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Factors associated with self-care practices in postoperative colorectal cancer patients undergoing chemotherapy

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Abstract

Introduction: Self-care practices are essential for helping patients undergoing adjuvant chemotherapy after colorectal cancer surgery in managing and coping with the common side effects of treatment. However, these practices can be influenced by various factors. Identifying these factors is crucial, as it enables healthcare providers, particularly nurses, to design and implement interventions that can improve patients' self-care abilities and overall quality of life.

Methods: A descriptive analytical cross-sectional study was conducted on 200 postoperative colorectal cancer patients receiving adjuvant chemotherapy at Cho Ray Hospital, who were interviewed directly using a structured questionnaire between April and August 2023. Participants who met the inclusion criteria and provided consent were included in the study.

Results: The mean age of the patients was 57.8±11.4 years, with 65% being male, and 64% had been undergoing chemotherapy for less than six months. The proportion of patients practicing good self-care was 24%, indicating that the rate of effective self-care practices remained low. Multivariable logistic regression analysis revealed independent associations, showing that employed patients and those with higher education levels were more likely to engage in good self-care practices (Employment: OR=4.05, 95%CI: 1.82–10.1, p=0.045; High school: OR=9.72, 95%CI: 3.62–9.62, p=0.001; University: OR=5.38, 95%CI: 3.46-35.3, p=0.008). Additionally, patients with better knowledge and the ability to meet their basic needs were more likely to practice good self-care (Chemotherapy and self-care knowledge: OR=3.01, 95%CI: 1.80–5.04, p<0.001; Ability to meet basic needs: OR=5.31, 95%CI: 1.71–16.5, p=0.004).

Conclusions: The rate of effective self-care practices among patients remained low. Interventions to improve self-care should consider factors such as employment status, level of education, family history of cancer, duration of chemotherapy-related side effects, knowledge of chemotherapy and self-care, and the capacity to meet basic needs to effectively enhance self-care behaviors

Keywords: self care; colorectal neoplasms; chemotherapy

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1. INTRODUCTION

Colorectal cancer is a highly prevalent malignancy, ranked as the third most common cancer worldwide and the fourth leading cause of cancer-related deaths, with an estimated 1.4 million new cases and 700,000 deaths annually. This disease poses a significant challenge to increasing life expectancy globally [1,2]. In Vietnam, the age-standardized incidence rate of colorectal cancer is 10.1 per 100,000 population, ranking sixth among all cancers in both genders [3]. Chemotherapy is a standard treatment for colorectal cancer, using pharmacological agents to kill or inhibit the growth of cancer cells. Adjuvant chemotherapy, administered postoperatively, aids in eliminating residual cancer cells and reducing the risk of recurrence [4].

The rising incidence and mortality of colorectal cancer have highlighted the critical role of self-care practices, particularly for patients undergoing adjuvant chemotherapy. Self-care practices aim at improving health, maintaining physical and psychological well-being, and ensuring a better quality of life post-treatment or after hospital discharge, all of which are essential for improving patient outcomes [5]. In the context of chemotherapy, self-care involves the decisions and actions that patients take to manage their health issues and optimize their overall well-being during treatment [6].

Despite the increasing acknowledgement of self-care's importance in cancer treatment, studies have shown that self-care practices among chemotherapy patients remain insufficient. Evidence on self-care practices in low- and middle-income countries like Vietnam remain scarce. Several barriers contribute to this gap, including older age, low education levels, limited self-care knowledge, and the burden of chemotherapy side effects [7–10]. These factors substantially hinder patients' ability to engage in effective self-care practices, potentially compromising their overall health outcomes [11].

Therefore, this study aimed to determine the prevalence of good self-care practices and identify factors associated with self-care behaviors among postoperative colorectal cancer patients undergoing adjuvant chemotherapy, including demographic characteristics, medical history and current (health) status, knowledge of chemotherapy and self-care, and the ability to meet basic needs at Cho Ray Hospital, Vietnam.

The findings are expected to inform enhancement in nursing care practices in Vietnam and provide valuable guidance for healthcare providers in optimizing support for these patients more effectively.

2. MATERIALS AND METHODS

2.1. Study settings

This study was conducted at the Oncology Center of Cho Ray Hospital, a leading specialized cancer treatment center in Southern Vietnam. Data collection took place from April 2023 to August 2023 and included patients undergoing adjuvant chemotherapy after colorectal cancer surgery.

2.2. Study design and participants

This was a descriptive cross-sectional analytical study conducted to analyze factors related to self-care practices among patients undergoing adjuvant chemotherapy. The study included patients diagnosed with colorectal cancer who had undergone surgical tumor resection surgery and were receiving adjuvant chemotherapy at the Oncology Center of Cho Ray Hospital. Eligible participants were aged 18 years or older, had completed at least one session of chemotherapy, and provided informed consent to participate. Patients were excluded if they had documented cognitive impairments due to neurological diseases or dementia, were unable to understand Vietnamese, had sensory disabilities such as mutism or deafness, or did not complete the interview. The study adhered to the CROSS checklist, which is specifically designed for survey-based research [12].

2.3. Sample size and sampling

The sample size was calculated using the formula for estimating a single proportion: n≥ , where is the critical value for a 95% confidence level (α=0.05), $z^2_{1-\alpha}\frac{(1-p)p}{d^2}$ p=0.44 based on the proportion of good self-care practices reported by Sae'd Abu El-Kass (2021) [7], and d=0.07 as the margin of error. The minimum required sample size was 194, and the study recruited 200 patients through convenience sampling based

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on the list of patients attending for treatment daily at the Oncology Center of Cho Ray Hospital from April to August 2023.

Data were collected using a structured questionnaire with five sections through direct interviews with the patients in the chemotherapy room on the day of treatment: (1) Personal characteristics (8 items); (2) Medical history and current condition (10 items); (3) Knowledge of chemotherapy and self-care (L-PaKC scale includes 9 items, each correct answer was scored as 1 point, while incorrect answers were scored as 0 points, scored from 0–9, where higher scores indicate better knowledge) [13]; (4) Self-care practices after chemotherapy (73 items across 13 domains, scored as 1 for "performed" or 0 for "not performed" with total scores ranging from 0 to 73; Supplementary Table S1); and (5) Basic needs response (12 items, each item had three choices: 0 points for "completely dependent", 1 point for "partially dependent", and 2 points for "completely independent", scored from 0–24, with higher scores indicating greater independence). Based on the self-care classification guidelines in the study by Sae'd Abu El-Kass [7], a total self-care score of ≥44 (≥60%) was classified as "good self-care practice".

Chemotherapy side effects were defined as the adverse effects of chemotherapy drugs on patients' daily activities at varying degrees [4]. These effects may include fatigue, hair loss, nausea, anorexia, gastrointestinal disturbances, and more [4,7]. Patients undergoing adjuvant chemotherapy after colorectal cancer surgery often experience health status and lifestyle changes, which can lead to decline in self-care capacity. The questionnaire used in this study focused on these key characteristics and self-care activities aimed at helping patients effectively manage with chemotherapy side effects.

2.4. Validation and translation of the questionnaire

The questionnaire was translated from English to Vietnamese following J. House's transition model [14]. The adaptation of the questionnaire from Sae'd Abu El-Kass's study was conducted in three key steps. In Step 1, the original questionnaire was sent to a nursing specialist, currently working at an oncology center, who holds a Doctor of Philosophy (PhD) in the Philippines. This expert independently translated the questionnaire into Vietnamese, making contextual modifications to ensure the wording aligned with the target population, while preserving the original content. In Step 2, the Vietnamese translation was reviewed by another nursing specialist with a doctoral degree, who teaches oncology nursing and holds an IELTS Academic certificate (score 6.5). This expert then performed a back-translation of the questionnaire into English, without access to the original version. Step 3 involved comparing and cross-checking the back-translated version with the original English version by a Vietnamese American nursing PhD. Following this, the research team reviewed and incorporated expert suggestions, finalizing the Vietnamese version of the questionnaire. Subsequently, content validity of the questionnaire was assessed by six specialists in oncology and chemotherapy, including three physicians and three nurses with advanced degrees and over 10 years of professional experience. The content validity index (S-CVI/Ave) was 0.87. The questionnaire was also pretested with 30 patients. Reliability was confirmed with Cronbach's alpha values of 0.89 for knowledge, 0.83 for the ability to meet basic needs, and 0.94 for self-care practices.

2.5. Statistical method

Only the fully completed survey forms containing all required data were entered and analyzed using SPSS version 26.0. The data were coded to ensure patient anonymity, excluding any identifiable information. Descriptive statistics were calculated, including frequencies and percentages for categorical variables, as well as means and standard deviations for continuous variables. Logistic regression analysis was conducted in two steps. In step 1, univariable logistic regression analysis was performed to assess the association between each independent variable and the dependent variable, which was the self-care practice status (a binary variable). Independent variables with a -2 Log Likelihood (-2LL) lower than the null model (a model with only the constant, no independent variables) and a p-value<0.2 were selected for inclusion in the multivariable analysis. In step 2, the selected independent variables from the univariable analysis were entered into the multivariable logistic regression model. A backward elimination method was applied to iteratively

remove non-significant variables (p>0.05). After each step of elimination, the -2LL, Nagelkerke R^2, and the predictive accuracy of the model were examined to ensure the best-fitting model. The final multivariable logistic regression model was evaluated based on Nagelkerke R^2, predictive accuracy, and the Hosmer-Lemeshow test to confirm the model's goodness-of-fit (p>0.05). The final predictors were reported as adjusted odds ratios (ORs) with 95% confidence intervals (CIs). A statistical significance level of p<0.05 was applied.

2.6. Ethical considerations

The study was approved by the Ethics Committee for Biomedical Research at Hong Bang University (Decision No. 36/PCT-HDDD, signed on March 5, 2023). Participation in the study was entirely voluntary, with written informed consent explicitly obtained from each patient prior to data collection.

3. RESULTS

3.1. Self-care practices of patients in the study

The survey results on self-care practices among patients undergoing colorectal cancer surgery receiving adjuvant chemotherapy indicated that most self-care items have low rates of good practice. Fever management exhibited the highest rate of good practice at 54.5%, while other areas, such as fatigue/exhaustion and hair loss/dry skin, had significantly lower rates, at 22.5% and 25.5%, respectively. Overall, only 24% of patients demonstrated effective self-care practices, highlighting substantial room for improvement in self-care behaviors following chemotherapy (Table 1).

3.2. Factors associated with self-care practices in the study

Table 2 presents the results of both univariable and multivariable logistic regression analyses examining factors associated with self-care practices. In the univariable analysis, several factors were significantly associated with self-care practices, including age, residential location, employment status, education level, family history of cancer, knowledge of chemotherapy, and the ability to meet basic needs (p<0.05). A multivariable logistic regression model was developed to identify factors associated with good self-care practices. After adjusting for potential confounders, employment status, level of education, presence of family history of cancer, duration of chemotherapy side effects, chemotherapy related knowledge, and the ability to meet basic needs were all found to be significantly associated with good self-care practices (p<0.05).

Specifically, employed patients were more likely to en-

Table 1. Proportion of patients practicing good self-care (n=200)

Self-care practices after chemotherapy	Possible score range	Score range indicating good practice	Frequency (n)	Percentage (%)
Personal hygiene and infection prevention	0–7	5–7	74	37.0
Shortness of breath	0–6	4–6	79	39.5
Fever	0–5	3–5	109	54.5
Constipation	0–4	3–4	79	39.5
Diarrhea	0–5	3–5	72	36.0
Vomiting, nausea	0–9	6–9	67	33.5
Loss of appetite	0–4	3–4	73	36.5
Mouth and throat ulcers	0–6	4–6	69	34.5
Hair loss and dry skin	0–6	4–6	51	25.5
Bleeding	0–5	3–5	82	41.0
Fatigue, exhaustion	0–6	4–6	45	22.5
Sleep disturbances, insomnia	0–6	4–6	61	30.5
Chemotherapy extravasation	0–4	3–4	66	33.0
Overall self-care practice	0–73	44–73	48	24.0

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Table 2. Association between demographic characteristics, medical history, current health status, self-care knowledge, ability to meet basic needs, and self-care practices (n=200)

Characteristic	Self-care practice		Univariable logistic regression			Multivariable logistic regression		
	Poor (n=152)	Good (n=48)	OR	p-value	CI 95%	OR	p-value	CI 95%
Age			Mean±SD: 57.8±11.4 (Min-max: 25–93)					
Under 50 years	26 (17.1)	18 (37.5)	1	-	-	1	-	-
50 to <60 years	52 (34.2)	13 (27.1)	0.36	0.02	0.15–0.85	0.30	0.127	0.06–1.41
60 years and older	74 (48.7)	17 (35.4)	0.33	0.007	0.15–0.74	0.73	0.756	0.10–5.35
Gender								
Male	96 (63.2)	34 (70.8)	1	-	-			
Female	56 (36.8)	14 (29,2)	0.71	0.332	0.35–1.43			
Marital status								
Single/widowed	17 (11.2)	7 (14.6)	1	-	-			
Married	135 (88.8)	41 (85.4)	0.74	0.529	0.29–1.90			
Cohabiting								
Other relatives	33 (21.7)	14 (29.2)	1	-	-			
Spouse	119 (78.3)	34 (70.8)	0.67	0.290	0.32–1.40			
Residence								
Rural	116 (76.3)	22 (45.8)	1	-	-	1	-	-
Urban	36 (23.7)	26 (54.2)	3.81	<0.001	1.93–7.52	2.54	0.2	0.61–10.5
Monthly income								
Low	30 (19,7)	6 (12.5)	1	-	-			
Average	47 (30.9)	7 (14.6)	0.75	0.625	0.23–2.43			
Above average	75 (49.4)	35 (72.9)	2.33	0.085	0.89–6.12			
Employment status								
Unemployed/retired	110 (72.4)	21 (43.8)	1	-	-	1	-	-
Employed	43 (27.6)	27 (56.2)	3.37	<0.001	1.72–6.59	4.05	0.045	1.82–10.1
Education level								
Primary or lower	64 (42.1)	7 (14.6)	1	-	-	1	-	-
Secondary school	66 (43.4)	9 (18.8)	1.25	0.679	0.44–3.55	1.01	0.991	0.10–7.34
High school	13 (8.6)	18 (37.5)	12.7	<0.001	4.40–36.4	9.72	0.001	3.62–9.62
University or higher	9 (5.9)	14 (29.1)	14.2	<0.001	4.53–44.7	5.38	0.008	3.46–35.3
Family history of cancer								
No	114 (75.0)	21 (43.8)	1	-	-	1	-	-
Yes	38 (25.0)	27 (56.3)	3.86	<0.001	1.96–7.60	3.76	0.037	1.08–13.1
Chronic Illness								
No	105 (69.1)	30 (62.5)	1	-	-			
Yes	47 (30.9)	18 (37.5)	1.34	0.397	0.68–2.64			
Chemotherapy duration								
Less than 6 months	95 (62.5)	33 (68.8)	1	-	-			
From 6 months to 1 year	41 (27.0)	13 (27.1)	0.91	0.809	0.44–1.91			
More than 1 year	16 (10.5)	2 (4.1)	0.36	0.188	0.08–1.65			
Number of chemotherapy doses per month								
1 dose	142 (93.4)	43 (89.6)	1	-	-			
2 doses	10 (6.6)	5 (10.4)	1.65	0.383	0.54–5.09			
Improvement after chemotherapy								
No	37 (24.3)	10 (20.8)	1	-	-			
Yes	115 (75.7)	38 (79.2)	1.22	0.618	0.56–2.69			
Onset of side effects								
Immediately after administration	41 (27.0)	15 (31.3)	1	-	-			
Within 1 week	98 (73.0)	32 (68.8)	0.89	0.755	0.44–1.82			
Duration of side effects								
1–3 days	58 (38.2)	24 (50.0)	1	-	-	1	-	-
1 week	60 (39.5)	20 (41.7)	0.81	0.542	0.4–1.61	0.44	0.263	0.11–1.85
2 weeks or more	29 (19.1)	4 (8.3)	0.33	0.061	0.11–1.05	0.05	0.014	0.01–0.55
Knowledge about chemotherapy & self-care	Mean±SD: 4.3±0.9		2.80	<0.001	2.02–3.90	3.01	<0.001	1.80–5.04
Ability to meet basic needs	Mean±SD: 21.4±3.3		4.09	<0.001	2.04–8.18	5.31	0.004	1.71–16.5

CIs, confidence intervals.

gage in good self-care practices compared to those who were unemployed (OR=4.05, 95% CI: 1.82–10.1, p=0.045). In addition, patients with higher education levels, including high school and university graduates, were significantly more likely to practice good self-care. High school graduates (OR=9.72, 95% CI: 3.62–9.62, p=0.001) and university graduates (OR=4.26, 95% CI: 3.46–35.3, p=0.008) demonstrated higher odds of engaging in good self-care compared to those with lower educational levels. Furthermore, both chemotherapy-related knowledge and self-care awareness, as well as the ability to meet basic needs, were strong predictors of good self-care practices. Patients with greater knowledge of chemotherapy and self-care were more likely to engage in good self-care (chemotherapy and self-care knowledge: OR=3.01, 95% CI: 1.80–5.04, p<0.001). Additionally, those who were better able to meet their basic needs had significantly higher odds of practicing good self-care (ability to meet basic needs: OR=5.31, 95% CI: 1.71–16.5, p=0.004). In contrast, patients who experienced chemotherapy side effects persisting for more than two weeks were significantly less likely to practice good self-care (OR=0.05, 95% CI: 0.01–0.55, p=0.014).

The final model accurately predicted 94.4% of patients engaging in good self-care practices (model fit: -2LL=70.779, Nagelkerke R^2=0.787, Hosmer-Lemeshow test χ^2=7.034, p=0.533). Although age group and residential locations were not independently significant predictors (p>0.05), their inclusion enhanced the model's predictive accuracy, and removing them increased the -2LL.

4. DISCUSSION

The survey results indicated that the rate of good self-care practices among patients following colorectal cancer surgery with adjuvant chemotherapy remained low, with only 24% of patients engaging in adequate self-care behaviors. This finding aligns with prior studies that have highlighted significant challenges faced by cancer patients in maintaining effective self-care, such as the side effects of chemotherapy and limited knowledge about health management during recovery [13,15,16]. Abu El-Kass S's study [7] similarly reported low levels of self-care, with the lowest rates observed in managing loss of appetite and vomiting (34%) and the highest in addressing sleep disturbances (61.3%). Comparable findings were noted in Doan et al.'s research [15], which showed a mean self-care score of 46.1 (SD=7.98). Interestingly, our study identified several factors significantly associated with better self-care practices. Employed patients and those with higher education levels (high school and university graduates) were more likely to exhibit good self-care behaviors. This underscores the critical role of socioeconomic factors in shaping health behaviors, as employment not only provides financial resources but also offers psychological and social support essential for recovery [17].

Furthermore, patients experiencing persistent chemotherapy side effects were less likely to practice good self-care, with fatigue and nausea being particularly challenging. Persistent side effects negatively affect patients' ability to manage their health, as highlighted by Ucciero et al.'s systematic review [17], which found that patients with (long-term) side effects demonstrated poorer adherence to self-care behaviors compared to those without such effects. Similarly, our findings revealed that patients with a higher level of independence in meeting their basic needs exhibited significantly better self-care practices (AOR=8.04, 95% CI: 1.95–36.4, p=0.004). This observation aligns with Abu El-Kass S's research [7], which reported a strong correlation between daily functional independence and effective self-care (p<0.001). Addressing the physical and psychological impacts of chemotherapy should therefore be a priority for healthcare providers when designing interventions to improve self-care behaviors.

Additionally, a family history of cancer and knowledge about chemotherapy and self-care were strong predictors of good self-care practices [17,18]. Patients with a family history of cancer may have prior exposure to the challenges of cancer treatment, including side effects and care strategies, which could support their self-care efforts [17,19]. However, most studies, including our own, indicate that patients generally have limited knowledge about chemotherapy and self-care [7,13,15]. This underscores the importance of enhancing patient education on treatment processes and side effects to

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improve their ability to manage their health and quality of life during recovery.

However, this study has certain limitations that should be acknowledged. First, as a cross-sectional survey, it captured a snapshot of patient practices and cannot establish causal relationships between the identified factors and self-care behaviors. Second, participants did not receive direct benefits from the study, which may have limited its immediate impact on their self-care practices. Lastly, the study relied on self-reported data, which may be subject to recall bias or social desirability bias.

5. CONCLUSION

In summary, our findings highlighted the need for targeted interventions that consider employment status, education level, and knowledge of chemotherapy to improve self-care practices. Public health policies should prioritize patient education on chemotherapy and its side effects, especially for patients with lower educational attainment and those in rural areas who may face additional barriers to effective self-care. Future research should explore the long-term effects of self-care interventions and their applicability across diverse patient populations, ensuring all patients are equipped with the resources and knowledge to practice effective self-care throughout colorectal cancer treatment.

SUPPLEMENTARY MATERIALS

Supplementary materials are only available online from: https://doi.org/10.32895/UMP.MPR.9.2.22

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Conflict of interest

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Availability of data and material

Upon reasonable request, the datasets of this study can be available from the corresponding author.

Ethics approval

The study was approved by the Ethics Committee for Biomedical Research, Hong Bang University (Decision No. 36/PCT-HDDD, signed on March 5, 2023).

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