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# Depression and quality of life among cancer patients undergoing chemotherapy

## Abstract

**Background.** Cancer is a leading cause of death globally and in Indonesia. Cancer itself and the treatment often cause physical and psychological changes that affect patients' quality of life (QoL). This study aimed to determine the level of depression and QoL in cancer patients.

**Material and methods.** This cross-sectional study involved 94 respondents who had chemotherapy in a public hospital in Indonesia. The study was conducted from January to April 2018. The depression level was assessed using the Beck Depression Inventory II (BDI II) while patients' QoL was measured using the EORTC QLQ-C30. Data were analysis using Pearson correlation.

**Results.** The present study found that the mean score of depression was  $8.65 \pm 6.53$ , which reflected their normal condition. The global QoL for patients with cancer in this study was high. The levels of depression and QoL in the study were contrary to previous studies. Fatigue and pain were the top two highest scores in the symptom scales. The study indicates moderate negative correlation between global QoL and depression. There is a need to develop intervention and management of patients undergoing chemotherapy to maintain patients' QoL and psychological aspects of care.

*Palliat Med Pract 2020; 4, 1: 1–6*

**Key words:** cancer, chemotherapy, depression, Indonesia, quality of life

## Introduction

Cancer is a global health problem, causing 9.6 million deaths in 2018 alone [1]. The International Agency on Cancer Research reports that there were 14.1 million new cases, of which 57% occurred in less developed countries including parts of Africa and Asia [2]. Furthermore, the report also states that cancer incidence is particularly high in Indonesia, with 299,700 new cases of cancer in Indonesia and 194,500 cancer-related deaths recorded in 2012. Most cancer patients present to health care providers at the late stage of the disease [3]. This was supported by

one study conducted at several Primary Health Care Centres in one Indonesian province, which found 80% of newly diagnosed cancer patients presented in advanced stages [4].

The process of cancer and its treatment have impacts on patients that include physical and emotional functioning. Studies from western countries reported the physical impact of advanced cancer on the individual, including the high prevalence of pain [5, 6], fatigue, weakness, and appetite loss [7–9]. The reduction in physical functioning and the burden of multiple symptoms due to cancer can result in poorer quality of life (QoL) [10]. In terms of psychological functioning,

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Palliative Medicine in Practice 2020; 14, 1, 1–6

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DOI: 10.5603/PMPI.2020.0002

depression is a common comorbidity among cancer patients, affecting 10–22% of this population [11, 12]. Depression and anxiety disorders are frequently experienced by advanced cancer patients who are receiving palliative care [12, 13]. Nevertheless, a number of studies have suggested that depression among cancer patients in palliative care is under-recognised by healthcare professionals [13, 14].

QoL is defined by the World Health Organisation as an individual's perception of life, values, standards, and interest in the framework of culture. Symptoms experienced by patients with cancer, including physical and psychological symptoms, affect their QoL [15]. Evaluating QoL and depression is an increasingly important issue in cancer patients. QoL and depression, particularly among cancer patients, is increasingly being studied in Indonesia. However, available studies focus only on one of those two aspects. No studies have yet been published that investigate depressive symptoms and QoL among cancer patients in Indonesia. Therefore, the aims of this study were: 1) to assess level of depression and health-related QoL of cancer patients; and 2) to evaluate the association of depressive symptoms and QoL. The current study, which investigated depressive symptoms and QoL in Indonesia, may serve as a bridge for better cancer management in clinical practice.

## Patients and methods

This cross-sectional study involved a total of 94 cancer patients. The study was conducted in a public hospital. Ethical approval was provided by the organisation (No. 137/EP-FKIK-UMY/II/2018). The study was conducted in accordance with the Declaration of Helsinki. Patients diagnosed with stage 3 or 4 cancer and undergoing chemotherapy, aged 18 years or older, were invited to participate in the study. Participants were provided with a participant information sheet describing the purpose of the study, their right to confidentiality, and their right to withdraw at any time without consequence.

Before completing the questionnaires, participants were asked to complete a consent form. This study utilised three questionnaires: a standardised sociodemographic questionnaire, as well as validated Indonesian versions of the European Organisation for Research and Treatment of Cancer QoL Questionnaire (EORTC QLQ-C30) and the Beck Depression Inventory-II (BDI-II). The sociodemographic questionnaire sought information about the participant's age, education, employment status, religion, and frequency of conducting daily worship. Disease-related information was also collected (i.e. stage of cancer, time of diagnosis, and cancer treatment). These questionnaires

were administered by the researchers during the participants' visit to the oncology unit at the hospital. This also provided participants with the opportunity to ask any questions of the researchers that they might have had about the study.

The EORTC QLQ-C30 was used to measure patients' QoL because this instrument has been confirmed to be reliable and valid for cancer populations in multicultural settings [16, 17]. As the name implies, the EORTC QLQ-C30 consists of 30 questions categorised into global health status/QoL and two scales: functional scales (i.e. physical, role, emotional, cognitive and social functions) and physical symptom scales (i.e. fatigue, nausea and vomiting, pain, dyspnoea, insomnia, loss of appetite, constipation, and diarrhoea). Participant responses are recorded via a modified Likert-type scale with anchors 1 (*not at all*), 2 (*a little*), 3 (*quite a bit*), and 4 (*very much*) for each item; except for the global health status/QoL scale, which has response options ranging from 1 (*very poor*) to 7 (*excellent*). Higher scores represent a better QoL for functional scales whereas higher scores in symptom scales mean worse QoL.

Depression was measured using the BDI-II, which gives a minimum score of 0 and a maximum score of 63. Total scores are categorised into the following six categories: normal (1–10), mild mood disturbance (11–16), borderline clinical depression (17–20), moderate depression (21–30), severe depression (31–40), and extreme depression (> 40). All the instruments were translated into Bahasa Indonesia and reliability was tested using Cronbach's alpha at 0.90 for the EORTC QLQ-30 and 0.90 for the BDI-II.

## Statistical analysis

Sociodemographic and disease-related information were calculated using descriptive statistics. The results are presented as percentage and mean  $\pm$  standard deviation. The continuous variables were tested for normalcy using the Kolmogorov test. The parametric Pearson test was used to test correlation of QoL and depression of patients. A 5% level of statistical significance was used for variables ( $P < 0.05$ ). Data were analysed using IBM SPSS for windows (version 23.0; SPSS Inc., Chicago, IL, USA).

## Results

The researchers recruited 111 patients, 11 of whom declined to participate and six did not complete the questionnaires; as a result, 94 patients were included in the analysis (the response rate was 84.7%). Table 1 illustrates the sociodemographic characteristics and disease-related information of the participants. The

**Table 1. Demographic characteristics of patients**

Demographic characteristics	f (%)	Mean $\pm$ SD
Age (Mean $\pm$ SD) (Min–Max)		44.72 $\pm$ 11.302 20–75
Gender		
Male	19 (20.2%)	
Female	75 (79.8%)	
Religion		
Islam	86 (91.5%)	
Christian	2 (2.1%)	
Catholic	1 (1.1%)	
Hindi	5 (5.3%)	
Education level		
None	20 (21.3%)	
Primary school	38 (40.4%)	
Middle school	19 (20.2%)	
Higher education	17 (18.1%)	
Employment status		
Not working	76 (80.9%)	
Working	18 (19.1%)	
Cancer stadium		
Stadium III	78 (83%)	
Stadium IV	16 (17%)	
Type of cancer		
Breast cancer	54 (57.4%)	
Ovarian cancer	8 (8.5%)	
Nasopharyngeal cancer	14 (14.9%)	
Cervix cancer	7 (7.4%)	
Colon cancer	6 (6.4%)	
Others	5 (5.4%)	
Length of diagnosis		
1–3 months	11 (11.7%)	
> 3 months	83 (88.3%)	
Frequency of religious worship		
Always	91 (96.8%)	
Often	2 (2.1%)	
Sometimes	1 (1.1%)	
Never	0 (0%)	

majority of the patients were female (79%), aged 20–75 years, with a mean age of 44.72 years, not working (76%), and were primary school graduates (64%). As shown in Table 1, most of the participant were Muslim (91%), with the remaining 6% being Hindi, Christian, and Catholic. The majority of respondents regularly conducted worship (95%). Most of the participants (86%) were diagnosed cancer more than three months previously, and all of the participants underwent chemotherapy.

The mean values of EORTC QLQ-C30 scores for all scales and items are presented in Table 2. The study found that the mean scores for global health status/QoL tended to be toward the higher end of the scale. Similarly, the mean score for cognitive

functioning was highest, whereas the mean score for physical functioning was the lowest, as compared to other subscales in the functional scale. Fatigue, pain, and insomnia attained the three highest mean scores in the symptom scale. As shown in Table 2, the higher global QoL and functional scale scores reflect a higher QoL, while the higher score in the symptom scales reflect a deterioration in the QoL. Table 2 identifies the mean score for depression: 8.65  $\pm$  6.531. This score is consistent with mild mood disturbance.

The data presented in Table 3 show that global health status, and the scores for most subscales in the function and symptom scales (except for cognitive subscale and diarrhoea), are significantly associated with depression. The higher scores for global health status and functioning are correlated with the lower scores for depression, whereas the higher scores in the symptom scales reflect higher levels of depression.

## Discussion

In this study the reference data of the quality of life and level of depression in cancer patients in Indonesia were presented. It was found that the depression level of the patients was considered as mild mood disturbance. The majority of respondents in this study were women. The findings of this study are consistent with those of previous studies. For example, a systematic review investigating depression in women with breast cancer found that most studies tended to show mild levels of depression among women with breast cancer [18].

The average depression score reflects that patients with cancer in the present study are considered normal. This finding is contrary to previous studies, in Indonesia and in other countries, which indicate mild to higher levels of depression. For example, a study by Widiyono and Setiyarini found that the level of depression among cancer patients in two Indonesian public hospitals ranged from mild to severe, with more than half of the patients reporting moderate to severe depression [19]. In addition, a systematic review investigating the prevalence of long-term depression among a sample of 12,499 patients after being diagnosed with breast cancer found that depressive symptoms ranged from 9.4% to 66.1% [20].

The score of depression in the present study was considered normal; this could be influenced by several factors, including the length of diagnosis and spirituality. The majority of patients in our study were diagnosed with cancer more than three months previously and probably had been able to accept the disease experienced at this time. This is

**Table 2. Status of quality of life and depression among patients with cancer**

Variable		Mean ± SD	Min–Max
Domain QoL	Overall QoL and global health	83.59 ± 27.229	0–100
Function scale	Physical function	78.87 ± 20.754	0–100
	Role function	79.26 ± 25.363	0–100
	Emotional function	86.44 ± 15.697	33–100
	Cognitive function	93.97 ± 11.160	33–100
	Social function	85.11 ± 22.596	0–100
Symptoms scale	Fatigue	32.03 ± 19.48	0–100
	Nausea and vomiting	14.50 ± 20.74	0–100
	Pain	29.08 ± 19.19	0–100
	Dyspnoea	5.32 ± 13.21	0–66.7
	Insomnia	26.95 ± 32.89	0–100
	Appetite loss	24.83 ± 28.89	0–100
	Constipation	12.41 ± 23.93	0–100
	Diarrhoea	3.55 ± 10.333	0–33
	Financial problems	26.95 ± 30.24	0–100
Depression		8.09 ± 5.95	0–30

**Table 3. Correlation of quality of life and depression**

		Depression
QoL	Global health status/QoL	–0.310 (p : 0.002)*
Function scale	Physical	–0.406 (p : 0.000)*
	Role	–0.324 (p : 0.001)*
	Emotional	–0.571 (p : 0.000)*
	Cognitive	–0.161 (p : 0.121)
	Social	–0.403 (p : 0.000)*
Symptoms scale	Fatigue	0.516 (p : 0.000)*
	Nausea and vomiting	0.131 (p : 0.210)
	Pain	0.395 (p : 0.000)*
	Dyspnoea	0.003 (p : 0.003)*
	Insomnia	0.463 (p : 0.000)*
	Appetite loss	0.296 (p : 0.004)*
	Constipation	0.189 (p : 0.067)
Diarrhoea	0.064 (p : 0.541)	
Financial problem		0.462 (p : 0.000)*
Total QoL		0.332 (p : 0.001)*

supported by findings from a study conducted by Bai et al., showing that within one to three months after being diagnosed with advanced cancer the patients experienced depression, existential crisis, and decreased QoL but returned to normal six months after cancer diagnosis [21]. Another factor that we might speculate influenced depression in this study is spirituality. A study among cancer survivors shows that meaning/peace as part of spirituality can protect cancer survivors from depression [22]. Although in the present study, the respondents had a different cancer trajectory, they reported being engaged in regular acts of worship. This might suggest that patients in this study had surrendered themselves to God, which might include trusting in the inevitability of their treatment.

The study indicates a generally positive QoL among cancer patients in this study, as supported by the scores for global QoL/health status and most subscales in the functional scale, especially in terms of cognitive functioning. The scores on the symptoms scale, however, particularly for fatigue, pain, insomnia, loss of appetite, and financial difficulty, were high. The findings of this study support those of previous studies. For example, a study among cancer patients receiving chemotherapy in a public hospital in Bandung, Indonesia, scored highest for QoL in cognitive function, while the highest average scores report by cancer patients were for the symptoms of loss of appetite and fatigue [23]. Another study in Kuwait found that a sample of 45 advanced cancer patients reported issues with similar symptoms, such as pain,

fatigue, anorexia, weight loss, and dyspnoea [24]. Such symptoms are commonly experienced by cancer patients and can be caused either by the disease itself or the treatment [25].

In addition to physical symptoms, our study also found that the burden of financial problems was a significant issue for these patients, which is similar to the findings of previous studies in Indonesia and India [10, 26]. A study comparing symptoms among patients with cancer in Indonesia and the Netherlands found that patients from Indonesia experienced greater financial problems [26]. The financial problems in the study might reflect the general economic trend in Indonesia where approximately 75% of Indonesian citizens lack access to health insurance, thus being required to pay for healthcare using their own money.

The result of the present study replicates the findings of previous studies about the relationship between QoL and depression. The study found that global health status and most functional were significantly correlated with depression, except cognitive and diarrhoea. A moderate negative correlation between global health status, the functional scale, and depression was indicated in the study. These findings are similar to the previous studies of Mystakidou et al. (2013) and Polat et al. (2014), in that individuals with higher QoL had lower levels of depression [27, 28].

Nevertheless, several limitations can be identified in this study. The cross-sectional design of this study predisposes the results to some level of respondent bias and the possibility of social acceptability bias. In addition, the sample was drawn from a single state, with the majority of the sample being female, and because the stage of cancer is not homogenous, one should be cautious about generalising the findings of this study to larger populations. The researcher was also present with the patients during data collection; as such, the face-to-face nature of data collection might introduce another possible source of bias.

## Conclusions

The findings of the study demonstrate that cancer patients are considered normal in terms of depression, and in general they were toward the higher end of the scale, which reflected higher QOL. In relation to symptoms, similar to cancer patients in other countries, Indonesian patients with cancer experience pain, fatigue, and insomnia. The similarity of these patients' symptoms indicate that symptoms experienced by cancer patients are not culturally specific. In summary, this study has demonstrated that depression is significantly associated with poor health-related QoL in terms of symptoms. These findings suggest the need

to develop specific services aimed at those undergoing chemotherapy to target symptom screening, symptom management, and to maintain the patient's QoL and psychological well-being.

## Conflict of interests

Authors declare no conflict of interest.

## Funding

This study has no funding.

## References

1. World Health Organization. Cancer, 2018.
2. IARC. Globocan 2008: country fact stat: International Agency on Research Cancer; 2008 [updated 2008]. <http://globocan.iarc.fr/factsheet.asp>.
3. Soebadi RD, Tejawinata S. Indonesia: status of cancer pain and palliative care. *J Pain Symptom Manage*. 1996; 12(2): 112–115, doi: [10.1016/0885-3924\(96\)00090-5](https://doi.org/10.1016/0885-3924(96)00090-5), indexed in Pubmed: [8754994](https://pubmed.ncbi.nlm.nih.gov/8754994/).
4. Fles R, Wildeman MA, Sulistiono B, et al. Knowledge of general practitioners about nasopharyngeal cancer at the Puskesmas in Yogyakarta, Indonesia. *BMC Med Educ*. 2010; 10: 81, doi: [10.1186/1472-6920-10-81](https://doi.org/10.1186/1472-6920-10-81), indexed in Pubmed: [21087467](https://pubmed.ncbi.nlm.nih.gov/21087467/).
5. van den Beuken-van Everdingen MHJ, de Rijke JM, Kessels AG, et al. Prevalence of pain in patients with cancer: a systematic review of the past 40 years. *Ann Oncol*. 2007; 18(9): 1437–1449, doi: [10.1093/annonc/mdm056](https://doi.org/10.1093/annonc/mdm056), indexed in Pubmed: [17355955](https://pubmed.ncbi.nlm.nih.gov/17355955/).
6. Yamagishi A, Morita T, Miyashita M, et al. Pain intensity, quality of life, quality of palliative care, and satisfaction in outpatients with metastatic or recurrent cancer: a Japanese, nationwide, region-based, multicenter survey. *J Pain Symptom Manage*. 2012; 43(3): 503–514, doi: [10.1016/j.jpainsymman.2011.04.025](https://doi.org/10.1016/j.jpainsymman.2011.04.025), indexed in Pubmed: [22337350](https://pubmed.ncbi.nlm.nih.gov/22337350/).
7. Abu-Saad Huijjer H, Abboud S, Doumit M, et al. Health-related quality of life among breast cancer patients in Lebanon. *Eur J Oncol Nurs*. 2012; 16(5): 491–497, doi: [10.1016/j.ejon.2011.11.003](https://doi.org/10.1016/j.ejon.2011.11.003), indexed in Pubmed: [22257429](https://pubmed.ncbi.nlm.nih.gov/22257429/).
8. Halawi R, Aldin ES, Baydoun A, et al. Physical symptom profile for adult cancer inpatients at a Lebanese cancer unit. *Eur J Intern Med*. 2012; 23(8): e185–e189, doi: [10.1016/j.ejim.2012.08.018](https://doi.org/10.1016/j.ejim.2012.08.018), indexed in Pubmed: [23009863](https://pubmed.ncbi.nlm.nih.gov/23009863/).
9. Teunissen SC, Wesker W, Kruitwagen C, et al. Symptom prevalence in patients with incurable cancer: a systematic review. *J Pain Symptom Manage*. 2007; 34(1): 94–104, doi: [10.1016/j.jpainsymman.2006.10.015](https://doi.org/10.1016/j.jpainsymman.2006.10.015), indexed in Pubmed: [17509812](https://pubmed.ncbi.nlm.nih.gov/17509812/).
10. Nayak MG, George A, Vidyasagar MS, et al. Quality of Life among Cancer Patients. *Indian J Palliat Care*. 2017; 23(4): 445–450, doi: [10.4103/IJPC.IJPC\\_82\\_17](https://doi.org/10.4103/IJPC.IJPC_82_17), indexed in Pubmed: [29123353](https://pubmed.ncbi.nlm.nih.gov/29123353/).
11. Huang X, Naghdy F, Naghdy G, et al. The Combined Effects of Adaptive Control and Virtual Reality on Robot-Assisted Fine Hand Motion Rehabilitation in Chronic Stroke Patients: A Case Study. *J Stroke Cerebrovasc Dis*. 2018; 27(1): 221–228, doi: [10.1016/j.jstrokecerebrovasdis.2017.08.027](https://doi.org/10.1016/j.jstrokecerebrovasdis.2017.08.027), indexed in Pubmed: [28919312](https://pubmed.ncbi.nlm.nih.gov/28919312/).
12. Wilson KG, Chochinov HM, Skirko MG, et al. Depression and anxiety disorders in palliative cancer care. *J Pain Symptom Manage*. 2007; 33(2): 118–129, doi: [10.1016/j.jpainsymman.2006.07.016](https://doi.org/10.1016/j.jpainsymman.2006.07.016), indexed in Pubmed: [17280918](https://pubmed.ncbi.nlm.nih.gov/17280918/).

13. Teunissen SC, de Graeff A, Voest EE, et al. Are anxiety and depressed mood related to physical symptom burden? A study in hospitalized advanced cancer patients. *Palliat Med.* 2007; 21(4): 341–346, doi: [10.1177/0269216307079067](https://doi.org/10.1177/0269216307079067), indexed in Pubmed: [17656411](https://pubmed.ncbi.nlm.nih.gov/17656411/).
14. Irving G, Lloyd-Williams M. Depression in advanced cancer. *Eur J Oncol Nurs.* 2010; 14(5): 395–399, doi: [10.1016/j.ejon.2010.01.026](https://doi.org/10.1016/j.ejon.2010.01.026), indexed in Pubmed: [20299283](https://pubmed.ncbi.nlm.nih.gov/20299283/).
15. Heydarnejad M, Hasanpour D, Solati D. Factors affecting quality of life in cancer patients undergoing chemotherapy African Health Sciences. 2011; 11(2).
16. Tavoli A, Montazeri A, Roshan R, et al. Depression and quality of life in cancer patients with and without pain: the role of pain beliefs. *BMC Cancer.* 2008; 8: 177, doi: [10.1186/1471-2407-8-177](https://doi.org/10.1186/1471-2407-8-177), indexed in Pubmed: [18570676](https://pubmed.ncbi.nlm.nih.gov/18570676/).
17. Velenik V, Secerov-Ermenc A, But-Hadzic J, et al. Health-related quality of life assessed by the EORTC QLQ-C30 questionnaire in the general slovenian population. *Radiology and Oncology.* 2017; 51(3): 342–350, doi: [10.1515/raon-2017-0021](https://doi.org/10.1515/raon-2017-0021).
18. Jafari A, Goudarzian AH, Bagheri Nesami M. Depression in Women with Breast Cancer: A Systematic Review of Cross-Sectional Studies in Iran. *Asian Pac J Cancer Prev.* 2018; 19(1): 1–7, doi: [10.22034/APJCP.2018.19.1.1](https://doi.org/10.22034/APJCP.2018.19.1.1), indexed in Pubmed: [29373872](https://pubmed.ncbi.nlm.nih.gov/29373872/).
19. Widiyono S, Setiyarini S, Effendy C. Tingkat depresi pada pasien Kanker di RSUP Dr. Sardjito, Yogyakarta, dan RSUD Prof. Dr. Margono Soekarjo, Purwokerto: Pilot Study. *Indonesian Journal of Cancer.* 2017; 11(4).
20. Maass SW, Roorda C, Berendsen AJ, et al. The prevalence of long-term symptoms of depression and anxiety after breast cancer treatment: A systematic review. *Maturitas.* 2015; 82(1): 100–108, doi: [10.1016/j.maturitas.2015.04.010](https://doi.org/10.1016/j.maturitas.2015.04.010), indexed in Pubmed: [25998574](https://pubmed.ncbi.nlm.nih.gov/25998574/).
21. Bai M, Lazenby M, Jeon S, et al. Exploring the relationship between spiritual well-being and quality of life among patients newly diagnosed with advanced cancer. *Palliat Support Care.* 2015; 13(4): 927–935, doi: [10.1017/S1478951514000820](https://doi.org/10.1017/S1478951514000820), indexed in Pubmed: [24992001](https://pubmed.ncbi.nlm.nih.gov/24992001/).
22. Gonzalez P, Castañeda SF, Dale J, et al. Spiritual well-being and depressive symptoms among cancer survivors. *Support Care Cancer.* 2014; 22(9): 2393–2400, doi: [10.1007/s00520-014-2207-2](https://doi.org/10.1007/s00520-014-2207-2), indexed in Pubmed: [24691887](https://pubmed.ncbi.nlm.nih.gov/24691887/).
23. Suwendar S, Fudholi A, Andayani T, et al. editors. Analisis Outcome Humanistik Pada Pasien Kanker Serviks Rawat Inap Selama Menjalani Kemoterapi Di Rumah Sakit Umum Pusat Dr. Hasan Sadikin Bandung Dengan Menggunakan Kuesioner EORTC QLQ-C30 Versi 3. SNAPP: Kesehatan (Kedokteran, Kebidanan, Keperawatan, Farmasi, Psikologi). 2015 Indonesia.
24. Alshemmari S, Ezzat H, Samir Z, et al. Symptom burden in hospitalized patients with cancer in kuwait and the need for palliative care. *Am J Hosp Palliat Care.* 2010; 27(7): 446–449, doi: [10.1177/1049909110362438](https://doi.org/10.1177/1049909110362438), indexed in Pubmed: [20228359](https://pubmed.ncbi.nlm.nih.gov/20228359/).
25. Solano JP, Gomes B, Higginson IJ. A comparison of symptom prevalence in far advanced cancer, AIDS, heart disease, chronic obstructive pulmonary disease and renal disease. *J Pain Symptom Manage.* 2006; 31(1): 58–69, doi: [10.1016/j.jpainsymman.2005.06.007](https://doi.org/10.1016/j.jpainsymman.2005.06.007), indexed in Pubmed: [16442483](https://pubmed.ncbi.nlm.nih.gov/16442483/).
26. Effendy C, Vissers K, Osse BHP, et al. Comparison of problems and unmet needs of patients with advanced cancer in a European country and an Asian country. *Pain Pract.* 2015; 15(5): 433–440, doi: [10.1111/papr.12196](https://doi.org/10.1111/papr.12196), indexed in Pubmed: [24666769](https://pubmed.ncbi.nlm.nih.gov/24666769/).
27. Mystakidou K, Parpa E, Panagiotou I, et al. Caregivers' anxiety and self-efficacy in palliative care. *Eur J Cancer Care (Engl).* 2013; 22(2): 188–195, doi: [10.1111/ecc.12012](https://doi.org/10.1111/ecc.12012), indexed in Pubmed: [22989256](https://pubmed.ncbi.nlm.nih.gov/22989256/).
28. Polat U, Arpacı A, Demir S, et al. Evaluation of quality of life and anxiety and depression levels in patients receiving chemotherapy for colorectal cancer: impact of patient education before treatment initiation. *J Gastrointest Oncol.* 2014; 5(4): 270–275, doi: [10.3978/j.issn.2078-6891.2014.034](https://doi.org/10.3978/j.issn.2078-6891.2014.034), indexed in Pubmed: [25083300](https://pubmed.ncbi.nlm.nih.gov/25083300/).