prevention behaviors. Furthermore, exploring the experiences of more diverse patients undergoing chemotherapy or combined treatments (e.g. chemoradiation) will be crucial for infection prevention strategies across various clinical practices.

Acknowledgments

The authors acknowledge the support of the Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand. They also extend appreciation to the Outpatient Chemotherapy Center at King Chulalongkorn

Memorial Hospital, the Thai Red Cross Society for their kind support during data collection, and they offer their thankfulness to all participants in this study.

AI statements
The authors did not employ any generative text artificial intelligence techniques during the manuscript preparation.

Author's declaration
All the authors contributed to the conceptual framework and design, manuscript writing, data collection, data analysis, and interpretation.

Availability of data and materials
All data are available from the authors when requested.

Competing interests
The authors declare no competing interest.

Ethical clearance
The study obtained approvals of ethical clearance from Ramathibodi Hospital, Faculty of Medicine Ramathibodi Hospital (COA. MURA2023/443) and Faculty of Medicine, Chulalongkorn University (COA No.1165/2023).

Funding
The study was partially funded by the Faculty of Graduate Studies and the Mahidol University Alumni Association.

Publishers and journal's note
The publisher or journal would likely emphasize its contribution to evidence-based practice in oncology nursing and health behavior research, particularly in a Southeast Asian context.

References

Abdelhadi, O. (2023). The impact of psychological distress on quality of care and access to mental health services in cancer survivors. *Frontiers in Health Services, 3*(2023). https://doi.org/10.3389/frhs.2023.1111677

Ahn, S., Romo, R. D., & Campbell, C. L. (2020). A systematic review of interventions for family caregivers who care for patients with advanced cancer at home. *Patient Education and Counseling, 103*(8), 1518-1530. https://doi.org/https://doi.org/10.1016/j.pec.2020.03.012

Ajmera, N. B., Doss, B. D., & Kim, Y. (2025). Social support, social constraint, and psychological adjustment in patients with colorectal cancer. *Journal of Behavioral Medicine, 48*(3), 414–429. https://doi.org/10.1007/s10865-025-00565-y

Al Qadire, M., Ballad, C. A. C., Aljezawi, M., Al Omari, O., Alaloul, F., Musa, A., Al Sabei, S., & Khalaf, A. (2023). Nurses' knowledge of chemotherapy-induced neutropenia and its management: A cross-sectional survey. *Journal of Cancer Research and Clinical Oncology, 149*(7), 2893–2901. https://doi.org/10.1007/s00432-022-04140-9

Alhofaian, A., Alaamri, M. M., Abdalmajeed, M. A., Wadaah, L. S., Aljuhani, L. A., Amin, M. A., Tunsi, A., & Alharazi, R. (2024). The role of illness perception and self-efficacy in determining quality of life among cancer patients. *Clinics and Practice, 14*(2), 498-507. https://www.mdpi.com/2039-7283/14/2/38

American Cancer Society. (2022). *Survivorship: During and after treatment*. American Cancer Society. https://www.cancer.org/treatment/survivorship-during-and-after-treatment.html

American Society of Clinical Oncology. (2021). *Side effects of chemotherapy*. American Society of Clinical Oncology. https://www.cancer.net/navigating-cancer-care/how-cancer-treated/chemotherapy/side-effects-chemotherapy

Aree-Ue, S., & Youngcharoen, P. (2020). The 6-item cognitive function Test-Thai version: Psychometric property testing. *Ramathibodi Nursing Journal, 26,* 188-202. https://he02.tci-thaijo.org/index.php/RNJ/article/view/217560

Ariza-Heredia, E. J., & Chemaly, R. F. (2018). Update on infection control practices in cancer hospitals. *CA Cancer J Clin, 68*(5), 340-355. https://doi.org/10.3322/caac.21462

Ba, Y., Shi, Y., Jiang, W., Feng, J., Cheng, Y., Xiao, L., Zhang, Q., Qiu, W., Xu, B., Xu, R., Shen, B., Luo, Z., Xie, X., Chang, J., Wang, M., Li, Y., Shuang, Y., Niu, Z., Liu, B., ... Zhou, C. (2020). Current management of chemotherapy-induced neutropenia in adults: key points and new challenges: Committee of Neoplastic Supportive-Care (CONS), China Anti-Cancer Association Committee of Clinical Chemotherapy, China Anti-Cancer Association. *Cancer Biology & Medicine, 17*(4), 896–909. https://doi.org/10.20892/j.issn.2095-3941.2020.0069

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W H Freeman/Times Books/ Henry Holt & Co.

Basch, E., Deal, A. M., Dueck, A. C., Scher, H. I., Kris, M. G., Hudis, C., & Schrag, D. (2017). Overall survival results of a trial assessing patient-reported outcomes for symptom monitoring during routine cancer treatment. *JAMA, 318*(2), 197-198. https://doi.org/10.1001/jama.2017.7156

Becqué, Y. N., van der Wel, M., Aktan-Arslan, M., Driel, A. G. V., Rietjens, J. A. C., van der Heide, A., & Witkamp, E. (2023). Supportive interventions for family caregivers of patients with advanced cancer: A systematic review. *Psychooncology, 32*(5), 663-681. https://doi.org/10.1002/pon.6126

Berger, O., Grønberg, B. H., Loge, J. H., Kaasa, S., & Sand, K. (2018). Cancer patients' knowledge about their disease and treatment before, during and after treatment: A prospective, longitudinal study. *BMC Cancer, 18*(1), 381. https://doi.org/10.1186/s12885-018-4164-5

Bloom, B. S., Madaus, G. F., & Hastings, J. T. (1971). *Handbook on formative and summative evaluation of student learning*. New York: McGraw-Hill.

Boonsri, S., Wongpiriyayothar, A., & Meethien, N. (2023). The relationships between health beliefs and infection prevention behaviors among patients with lung cancer receiving chemotherapy. *Nursing Journal CMU, 50*(3), 163–173. https://he02.tci-thaijo.org/index.php/cmunursing/article/view/263881

Brodziak, A., Sigorski, D., Osmola, M., Wilk, M., Gawlik-Urban, A., Kiszka, J., Machulska-Ciuraj, K., & Sobczuk, P. (2021). Attitudes of patients with cancer towards vaccinations-results of online survey with special focus on the vaccination against COVID-19. *Vaccines, 9*(5), 411. https://doi.org/10.3390/vaccines9050411

Brooke, P., & Bullock, R. (1999). Validation of a 6 item cognitive impairment test with a view to primary care usage. *International Journal of Geriatric Psychiatry, 14*(11), 936–940. https://pubmed.ncbi.nlm.nih.gov/10556864/

Carlson, L. E., & Garland, S. N. (2005). Impact of mindfulness-based stress reduction (MBSR) on sleep, mood, stress and fatigue symptoms in cancer outpatients. *International Journal of Behavioral Medicine, 12*(4), 278-285. https://doi.org/10.1207/s15327558ijbm1204_9

Centers for Disease Control and Prevention. (2022). *Staying healthy during cancer treatment*. Centers for Disease Control and Prevention. https://www.cdc.gov/cancer/survivors/patients/staying-healthy-during-cancer-treatment.htm

Chin, C.-H., Tseng, L.-M., Chao, T.-C., Wang, T.-J., Wu, S.-F., & Liang, S.-Y. (2021). Self-care as a mediator between symptom-management self-efficacy and quality of life in women with breast cancer. *PLoS One, 16*(2), e0246430. https://doi.org/10.1371/journal.pone.0246430

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Coyne, E., Heynsbergh, N., & Dieperink, K. B. (2020). Acknowledging cancer as a family disease: A systematic review of family care in the cancer setting. *Eur J Oncol Nurs, 49,* 101841. https://doi.org/10.1016/j.ejon.2020.101841

Cupp, J., Culakova, E., Poniewierski, M. S., Dale, D. C., Lyman, G. H., & Crawford, J. (2018). Analysis of factors associated with in-hospital mortality in lung cancer chemotherapy patients with neutropenia. *Clinical Lung Cancer, 19*(2), e163–e169. https://doi.org/10.1016/j.cllc.2017.10.013

El-Kass, A. S., Ragheb, M. M., Hamed, S. M., Turkman, A. M., & Zaki, A. T. (2021). Needs and self-care efficacy for cancer patients suffering from side effects of chemotherapy. *Journal of Oncology, 2021*, 8880366. https://doi.org/10.1155/2021/8880366

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Fu, L., Yang, Y., Hu, Y., Lu, Z., Zhang, X., Huang, M., Li, Y., Zhu, F., Wang, Y., & Huang, Z. (2022). Distress management in cancer patients: Guideline adaption based on CAN-IMPLEMENT. *Int J Nurs Sci, 9*(1), 56-62. https://doi.org/10.1016/j.ijnss.2021.12.005

Griffin, J. M., Meis, L. A., MacDonald, R., Greer, N., Jensen, A., Rutks, I., & Wilt, T. J. (2014). Effectiveness of family and caregiver interventions on patient outcomes in adults with cancer: A systematic review. *Journal of General Internal Medicine, 29*(9), 1274-1282. https://doi.org/10.1007/s11606-014-2873-2

Han, A., & Choi, J. S. (2018). Factors influencing infection prevention self-care behaviors in patients with hematologic cancer after discharge. *European Journal of Oncology Nursing, 35,* 102-106. https://doi.org/10.1016/j.ejon.2018.06.005

Hendrix, C. C., Bailey, D. E., Jr., Steinhauser, K. E., Olsen, M. K., Stechuchak, K. M., Lowman, S. G., Schwartz, A. J., Riedel, R. F., Keefe, F. J., Porter, L. S., & Tulsky, J. A. (2016). Effects of enhanced caregiver training program on cancer caregiver's self-efficacy, preparedness, and psychological well-being. *Support Care Cancer, 24*(1), 327-336. https://doi.org/10.1007/s00520-015-2797-3

Holden, C. E., Wheelwright, S., Harle, A., & Wagland, R. (2021). The role of health literacy in cancer care: A mixed studies systematic review. *PLoS One, 16*(11), e0259815. https://doi.org/10.1371/journal.pone.0259815

House, J. S. (1981). *Work stress and social support*. Reading, MA: Addison-Wesley.

Hung, C. T., Chen, Y. J., Chan, J. C., Fang, Y. Y., Li, I. F., Shih, H. H., Ku, H. Y., Chiu, W. T., & Lee, Y. H. (2020). Psychological distress, social support, self-management ability and utilization of social resources for female patients with cancer in oncology outpatient settings in Taiwan. *Support Care Cancer, 28*(7), 3323-3330. https://doi.org/10.1007/s00520-019-05143-y

International Agency for Research on Cancer. (2022). *Cancer factsheets: All cancers*. International Agency for Research on Cancer. https://gco.iarc.fr/today/en/fact-sheets-cancers

Jacobsen, P. B., & Ransom, S. (2007). Implementation of NCCN distress management guidelines by member institutions. *Journal of the National Comprehensive Cancer Network : JNCCN, 5*(1), 99–103. https://doi.org/10.6004/jnccn.2007.0010

Jamjumrus, J., & Chanpho, D. (2021). Roles of nurses in the prevention and management of the febrile neutropenia in cancer patients undergoing chemotherapy [in Thai]. *Siriraj Medical Bulletin, 14*(3), 61-65. https://doi.org/10.33192/smb.v14i3.249761

Jearranaipreprame, R., Bannaasan, B., & Matchim, Y. (2023). The effects of the supportive educative nursing system on self-care behaviors and risk for infection among hematological cancer patients receiving chemotherapy [in Thai]. *Journal of Health Sciences and Wellness, 27*(2), 321-335. https://he01.tci-thaijo.org/index.php/HCUJOURNAL/article/view/264141

Jongerden, I. P., Slev, V. N., van Hooft, S. M., Pasman, H. R., Verdonck-de Leeuw, I. M., de Veer, A. J. E., van Uden-Kraan, C. F., & Francke, A. L. (2019). Self-management support in patients with incurable cancer: How confident are nurses? *Oncol Nurs Forum, 46*(1), 104-112. https://doi.org/10.1188/19.Onf.104-112

Kim, D., Lee, S., Youk, T., & Hong, S. (2021). Incidence and clinical outcomes of febrile neutropenia in adult cancer patients with chemotherapy using Korean nationwide health insurance database. *Yonsei Medical Journal, 62*(6), 479-486. https://doi.org/10.3349/ymj.2021.62.6.479

Kim, H. S., Kim, M., & Lee, S. (2016). Symptom clusters in Korean patients with metastatic cancer undergoing palliative chemotherapy. *Journal of Hospice & Palliative Nursing, 18,* 292-299. https://doi.org/10.1097/NJH.0000000000000240

Kim, H. S., Oh, E. G., Lee, H., Kim, S. H., & Kim, H. K. (2015). Predictors of symptom experience in Korean patients with cancer undergoing chemotherapy. *European Journal of Oncology Nursing, 19*(6), 644-653. https://doi.org/10.1016/j.ejon.2015.04.003

Kim, H., & Cho, M.-K. (2021). Factors influencing self-care behavior and treatment adherence in hemodialysis patients. *International Journal of Environmental Research and Public Health, 18*(24), 12934. https://doi.org/10.3390/ijerph182412934

Kırca, K., & Kutlutürkan, S. (2021). Self-Efficacy in coping behaviors of cancer patients: Who am i and what can i accomplish? *Turkish Journal of Family Medicine and Primary Care, 15* (3), 610-621. https://doi.org/10.21763/tjfmpc.744412

Klaisuban, T., Srichantaranit, A., & Payakkaraung, S. (2024). Factors predicting infection prevention behaviors among caregivers of children with cancer undergoing chemotherapy. *Nursing Science Journal of Thailand, 42*(3), 105-118. https://he02.tci-thaijo.org/index.php/ns/article/view/269086

Klein, W. M. P., O'Connell, M. E., Bloch, M. H., Czajkowski, S. M., Green, P. A., Han, P. K. J., Moser, R. P., Nebeling, L. C., & Vanderpool, R. C. (2022). Behavioral research in cancer prevention and control: Emerging challenges and opportunities. *Journal of the National Cancer Institute, 114*(2), 179–186. https://doi.org/10.1093/jnci/djab139

Kong, L.-N., Yao, Y., Li, L., Zhao, Q.-H., Wang, T., & Li, Y.-L. (2021). Psychological distress and self-management behaviours among patients with chronic hepatitis B receiving oral antiviral therapy. *Journal of Advanced Nursing, 77*(1), 266-274. https://doi.org/https://doi.org/10.1111/jan.14610

Kubeček, O., Paterová, P., & Novosadová, M. (2021). Risk factors for infections, antibiotic therapy, and its impact on cancer therapy outcomes for patients with solid tumors. *Life, 11*(12), 1387. https://doi.org/10.3390/life11121387

Laurujisawat, P., & Jetiyanuwat, S. (2013). Validity of the Thai Version of the Distress Thermometer [in Thai]. *Journal Psychiatr Assoc Thailand, 58*(3), 257-270. https://www.psychiatry.or.th/JOURNAL/58-3/04-Sawitree.pdf

Liu, X., Tao, S., Ji, H., Chen, S., Gu, Y., & Jin, X. (2021). Risk factors for peripherally inserted central catheter (PICC)-associated infections in patients receiving chemotherapy and the preventive effect of a self-efficacy intervention program: A randomized controlled trial. *Annals of Palliative Medicine, 10*(9), 9398-9405. https://doi.org/10.21037/apm-21-1848

Lortrakul, N. (2000). *Social support and health promoting behaviors among the elderly with coronary artery disease* [Unpublished master's thesis]. Chiang Mai University, Chiang Mai, Thailand.

Ma, Q., Luo, J., Cao, H., Ye, S., Dang, N., Wang, T., Fan, S., Tang, M., Zheng, G., & Hou, L. (2024). Social support, health behavior self-efficacy, and anxiety on physical activity levels among lung cancer survivors: A structural equation modeling. *Journal of Cancer Survivorship: Research and Practice*. https://doi.org/10.1007/s11764-024-01626-y

Mazzocco, K., Masiero, M., Carriero, M. C., & Pravettoni, G. (2019). The role of emotions in cancer patients' decision-making. *Ecancermedicalscience, 13,* 914. https://doi.org/10.3332/ecancer.2019.914

McCarter, K., Fradgley, E. A., Britton, B., Tait, J., & Paul, C. (2020). Not seeing the forest for the trees: A systematic review of comprehensive distress management programs and implementation strategies. *Current Opinion in Supportive and Palliative Care, 14*(3), 220-231. https://doi.org/10.1097/spc.0000000000000513

Merluzzi, T. V., Pustejovsky, J. E., Philip, E. J., Sohl, S. J., Berendsen, M., & Salsman, J. M. (2019). Interventions to enhance self-efficacy in cancer patients: A meta-analysis of randomized controlled trials. *Psychooncology, 28*(9), 1781-1790. https://doi.org/10.1002/pon.5148

Ministry of Public Health. (2023). *Public health statistics A.D.2022* [in Thai]. Retrieved July 15, 2023 from https://spd.moph.go.th/wp-content/uploads/2023/11/Hstatistic65.pdf

Morgan, S. P., Lengacher, C. A., & Rodriguez, C. S. (2022). Caregiver burden in caregivers of patients with advanced stage cancer: A concept analysis. *European Journal of Oncology* Nursing, *60*, 102152. https://doi.org/10.1016/j.ejon.2022.102152

National Cancer Institute. (2017). *Common Terminology Criteria for Adverse Events (CTCAE) Version 5.0*. National Cancer Institute.https://ctep.cancer.gov/protocolDevelopment/electronic_applications/docs/CTCAE_v5_Quick_Reference_8.5x11.pdf

Nucci, M., & Anaissie, E. J. (2017). Prevention of infections in patients with hematological malignancies. *Neoplastic Diseases of the Blood*, 1047–1062. https://doi.org/10.1007/978-3-319-64263-5_49

Oken, M. M., Creech, R. H., Tormey, D. C., Horton, J., Davis, T. E., McFadden, E. T., & Carbone, P. P. (1982). Toxicity and response criteria of the Eastern Cooperative Oncology Group. *American Journal of Clinical Oncology, 5*(6), 649–655. https://pubmed.ncbi.nlm.nih.gov/7165009/

Oncology Nursing Society. (2021). Putting evidence into practice: Prevention of infection in patients receiving cancer treatments. Oncology Nursing Society. https://www.myamericannurse.com/putting-evidence-into-practice-prevention-of-infection-in-patients-receiving-cancer-treatments-2/

Palung, C., & Nunuan, P. (2020). Social support and adaptation of cancer patients who received receiving service at the National Cancer Institute: The case study research [in Thai]. *Thai Cancer Journal, 40*(2), 62-75. https://he01.tci-thaijo.org/index.php/TCJ/article/view/243901

Pessanha, R. M., D'Agostini, N. S., Giacomin, L. M., Busatto, L. S., Amaral, M. C., de Souza, A. C. S. V., Grippa, W. R., & Luis, C. (2024). Clinical and epidemiological profile of cancer patients undergoing outpatient chemotherapy. *Journal of Nursing UFPE Online, 18*(1). https://doi.org/10.5205/1981-8963.2024.262591

Phoosuwan, N., & Chaimongkol, S. (2020). Validity and reliability of self-efficacy questionnaire among public health professionals for perinatal depressive symptom prevention in women [in Thai]. *Journal of Council of Community Public Health, 2*(3), 100-108. https://he01.tci-thaijo.org/index.php/JCCPH/article/view/243000

Podbury, B., Gurgenci, T., Huggett, G., Greer, R., Hardy, J., & Good, P. (2024). Psychological distress and physical symptoms in advanced cancer: cross-sectional study. *BMJ supportive & palliative care,* spcare-2024-004940. https://doi.org/10.1136/spcare-2024-004940

Pongpradit, P. (2011). *Selected factors related to health promoting behaviors in woman with breast cancer undergone adjuvant chemotherapy* [Unpublished master's thesis]. Mahidol University, Bangkok, Thailand.

Prasertsri, T., & Phanthusart, N. (2018). Influence factors and severity of infections within the cancer patient [in Thai]. *Journal of Nursing and Health Care, 36*(2), 22-30. https://he01.tci-thaijo.org/index.php/jnat-ned/article/view/139612/103562

Qian, H., & Yuan, C. (2012). Factors associated with self-care self-efficacy among gastric and colorectal cancer patients. *Cancer Nursing, 35*(3), E22-E31. https://doi.org/10.1097/NCC.0b013e31822d7537

Rodin, D., Glicksman, R. M., Hepel, J. T., Huber, K., Kirova, Y., Loap, P., & Rakovitch, E. (2024). Early-stage breast cancer: A critical review of current and emerging practice. *Int J Radiat Oncol Biol Phys, 120*(5), 1260-1272. https://doi.org/10.1016/j.ijrobp.2024.08.037

Roth, A. J., Kornblith, A. B., Batel-Copel, L., Peabody, E., Scher, H. I., & Holland, J. C. (1998). Rapid screening for psychologic distress in men with prostate carcinoma: A pilot study. *Cancer, 82*(10), 1904–1908. https://doi.org/10.1002/(sici)1097-0142(19980515)82:10<1904::aid-cncr13>3.0.co;2-x

Roy, V., Ruel, S., Ivers, H., Savard, M. H., Gouin, J. P., Caplette-Gingras, A., Lemieux, J., Couture, F., & Savard, J. (2020). Stress-buffering effect of social support on immunity and infectious risk during chemotherapy for breast cancer. *Brain, Behavior, & Immunity - Health, 10,* 100186. https://doi.org/10.1016/j.bbih.2020.100186

Ruiz-Rodríguez, I., Hombrados-Mendieta, I., Melguizo-Garín, A., & Martos-Méndez, M. J. (2022). The importance of social support, optimism and resilience on the quality of life of cancer patients. *Front Psychol, 13,* 833176. https://doi.org/10.3389/fpsyg.2022.833176

Rungruang, C., & Siritientong, T. (2020). Effects of chemotherapy on nutrition in cancer patients [in Thai]. *Thai Journal of Parenteral and Enteral Nutrition, 27*(2). https://he02.tci-thaijo.org/index.php/ThaiJPEN/article/view/242056

Schwarzer, R., & Jerusalem, M. (1995). *Generalized self-efficacy scale*. In American Psychological Association (pp. 35-37): Windsor, UK: NFER-NELSON.

Shahsavar, Y., & Choudhury, A. (2023). Examining influential factors in newly diagnosed cancer patients and survivors: Emphasizing distress, self-care ability, peer support, health perception, daily life activity, and the role of time since diagnosis. *PLoS One, 18*(9), e0291064. https://doi.org/10.1371/journal.pone.0291064

Sukmak, V., Sirisoonthon, A., & Meena, P. (2001). Validity of the general perceived self-efficacy scale. *Journal of the Psychiatric Association of Thailand, 47*(1), 31-37. https://www.psychiatry.or.th/JOURNAL/vol471/47-1-05.pdf

Sun, Y., Ma, Y., Shi, L., Liu, T., Dong, Y., & Jin, Q. (2025). The impact and molecular mechanisms of exercise in cancer therapy. *Current Issues in Molecular Biology, 47*(5), 374. https://doi.org/10.3390/cimb47050374

Suwan, N., Kasatpibal, N., & Viseskul, N. (2024). Knowledge, attitude, and practice in preventing infection among patients with cancer receiving chemotherapy. *Journal of Nursing Care Quality, 39*(3), E32–E38. https://doi.org/10.1097/NCQ.0000000000000768

Temel, J. S., Greer, J. A., Muzikansky, A., Gallagher, E. R., Admane, S., Jackson, V. A., Dahlin, C. M., Blinderman, C. D., Jacobsen, J., Pirl, W. F., Billings, J. A., & Lynch, T. J. (2010). Early palliative care for patients with metastatic non–small-cell lung cancer. *New England Journal of Medicine, 363*(8), 733-742. https://doi.org/doi:10.1056/NEJMoa1000678

Thapanakulsuk, P., Sirapo-ngam, Y., Estwing Ferrans, C., Orathai, P., & Junda, T. (2020). Psychometric testing of a spiritual well-being scale for people with cancer. *Pacific Rim International Journal of Nursing Research, 24*(1), 39-53. https://he02.tci-thaijo.org/index.php/PRIJNR/article/view/164895/160657

Thom, K. A., Kleinberg, M., & Roghmann, M. C. (2013). Infection prevention in the cancer center. *Clin Infect Dis, 57*(4), 579-585. https://doi.org/10.1093/cid/cit290

Toquero, P., Blanco Fernández, C., López Martí, M. P., Hernández Marín, B., Vera Cea, E. B., Garrido García, A., Méndez Carrascosa, E., Bañón Torres, D., Donnay Candil, O., Ballesteros García, A. I., Sánchez-Torres, J. M., Costas Rojo, P., Mondéjar, R., Colomer, R., & Romero-Laorden, N. (2021). Emotional distress in cancer patients during the first wave of the COVID-19 pandemic. *Frontiers in psychology, 12,* 755965. https://doi.org/10.3389/fpsyg.2021.755965

van Roij, J., Brom, L., Sommeijer, D., van de Poll-Franse, L., & Raijmakers, N. (2021). Self-care, resilience, and caregiver burden in relatives of patients with advanced cancer: Results from the eQuiPe study. *Supportive Care in Cancer, 29*(12), 7975-7984. https://doi.org/10.1007/s00520-021-06365-9

Viseskul, N., Kasatpibal, N., Suwan, N., Chaywong, Y., & Pholdee, N. (2025). Effectiveness of using an online instructional video for preventing infections among Thai patients with cancer: A quasi-experimental study. *Belitung Nurs J, 11*(2), 215-223. https://doi.org/10.33546/bnj.3681

Wong, S. C., Ip, S. C., Kwok, M. O., Siu, C. Y., Chen, J. H., So, S. Y., Chiu, K. H., Yuen, K. K., & Cheng, V. C. (2024). Promoting hand hygiene in a chemotherapy day center: The role of a robot. *Antimicrob Resist Infect Control, 13*(1), 154. https://doi.org/10.1186/s13756-024-01510-5

Wu, S. V., Wang, T. J., Liang, S. Y., Lin, L. J., Lu, Y. Y., & Lee, M. C. (2022). Differences in self-care knowledge, self-efficacy, psychological distress and self-management between patients with early- and end-stage chronic kidney disease. *Journal of Clinical Nursing, 31*(15-16), 2287-2295. https://doi.org/10.1111/jocn.16046

Yang, L., Courneya, K. S., & Friedenreich, C. M. (2024). The Physical Activity and Cancer Control (PACC) framework: Update on the evidence, guidelines, and future research priorities. *British Journal of Cancer, 131*(6), 957-969. https://doi.org/10.1038/s41416-024-02748-x

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

Yin, Y., Lyu, M., Chen, Y., Zhang, J., Li, H., Li, H., Xia, G., & Zhang, J. (2022). Self-efficacy and positive coping mediate the relationship between social support and resilience in patients undergoing lung cancer treatment: A cross-sectional study. *Frontiers in psychology, 13,* 953491. https://doi.org/10.3389/fpsyg.2022.953491

Yuphet, K., Sangthawee, P., & Utchariyaprasit, E. (2020). The role of nurses in cancer patient with neutropenia [in Thai]. *Siriraj Medical Bulletin, 13*(3), 190-195. https://he02.tci-thaijo.org/index.php/simedbull/article/view/243007/165254

Zhou, Y., Shan, H., Wu, C., Chen, H., Shen, Y., Shi, W., Wang, L., & Li, Q. (2024). The mediating effect of self-efficacy on family functioning and psychological resilience in prostate cancer patients. *Frontiers in psychology, 15,* 1392167. https://doi.org/10.3389/fpsyg.2024.1392167

Authors' insight

Key points

- The study directly examines infection prevention behaviors, which is a critical aspect of care for a vulnerable group: patients receiving chemotherapy in Thailand.
- The finding states that the integration of Bandura's Self-efficacy Theory will analyze through a well-established psychological model and suggest a structured approach to understanding behavior change.
- The higher self-efficacy improves adherence to prevention and greater knowledge equips patients for effective infection control.

Emerging nursing avenues

- What specific aspects of Bandura's Self-efficacy Theory are explored as predictors, and how are they measured in the context of infection prevention behaviors?
- How might the cultural or healthcare context of Thailand uniquely influence infection prevention behaviors or the application of self-efficacy theory in this patient population?
- What other modifiable factors (e.g., specific educational interventions, support programs) might nurses or healthcare providers target to improve these behaviors based on the study's findings?

How to cite this article (APA style)
Srisoithongsug, W., Junda, T., & Sumdaengrit, B. (2025). Quantitative analysis of infection prevention behaviors among patients receiving chemotherapy in Thailand: Predictors through the Bandura's Self-efficacy Theory. *Journal of Holistic Nursing Science, 12*(2), 183–200. https://doi.org/10.31603/jhns.v12i2.13178