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ORIGINAL RESEARCH

Factors Influencing the Quality of Life in Thai Cancer Patients Receiving Chemotherapy during COVID-19 Pandemic

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Abstract

Background: The Coronavirus disease (COVID-19) pandemic has physical and mental impacts on cancer patients receiving chemotherapy and this can lead to a decline in their quality of life (QoL). Little is currently known about the factors that affect QoL among cancer patients in Thailand during the COVID-19 pandemic.
Purpose: This study aimed to examine the factors influencing the QoL of cancer patients receiving chemotherapy during the COVID-19 pandemic.
Methods: This descriptive cross-sectional study was conducted among 102 cancer patients undergoing chemotherapy recruited using a simple random sampling technique. Four instruments were used; 1) Demographic and clinical characteristics questionnaires; 2) the Thai Hospital Anxiety and Depression Scale (Thai HADS); 3) the Revised Thai version of the Multidimensional Scale of Perceived Social Support (r-Thai MSPSS); and 4) the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30 (EORTC QLQC-30, Thai version). Descriptive statistics and multiple linear regression were used for data analysis.
Results: According to the findings, the study demonstrated that depression had a statistically significant negative influence on QoL, physical functioning, and emotional functioning (B=-2.196, p=0.001; B=-2.630, p<0.001; B=-1.605, p=0.009, respectively). Similarly, anxiety exhibited a negative influence on emotional functioning, cognitive functioning, and social functioning (B= -2.593, p<0.001; B=-1.508, p=0.037). However, social support did not significantly influence QoL.
Conclusion: The study underscores the negative impact of depression and anxiety on QoL, emphasizing the importance of addressing psychological well-being. While social support's influence on QoL was not significant in this context, the research highlights the factors affecting cancer patients' well-being during challenging times. These insights could inform interventions to enhance QoL and patient care.

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1. Introduction

Since the coronavirus disease 2019 (COVID-19) outbreak began in December 2019, it has impacted daily life and medical care. The impact of the pandemic has led to the government implementation of lockdowns, social distancing, and inefficiencies in healthcare systems, causing interruptions in cancer screening during the first months of the pandemic (Waterhouse et al., 2020).

The postponement or cancellation of patient appointments and screening tests will result in fewer newly screened cancer cases and a delay in starting treatments. Approximately 40-50% reduction in new cancer diagnoses across various cancer types was reported compared to previous years (Boettcher et al., 2020). In Thailand, the data found that approximately 16.1% of those diagnosed with cancer delayed treatments, including chemotherapy, surgery, and tissue biopsy. This delay was attributed to patients' anxiety regarding the COVID-19 pandemic. The postponement of treatment extended by approximately 1.6 to 2 months, leading to disease progression in around 22.7% of cases (Sukhokanjanachusak, 2021). As a result of these postponements, cancer patients are at an increased risk of developing severe illnesses following infection with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Grivas et al., 2021). Notably, cancer patients undergoing chemotherapy within two weeks of admission have faced the highest risk of disease severity and mortality if they contract COVID-19 during the pandemic (Tian et al., 2020). Unfortunately, these patients might also be at a high risk of death from COVID-19 compared to non-cancer patients (Sharafeldin et al., 2021; Tian et al., 2020).

Furthermore, the disruption in accessing medical care resulting from the pandemic has emerged as an impact of psychological distress. Some cancer patients had to postpone chemotherapy appointments and follow-ups visits because of the disrupted healthcare systems (Nnaji & Moodley, 2021). This situation could lead to emotional disorders, including anxiety, depression, and loneliness (Brooks et al., 2020). Additionally, the impact of the disease and its treatments cause patients to experience stress and anxiety. Some patients may have feelings of depression when faced with cancer prognosis and its treatment (Dehghan et al., 2020). Recent studies suggest that the prevalence of depression and anxiety among cancer patients worldwide could be higher than among non-cancer patients (Miaskowski et al., 2020; Obispo-Portero et al., 2022; Qian et al., 2020; Salari et al., 2020; Wang et al., 2020). When compounded with emerging illnesses like COVID-19, cancer patients may experience high levels of depression and anxiety (Adzrago et al., 2022).

Social distancing amid a pandemic also leads to mental health disorders, along with the erosion of motivation and self-esteem (Park et al., 2020). Cancer patients may have distanced themselves from their family members and friends due to the risk of contracting COVID-19 infection (Bergerot et al., 2022). This circumstance might have resulted in a decrease in social support from family members and healthcare providers, as Qian et al. (2020) stated, potentially leading to reduced provision of social support and poorer clinical outcomes in these patients (Davis et al., 2021). According to Brooks et al. (2020), cancer patients must adhere to social distancing, which could result in emotional disorders including anxiety, depression, and loneliness. Fortune et al. (2023) also found that the impact on families was a significant predictor of anxiety. Consequently, these factors might affect the QoL of cancer patients (Hofman et al., 2021).

In the literature review, it was found that many factors might affect the QoL in cancer patients. These factors include support from family, friends, and others (Lee & Jeong, 2019; Raz et al., 2016;), and depression-anxiety (Bužgová et al., 2015; Fujisawa et al., 2016; Li et al., 2016). A systematic review of 22 studies demonstrated that social support enhances QoL, particularly on emotional and physical dimensions (Hofman et al., 2021). According to Fujisawa et al. (2016), it was found that patients with depression have experienced lower QoL. Additionally, anxiety has impacted adverse effects on various QoL dimensions (Bužgová et al., 2015).

Amidst the COVID-19 pandemic, numerous studies conducted by Obispo-Portero et al. (2022) and Adzrago et al. (2022) demonstrated a significant increase in anxiety and other psychiatric issues when compared to pre-pandemic levels. Adzrago et al. (2022) specifically identified a heightened likelihood of individuals experiencing mild to severe symptoms of anxiety and depression during the pandemic compared to before. According to Ayubi et al. (2021) and Momenimovahed et al. (2021), cancer patients are experiencing a noteworthy increase in overall depression and anxiety rates. This trend highlights the mental health challenges posed by the pandemic.

During the pandemic in Thailand, cancer patients with weakened immune systems and a high risk of infection have been encouraged to stay home to prevent getting infected with COVID-19. Consequently, cancer patients amidst the pandemic might lack the opportunity to receive treatment or may have to postpone treatments. These situations can cause increased stress and anxiety, which can further worsen QoL. Additionally, the lack of social support from family, friends, and peers due to social distancing can compound the emotional strain and intensify the adverse effects on QoL. Cancer patients may face critical dilemmas that significantly affect their overall QoL due to complicated situations, which could lead to unfavorable therapeutic outcomes. (Ciazynska et al., 2020; Brooks et al., 2020; Heidary et al., 2023).

According to the literature review, limited studies have examined the factors influencing QoL among cancer patients receiving chemotherapy in Thailand during the COVID-19 pandemic. As the literature review indicates, the researcher is particularly interested in studying factors such as anxiety, depression, and social support. Consequently, this study was conducted to investigate the factors influencing the quality of life of cancer patients receiving chemotherapy during the COVID-19 pandemic. The results of this study can contribute to evidence-based practice for providing care to cancer patients in the post COVID-19 period.

2. Methods

2.1 Research design

This study used a cross-sectional design to investigate the levels of anxiety, depression, social support, and quality of life, and the factors influencing the QoL among cancer patients receiving chemotherapy during the COVID-19 pandemic at a university hospital in Bangkok, Thailand.

2.2 Setting and samples

Data were collected during February-May 2022 at a university hospital in Bangkok, Thailand. The participants were chosen by simple random sampling according to the following criteria: (1) age older than 18, diagnosis with Stage 1- 4 cancer; (2) receiving chemotherapy, and (3) having a smartphone and being able to use Android or IOS well. The exclusion criteria were patients with brain metastasis and limitations on smartphone usage.

The sample size was calculated with the G*Power 3.1.9.4 program by setting the effect size at 0.26 based on a previous study (Jeppesen et al., 2021), with power of the test equal to 0.90, significance level at 0.05 and a size of 82 cases. The sample size was increased to 102 participants to account for a possible 20% loss to follow-up.

2.3 Measurement and data collection

Data collection was conducted by the principal researcher and two research assistants, all of whom were affiliated with the chemotherapy ward. The data collection process involved the utilization of online questionnaires administered through Google Forms. Prior to seeking informed consent from participants, the researchers provided detailed explanations regarding the study's objectives, potential benefits, and any associated risks. Participants were also informed of their right to decline participation or withdraw from the study at any time. To ensure consistency, the research team thoroughly briefed the research assistants about the data collection procedures and methods before commencing the data collection process.

The research instrumentation consisted of 4 instruments, including demographic and clinical characteristic questionnaires; the Thai Hospital Anxiety and Depression Scale (Thai HADS); the Revised-Thai version of the Multi-dimensional Scale of Perceived Social Support (r-T-MSPSS); and the EORTC-QLQ-C 30 (version 3) with details as follows.

2.3.1 Demographic and clinical characteristic questionnaires

Demographic and clinical characteristic questionnaires collected data on gender, age, education level, marital status, economic condition, working status, household, cancer diagnosis, and stage of the disease. Moreover, the researcher collected data from medical records, including the type and stage of cancer, and the time of the latest chemotherapy.

2.3.2 The Thai hospital anxiety and depression scale (Thai HADS)

The Thai HADS was translated from the English version of Zigmond and Snaith by Nilchaikowitet and colleagues (Nilchaikovit et al., 1996). The instrument contains 14 items, seven for anxiety assessment and seven for depression assessment. The items were rated on 4-point Likert scales (0-3), with 0 indicating the lowest level of agreement and a 3 indicating the highest level of agreement. For each subscale of anxiety and depression, a score of 8-10 indicated a borderline anxiety or depression while a score of ≥11 was suggestive of clinical anxiety or depression. This instrument was tested in 30 cancer patients before collecting data. Cronbach's alpha reliability coefficient of anxiety and depression for this study were 0.86 (anxiety) and 0.81 (depression), respectively. Additionally, the sensitivity values for the anxiety and depression sub-scales of the Thai HADS were reported as 100% and 85.71% respectively. The specificity values were 86.0% for anxiety and 91.3% for depression (Nilchaikovit et al., 1996).

2.3.3 The revised Thai version of the multi-dimensional scale of perceived social support (r-T-MSPSS)

The r-TMSPSS measures perceptions of multidimensional social support from significant others, family, and friends. Containing 12 questions, the questionnaire was translated into Thai and revised by Wongpakaran et al. (2018). The items were rated on 7-point rating scales, one of which referred to strongly disagree and seven to strongly agree. The total scores ranged from 12-

84 points. For score interpretation, the mean scoring scale ranged from 1 to 2.9, which indicated low support; a score of 3 to 5 indicated moderate support; a score of 5.1 to 7 indicated high support. This instrument was tested in 30 cancer patients before collecting data. In this study, Cronbach's alpha reliability coefficient of the r-TMSPSS was 0.91. The validity test showed a positive correlation with the r-T-MSPSS and the Rosenberg Self-Esteem Scale (RSES) ($r=0.44$, $p<0.001$), and a negative correlation with r-T-MSPSS and TDI ($r=-0.31$, $p<0.001$) (Wongpakaran & Wongpakaran, 2012).

2.3.4 The European organization for research and treatment of cancer quality of life questionnaire-core 30 (EORTC-QLQ-C 30)

The EORTC-QLQ-C 30 version 3 is a standardized cancer-specific 30-item instrument (Aaronson et al., 1993) to measure QoL in cancer patients. Translated into Thai (Silpakit et al., 2006), the instrument contains 30 items that include five functional scales (cognitive, emotional, physical, role, and social functioning), a global health status/QoL scale, eight symptom scales, and a scale on financial difficulties. Each item was rated on a four-point Likert scale according to the symptom scale (not at all, slightly, high, and highest). The scores ranged from 0 to 100. A higher score on the functional scale and the global health status QoL represents good functioning, while a higher score on the symptom scale represents poor functioning. This instrument was tested in 30 cancer patients before collecting data. The Cronbach's alpha reliability coefficient of the EORTC-QLQ-C 30 (Version 3) was 0.93. The validity test revealed that all item-scale correlation coefficients exceeded 0.40, confirming satisfactory item convergent validity.

2.4 Data analysis

Descriptive statistics were used for demographics and clinical characteristics. Quality of life, anxiety, and depression were expressed as means and standard deviations. The collected data were tested for normality using the Shapiro-Wilk test ($p>0.05$). The results indicated that the data did not follow a normal distribution ($p=0.04$ for anxiety, $p<0.01$ for depression, $p=0.02$ for social support, and $p< 0.01$ for QoL). As a result, Spearman's rank correlation coefficient was computed to assess the relationships between the factors (anxiety, depression, and social support) and the domains of QoL. To investigate factors influencing individual domains of quality of life, a multiple linear regression analysis was employed. Separate multivariable linear regression models were used for each domain, resulting in a total of six models. All statistical analyses were performed by IBM SPSS Statistics for Windows Version 28.0 (IBM Corp., Armonk, NY, USA). The significance level of the statistical analysis was set at 0.05.

2.5 Ethical considerations

This study obtained approval from the Research Ethics Review Board of the Faculty of Medicine, Vajira Hospital, Navamindradhiraj University, under approval number 275/64E, dated 21 January 2022. The researchers requested informed consent from participants and clearly described the purposes, research benefits, and risks that might occur with the participants. The researchers also clarified the freedom to refuse or consent to participate in this research project and the ability to withdraw from participating at any time.

3. Results

3.1 Demographic and clinical characteristics

Table 1 shows that the average age was 54.60 (13.08), with 62.7% below the age of 60, and 66.7% were women. About 31.4% had primary education, and 60.8% were married, had sufficient income for expenses (64.7%), and were employed (43.1%). One-third of the participants lived with their spouses and children (30.4%). Most were diagnosed with breast cancer (26.5%). Lastly, more than half of the participants (53.9%) were diagnosed with Stage 3 cancer.

3.2 Anxiety, depression, social support, and QoL of cancer patients receiving chemotherapy

Table 2 indicates that most participants reported that they did not experience anxiety and depression. Regarding social support, most of the participants reported perceiving high levels of support from their families. In terms of quality of life, the functional scales showed that the role functioning score achieved the highest value, indicating good functioning. Conversely, within the symptom scales, the fatigue dimension obtained the highest score, indicating poor functioning.

Table 1. Demographic and clinical characteristics of cancer patients receiving chemotherapy (n=102)

Characteristics	f	(%)
Age (years), Mean(SD)	54.60(13.08)	
<60	64	(62.7)
≥60	38	(37.3)
Gender		
Male	34	(33.3)
Female	68	(66.7)
Education Level		
Primary	32	(31.4)
Secondary	27	(26.4)
Diploma	10	(9.8)
Undergraduate	26	(25.5)
Postgraduate	7	(6.9)
Marital status		
Married/Living Together	62	(60.8)
Single	21	(20.6)
Widowed/Divorced/Separated	19	(18.6)
Income		
Sufficient for Expenses	66	(64.7)
Sufficient with Savings	19	(18.6)
Insufficient for Expenses	17	(16.7)
Occupational Status		
Employed	44	(43.2)
Unemployed	39	(38.2)
Retired	19	(18.6)
Household		
Living with Spouse	30	(29.4)
Living with Spouse and Descendants	31	(30.4)
Living with Descendants/Parents	26	(25.5)
Living Alone	15	(14.7)
Cancer Diagnosis		
Breast Cancer	27	(26.5)
Endometrium/Cervical	18	(17.6)
Colorectal Cancer	17	(16.7)
Head Neck Cancer	15	(14.7)
Lung Cancer	13	(12.8)
Liver Cancer	3	(2.9)
Other Cancer	9	(8.8)
Cancer Stage		
1	3	(2.9)
2	4	(3.9)
3	55	(54.0)
4	40	(39.2)

Table 2. Anxiety, depression, social support, and quality of life of cancer patients (n=102)

Quality of Life (EORTC-QLQ-C 30)	Mean(SD)	f	(%)
Anxiety, Mean(SD)	6.80(3.79)		
No Anxiety		62	(60.8)
Borderline Anxiety		20	(19.6)
Clinical Anxiety		20	(19.6)
Depression, Mean(SD)	5.25(3.66)		
No Depression		67	(65.7)
Borderline Depression		27	(26.5)
Clinical Depression		8	(7.8)

Table 2. Continued

Quality of Life (EORTC-QLQ-C 30)	Mean(SD)	f	(%)
Social Support, Mean(SD)	5.97(0.80)		
Significant Others	6.13(0.93)		
Family	6.26(0.85)		
Friends	5.53(1.06)		
Global Health/QOL Mean(SD)	70.34(19.96)		
Functional Scales Mean(SD)			
Physical Functioning	75.88(19.25)		
Role Functioning	76.31(22.91)		
Emotional Functioning	74.26(16.42)		
Cognitive Functioning	75.98(18.99)		
Social Functioning	70.42(19.61)		
Symptom Scales Mean(SD)			
Fatigue	40.74(19.49)		
Nausea and Vomiting	19.77(21.59)		
Pain	29.08(21.71)		
Dyspnea	23.20(22.39)		
Insomnia	32.68(24.81)		
Appetite Loss	32.68(25.68)		
Constipation	26.14(25.53)		
Diarrhea	8.82(16.20)		
Financial Difficulties	31.70(27.50)		

3.3 Correlations among factors related to QoL

According to the findings (Table 3), anxiety and depression had a negative correlation with Global health/QoL with statistical significance ($p<0.05$). Both anxiety and depression also had a negative correlation with physical functioning; emotional functioning; cognitive functioning; and social functioning with statistical significance.

Table 3. Correlation analysis for factors related to quality of life (n=102)

Factors	*ρ*	95%CI	*p*-value
Global Health/QOL			
Anxiety	-0.39	(-0.55, -0.21)	<0.001*
Depression	-0.48	(-0.62, -0.31)	<0.001*
Perceived Social Support	-0.04	(-0.24, 0.16)	0.672
Physical Functioning			
Anxiety	-0.21	(-0.39, -0.01)	0.035*
Depression	-0.36	(-0.52, -0.17)	<0.001*
Perceived Social Support	-0.07	(-0.27, 0.13)	0.496
Role Functioning			
Anxiety	-0.19	(-0.37, 0.01)	0.061
Depression	-0.29	(-0.46, -0.09)	0.003*
Perceived Social Support	-0.04	(-0.24, 0.16)	0.673
Emotional Functioning			
Anxiety	-0.76	(-0.84, -0.67)	<0.001*
Depression	-0.70	(-0.79, -0.59)	<0.001*
Perceived Social Support	0.15	(-0.06, 0.34)	0.142
Cognitive Functioning			
Anxiety	-0.39	(-0.55, -0.21)	<0.001*
Depression	-0.28	(-0.45, -0.09)	0.004*
Perceived Social Support	0.06	(-0.14, 0.26)	0.559
Social Functioning			
Anxiety	-0.32	(-0.49, -0.12)	0.001*
Depression	-0.27	(-0.45, -0.08)	0.005*
Perceived Social Support	0.02	(-0.18, 0.22)	0.864

Notes: ρ: Spearman's correlation coefficient; (CI) confidence interval; * Significant at *p*-value <0.05

3.4 Factors influencing QoL in cancer patients receiving chemotherapy

As shown in Table 4, the results indicate that depression exhibited a significant negative influence on Global health/QoL. Additionally, depression demonstrated a statistically significant negative impact on physical functioning. Both anxiety and depression were found to affect emotional functioning significantly. Similarly, anxiety exhibited a negative influence on cognitive functioning and social functioning with statistical significance.

Table 4. Multiple linear regression analysis for the factors related to the quality of life

Factors	B	SE(B)	*β*	t	*p*-value
Global Health/QoL[a]					
Anxiety	-1.049	0.641	-0.198	-1.637	0.105
Depression	-2.196	0.662	-0.401	-3.318	0.001*
Perceived Social Support	-4.252	2.556	-0.143	-1.664	0.099
Physical Functioning[b]					
Anxiety	0.554	0.667	0.109	0.831	0.408
Depression	-2.630	0.689	-0.501	-3.819	<0.001*
Perceived Social Support	-2.908	2.660	-0.102	-1.093	0.277
Role Functioning[c]					
Anxiety	0.585	0.839	0.096	0.697	0.487
Depression	-2.277	0.867	-0.364	-2.628	0.010
Perceived Social Support	-2.790	3.347	-0.082	-0.834	0.406
Emotional Functioning[d]					
Anxiety	-2.593	0.384	-0.600	-6.753	<0.001*
Depression	-1.065	0.397	-0.239	-2.684	0.009*
Perceived Social Support	0.175	1.532	0.007	0.114	0.909
Cognitive Functioning[e]					
Anxiety	-1.944	0.664	-0.385	-2.927	0.004*
Depression	-0.277	0.686	-0.053	-0.404	0.687
Perceived Social Support	-0.329	2.650	-0.012	-0.124	0.902
Social Functioning[f]					
Anxiety	-1.508	0.714	-0.289	-2.111	0.037*
Depression	-0.327	0.738	-0.061	-0.443	0.659
Perceived Social Support	-1.059	2.850	-0.036	-0.372	0.711

Notes: B: Regression coefficient, SE(B): Standard error of B, *β*: Standardized regression coefficient
[a]F = 14.235 (p-value <0.001), R-squared = 0.306, Adjusted R-squared = 0.284; [b]F = 7.208 (p-value <0.001), R-squared = 0.182, Adjusted R-squared = 0.157; [c]F = 3.236 (p-value = 0.026), R-squared = 0.091 Adjusted R-squared = 0.063; [d]F = 53.635 (p-value <0.001), R-squared = 0.624, Adjusted R-squared = 0.612; [e]F = 7.020 (p-value < 0.001), R-squared = 0.178, Adjusted R-squared = 0.153; [f]F = 3.968 (p-value = 0.010), R-squared = 0.109, Adjusted R-squared = 0.082. * Significant at *p*-value <0.05

4. Discussion

The aim of this study was to investigate the factors influence the QoL among cancer patients receiving chemotherapy during the COVID-19 pandemic. The results showed a low prevalence of anxiety and depression, which is consistent with the research conducted by Aminisani et al. (2017) among colorectal cancer survivors. However, the scores differed from a study in Ethiopia (Wondie et al., 2020), which reported higher mean scores for anxiety and depression. This difference could possibly be attributed to the fact that the cancer patients in the recent study had high social support from family members, healthcare providers, and friends, as indicated by the elevated perceived social support scores.

Concerning perceived social support among cancer patients, the results indicated varying levels of perceived social support as follows: family, significant others, and friends, with findings consistent with previous studies. The study by Zhang et al. (2020) on Chinese patients diagnosed with oral cancer reported high perceived social support in cancer patients, as did studies involving patients referring to Sayed Al-Shohada Hospital, Iran (Naseri & Taleghani, 2012). Similarly, the study of Faghani et al. (2014) in cancer survivors in Iran found that participants perceived substantial social support from family, significant others, and friends. Additionally, a study with Thai women recovering from breast cancer treatment also reported a high level of social support (Sumdaengrit & Limthongkul, 2014). Aligning with these findings, a study conducted in Indonesia (Sinaga et al., 2022) found that factors involving support for older people had a high score in the social domain due to the majority of older people living with a spouse or family. This living arrangement allows older individuals to receive attention and spend time with family, reducing feelings of loneliness. These findings collectively suggest that prior research consistently generated elevated levels of perceived social support, wherein family support frequently involves emotions such as concern, love, attachment, and sympathy. These emotions contribute to enhancing patients' mental stability and fostering a sense of security. The strong emphasis on mutual assistance within Thai society, whether provided by family, significant others like healthcare providers, friends, or community members, is likely a contributing factor to the highlighted high levels of social support observed in this study.

In terms of QoL results from this study, the mean of global QoL was found to be similar to those of Danish patients with cancer who were studied by Jeppesen et al. (2021) during the COVID-19 pandemic. This similarity might be attributed to the participants' characteristics, such as mostly living with a spouse and being diagnosed with breast cancer. Consequently, both studies suggest a parallel trend in QoL scores among breast cancer patients. However, contrasting results emerged from a study conducted by Ciążyńska et al. (2020) in Poland. The outcomes of this Polish study revealed that the global health/QoL and other dimensions of QoL for Polish cancer patients were comparatively lower than the QoL observed among Thai cancer patients in our study. This variation could potentially be attributed to the fact that data collection took place in March and April 2020, a time when the impact of COVID-19 was particularly severe in Poland. In alignment with the study in Vietnam, it was discovered that the average QoL was relatively reduced. This decline was due to the lack of vaccination coverage in Vietnam, which led to the central quarantine, social distancing, and lockdowns. These factosr could contribute to the fear of COVID-19 and distress, ultimately impacting QoL. (Nguyen et al., 2022).

Nevertheless, in the symptom scales, the scores exhibited a similarity. This similarity may potentially find its origin in a shared characteristic among patients who were in stages 3 and 4 of cancer progression and undergoing chemotherapy. Patients in advanced stages of cancer often experience similar symptoms, which can lead to the manifestation of consistent symptoms across different populations of cancer patients.

For the factors predicting QoL, anxiety, and depression negatively influenced emotional functioning, and depression negatively influenced the Global health/QOL as well, possibly due to the hardships and stresses experienced by the patients. Patients reported stress, and anxiety, from being quarantined at home and being concerned about infection. This is in line with a study by Brooks et al. (2020) which also found that patients who were placed under home quarantine had a higher risk of developing anxiety and depression. It was demonstrated that the cause of anxiety and depression increased because the patients worried about becoming infected with COVID-19. These results are consistent with a study by Aminisani et al. (2017) which revealed that depression and anxiety negatively influenced QoL and survival rates in colorectal cancer patients. In addition, a study by Ramasubbu et al. (2021) illustrated that depression also harmed QoL among colorectal cancer patients in Japan. A study in Vietnam also stated that depression had a similar impact on QoL in lung cancer patients (Khue et al., 2019) confirmed that depression was very highly correlated and able to predict QoL. Interestingly, social support could not predict QoL which was different from previous studies (Hofman et al., 2021; Khue et al., 2019; Li et al., 2016). This can be explained in that majority of the participants might have had the same level of social support scores that could not predict the QoL as the previous studies.

5. Implications and limitations

The findings of this study are important for enhancing the QoL for cancer patients. Understanding related factors that impact the QoL among these patients is crucial.This understanding can guide professional nurses and healthcare teams in offering screenings for anxiety and depression, as well as implementing intervention programs customized to manage these psychological aspects. The overarching aim is to elevate the quality of life for cancer patients undergoing chemotherapy..

This study has limitations. The data for this study were collected from a single hospital in Bangkok, which may not be representative of all regions in Thailand. Therefore, the study's findings are not generalizable to the entire population. Future research could conduct the study in collaboration with multiple hospitals across different regions of Thailand. This would provide a more diverse and comprehensive dataset that better represents the entire population.

6. Conclusion

The finding concluded that depression had negative influence on global health/QoL, physical, emotional, cognitive, and social functioning. Anxiety similarly contributed to negative effects on emotional, cognitive, and social functioning. These findings emphasize the need for comprehensive psychological support to alleviate anxiety and depression among cancer patients, as well as interventions targeting functional domains to enhance overall quality of life. For future research, subsequent studies could explore the effectiveness of psychological interventions in alleviating anxiety and depression among cancer patients. For long-term research, examining how consistent emotional support influences diverse aspects of patients' lives, as well as investigating the relationship between mental well-being and treatment outcomes, could provide a more comprehensive perspective.

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Author contribution

All authors (SJ, AV) contributed significantly throughout the development of the manuscript, including its conception, design, data analysis, writing, and revision.

Conflict of interest

There is no conflict of interest in this study.

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