Quality of life in cancer patients – A systematic review

Vlora Ejupi[1], Nexhmije Gori[2], Astrit M. Gashi[3]

[1]Clinic of Hematology, University Clinical Center of Kosovo, Pristina, Kosovo
[2]Clinic of Neonatology, University Clinical Center of Kosovo, Pristina, Kosovo
[3]Clinic of Obstetrics and Gynaecology, University Clinical Centre of Kosovo, Prishtina, Kosovo

ABSTRACT

Background. Cancer is a significant health problem worldwide. Globally, cancer is one of the most common causes of morbidity and mortality and this is predicted to increase by at least 70% by 2030. The aim of this systematic review was to identify the state of the scientific evidence regarding the quality of life in patients. with cancer.

Methods. The literature was searched in the Scopus, Web of Science and Pub Med databases, the literature related to the quality of life in cancer patients. Keywords are combined with Boolean operators (AND/OR). There are sixty studies were included in the current review.

Results. The social and physical domains were the most endangered, while the environment was the most preserved. Comparison between scores showed a significant difference only in terms of self-rated health. The highest scores were found in the group with the best assessment of their health. The results suggest that self-rated health can be a reliable predictor of quality of life in these patients, being important for further studies on this topic.

Discussion. The findings of this review indicate low QoL among cancer patients on anticancer therapy. Functional well-being was most affected among cancer patients, followed by emotional well-being among cancer patients on cancer therapy. From our study, it was found that the overall quality of life of the patients was influenced by the education and professional status of the patient. Unemployed and illiterate patients have worse QoL than employed and educated patients.

Keywords: quality of life, patient, cancer, chemotherapy, symptoms

INTRODUCTION

Cancer is a major health problem worldwide. Globally, cancer is one of the most common causes of morbidity and mortality and this is projected to increase by at least 70% by 2030 [1]. Inadequate symptom management can prevent an individual from performing daily activities. Treating symptoms will help alleviate suffering and improve quality of life [2]. Symptoms have a major impact on the quality of life in cancer patients. Greater symptom burden has been associated with higher levels of emotional distress and poorer physical and social functioning [3] Thus, effective symptom management may improve quality of life in patients with cancer [4].

Anticancer therapy causes personal, mental, and emotional distress among individuals with cancer, affecting their overall quality of life. Quality of life research findings provide information about the effect of disease and its treatment on functioning and well-being, the recognition of common problems, and the design of appropriate approaches to solving these issues. These findings help to assess the effect of chemotherapy on patients' well-being and to predict response to therapy [5].

A cancer diagnosis can be devastating and deciding on the right treatment can be complicated and scary. Patients are asked to consider factors including mortality from disease and the potential for acute and chronic morbidity from treatment. Appropriate decision-making requires a satisfactory patient understanding of these treatment choices, which include potential benefits and harms [6]. The primary focus of cancer treatment has always been to increase overall and disease-free survival; however, quality of life is recognized as an important ultimate goal [7].

Best practices for the management of advanced cancer are a global health concern, especially in de-

veloping countries [8]. When curative strategies are exhausted, the focus of cancer care shifts to preserving quality of life and prolonging survival [9]. Studies show that 20 to 50% of patients with advanced cancer receive chemotherapy at the end of life with the goals of prolonging and improving survival [10].

Cancer still remains a major public health problem in the world. In 2040, 16.3 million people are expected to be living with cancer, most of them from low- and middle-income countries. In these countries, the diagnosis of most cancers is often made at advanced stages when treatment options are limited or unavailable [11].

The quality of life together with the evaluation of the efficacy and safety of the treatment became the basic goal of the therapeutic approach. Self-assessment of quality of life is based on a subjective scale of symptom severity. It complements the clinical assessment and helps predict survival. Studies have shown that baseline quality assessment along with physical status assessment is an important source of prognostic information in lung cancer patients [12].

METHODS

Identification of research

In the Scopus, Web of science and PubMed databases, the literature related to the quality of life in cancer patients was searched. Search keywords: quality of life, patients, cancer, symptoms, neoplastic drugs. Keywords are combined with Boolean operators (AND/OR): "quality of life" AND "patients" AND "cancer" OR "malignant neoplasm" AND "neoplastic drugs" OR "chemotherapy" OR "radiotherapy" AND "oncology".

Inclusion criteria: Studies published in English from medicine, nursing and health; studies published from 2012 to 2022; original quantitative studies; full-text studies with patients diagnosed with cancer as the population of interest.

Exclusion criteria: Studies published outside medical, nursing and health journals, studies published in languages other than English, articles published before 2012 and studies with limited access were excluded.

Selected research

The studies were selected in accordance with the criteria of Prisma flow diagram in the literature review database. During the identification, a total of 705 studies were found, of which 37 of them were removed as duplicates. The review examined the remaining 668 studies, excluding 515 studies that were not in e-format or PDF. In the acceptance phase, out of a total of 153 studies, 87 studies with a different study design and 50 studies with other

pathologies (not cancer patients) were excluded. Sixteen studies were included in the current review (Figure 1).

In order to prevent and reduce prejudices in the process of selecting studies, a colleague from doctoral studies has also been engaged. Disagreements were discussed and resolved with full agreement by both researchers.

Assessment of the quality of the research

The evaluation of the quality of the studies selected for the systematic review was done on the basis of the hierarchy of evidence in scientific research work Polit & Beck, (Table 1).

Studies by year: 2012=1, 2013=2, 2014=1, 2017=2, 2018=5, 2020=1, 2021=4.

According to the countries: India=3, Brazil=4, France & Germany and Taiwan, Croatia, Colombia, Turkey, Ethiopia and Iran are listed with one publication each.

Type of cancer (by location): Breast cancer=9, Cervix=2, Head & neck=3 Gastrointestinal=3, Lung=5, Colorectal=4, Genital system=1, Prostate=3, Ovarian=1, Blood cancer= 1.

Type of cancer treatment: Radiotherapy & chemotherapy=3, Chemotherapy=9, Radiotherapy=6, Surgery=2, Hormone Therapy=1, Surgery + Radiotherapy=1, Surgery + Chemotherapy + Radiotherapy=1 and not reported=2.

According to Research design: Exploratory=1, Cross-sectional=10, Control cohort studies=1, Prospective study=2, Descriptive study=1, Longitudinal and correlational=1.

Sample size=8489 cancer patients, average=446.8 per study (20-3453.

Sampling method: Convenient=1, Consecutive=3, Random=1 and not reported=11.

RESULTS

Description and findings of the research involved

Patient income was statistically related (F = 3.612, p = 0.006) to life characteristics. Thus, patients with higher incomes reported better quality of life than those with lower incomes. So, the life history of cancer patients and income is independent of demographic variables, such as age, educational status, cancer type of their patients and duration of death [13].

The overall mean lifetime FACT-G score for illiterate patients was low (p = .009) and also for those engaged in agriculture/business (P = .04). No differences were found when FACT-G overall QoL scores were compared in terms of age, income status, can-
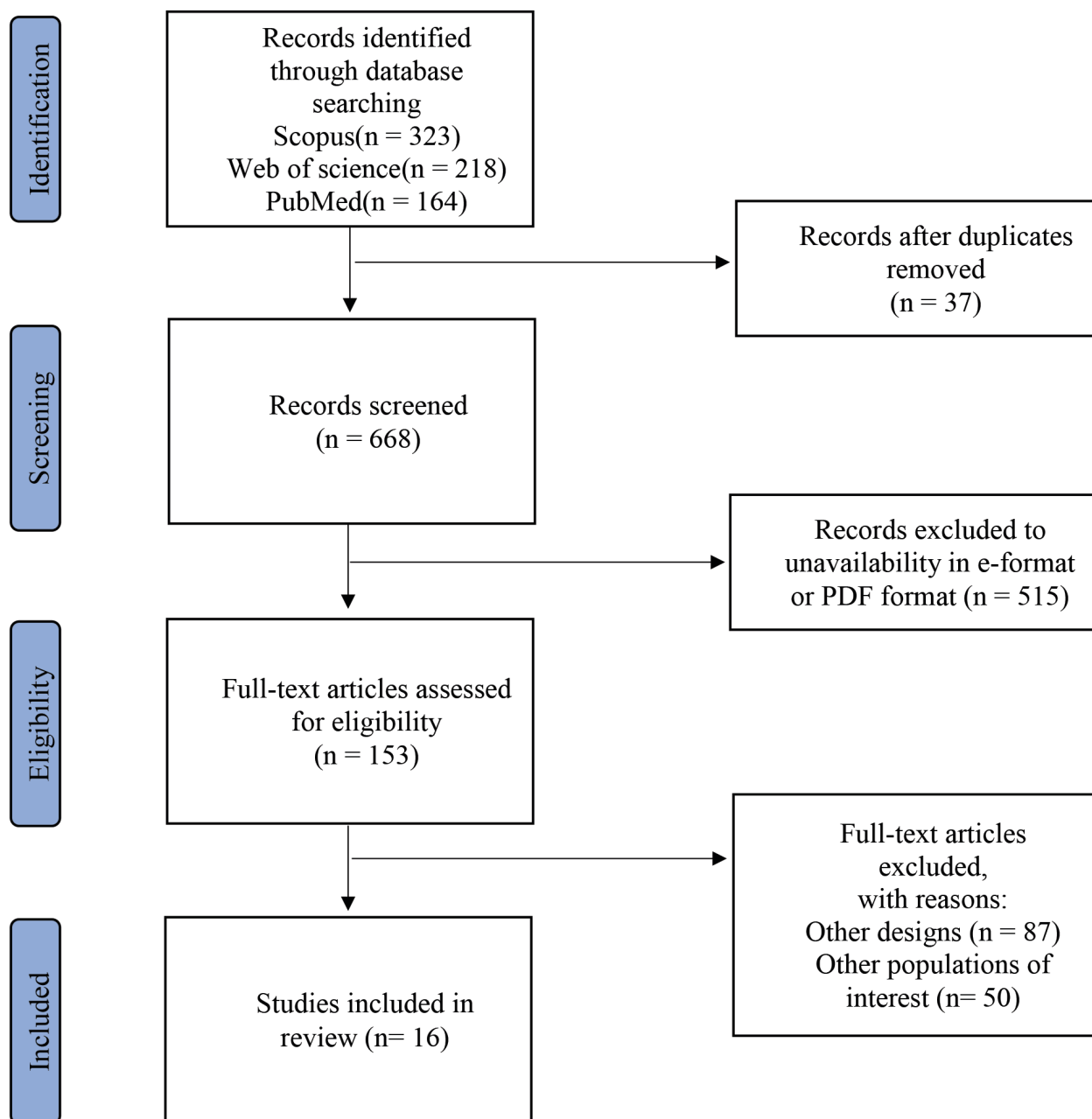
FIGURE 1. Prisma flow diagram in the database literature review

cer type, number of ADRs, and comorbidity. Mean social well-being scores of patients who did not go to school (illiterate) were found to be true low (P = 0.033. Mean well-being subscale scores for patients who were functional in agriculture/business were low views (P = 0, 04) [14].

Regarding the areas of life of 80 patients in outpatient chemotherapy, it was found that social and physical was the most endangered, while the environment was the greatest. Comparison between scores showed a difference only in terms of self-rated health. The highest scores were found in the best health group. To suggest that self-esteem can be a predictor of how people live their lives, as they are the results for further studies on this topic. In addi-

tion, this study shows the need related to this study, all these particular studies related to their appearance in this study [15].

Patients with good rates of disease metastases had HRQoL. Further, the incomplete assistance of patients with Ca and the level of satisfaction with general care and found that care in the extent of HRQoL. Therefore, early detection of the neoplasm to arrest metastasis is warranted to achieve a better QoL. In addition, it is recommended to address the unmet needs of these patients and ensure higher levels of satisfaction to maintain adequate HRQoL [16].

In the studies of Özkorumak E, et al. [17], it was found that there is a relationship between the edu-

cational status of members and members of their lives. In parallel with the increase in the level of the results of the education of the life of the patients. In a study conducted by Sarÿÿen on life knowledge, it was found that the physical functioning scores of high school graduates were significantly lower. When the results of the QLQ BR23 lifetime study were examined, university graduates were found to have lower body image, arm symptoms and use effects scores. These results, similar to the literature, suggest that increasing the level of education contributes to patients' information, level of awareness and access to effective coping methods.

In a study investigating the life histories of hematology and oncology patients undergoing chemotherapy, there was no association between these studies and the patients' work status. Unlike this study, when analyzing the results of the study of Acil H, et al. [18], it was found that with the level of education of patients, the life outcomes of people who worked also increase.

In the study Kirca et al. [19] those who did not work and found that they had significantly lower functioning and social functioning scores than physical creators. This finding can be interpreted as follows: in the processes of victims who may have some other methods of dealing with those that are not possible, his attention is focused on the other side and they act with other people in this way. Coping with effectiveness and their state of well-being increases.

Compared to the relevant literature, most studies emphasize that marital status has effects positive on perceived level of social support, shared emotional burden, early cancer detection, treatment and survival. Additionally, support for medical assistance from partners in managing anxiety-related symptoms related to cancer is reported to result in less worry, anxiety, and depression. Hasfield et al. [20] also reported that the support of family and friends helped create a strategy to cope with the intensity of side effects. Aizer et al. [21] investigated the relationship between marital status and cancer survival and found that unmarried cancer patients were at increased risk for cancer-related metastasis and death compared to married individuals.

Findings related to the QLQ-BR23 quality of life scale showed that body image and sex life outcomes decreased in those aged 45 years and older. This is thought to be due to the anxiety created by the complex and chronic nature of cancer and the high expectations young people have for the future [20].

Analysis/synthesis of research findings

Patient income was statistically associated (F = 3.612, p = 0.006) with quality of life. Thus, patients with higher incomes reported better quality of life

TABLE 1. The evaluation of the quality of the studies selected for the systematic review

Study (author, year) & Country	Purpose of the study	Type of cancer (by location)	Type of cancer treatment	Dependent variables	Independent variables	Research design	Research sample/Setting	Sampling method	Data Collection (Instrument/s)	Main results
Nayak et al. (2017) India	To assess the QOL among cancer patients.	Breast/cervix/head-and-neck/gastro-intestinal cancer tract/lung/colorectal cancer	Radiotherapy & chemotherapy	QOL	Demographic & disease related variables	Exploratory	768 patients in cancer hospitals	Convenient	QOL version II 41 items	82.3% reported poor quality of life scores 96.1% poor overall well-being; 72.3% poor physical well-being; 53.5% poor psychological well-being; 93.6% economic well-being below average.
Ramasubbu et al. (2021) India	To assess the QoL & factors affecting it in adult cancer patients undergoing chemotherapy treatment.	Not reported	Chemotherapy	QOL	Age Income status Type of cancer Stage of the disease	Cross-sectional	20 adult patients of a tertiary care hospital.	Consecutive	FACT-G	The total FACT-G QoL mean score was 61.933 ± 5.85502. An evaluation of subscale mean scores shows that physical well-being (min: 0-max: 28) was 17.39 ± 2.692, social well-being (min: 0-max: 28) was 15.95 ± 3.493, emotional well-being (min:0-max: 24) was 14.50 ± 2.158, and functional well-being (min:0 - max:28) was 13.95 ± 3.295; the subscale which was most negatively affected was functional well-being followed by emotional well-being.

Study (author, year) & Country	Purpose of the study	Type of cancer (by location)	Type of cancer treatment	Dependent variables	Independent variables	Research design	Research sample/Setting	Sampling method	Data Collection (Instrument/s)	Main results
Mansano-Schlosser & Ceolim, (2012) Brasil	To evaluate the quality of life in cancer patients undergoing chemotherapy	Colon, head & neck, digestive system, lung, genital system	Chemotherapy	QOL	Gender, marital status, & type of cancer	Cross-sectional	80 patients in a university hospital	Not reported	WHOQOL-Bref instrument	The highest scores were in the group with better assessment of their own health. The Psychological domain reached the highest scores, unlike the others, who evaluated the Environment domain best. The results suggest that health self-assessment can be a reliable predictor of quality of life in these patients.
Schaller et al. (2017) Sweden	To identify potential factors that may influence QoL in patients with head & neck cancer during radiotherapy	Head & neck cancer	Radiotherapy	QoL	Pain intensity, pain interference, catastrophizing, mood disturbances, anxiety, & depression.	Cross-sectional	54 patients at a University Pain and Rehabilitation Center	Not reported	Self-reported questionnaires: EQ-5D EQ-VAS	The patients in this study scored high for QoL, low for pain intensity, and low for pain interference. The patients reported minor depressive symptoms and anxiety symptoms. Regression analyses showed that pain intensity and depressive symptoms negatively influenced QoL.
Maurer et al. (2021) Germany	To investigate HRQoL over time using patient-reported status before diagnosis, during treatment, 1 year post-surgery, approx 5. years and ≥10 years post-diagnosis	Breast Cancer	Not reported	QoL	Nodal status Tumor size Educational Status BMI in Diagnosis sis / Recruitment Smoking status Taking alcohol Physical activity Family status Osteoporosis Diabetes Rheumatic diseases	Control cohort studies	Cohort of 1123 BC patients & of 3453 matched controls	Not reported	EORTC QLQ-C30	Over all ages, the general HRQoL in patients improved in the first 5 years post-diagnosis. In the subsequent years, HRQoL slightly deteriorated but was comparable to that of the controls. Younger survivors mostly improved their HRQoL from the 5 to 10-year follow-up but remained negatively affected for most functioning and symptom scales compared to controls. In older survivors, HRQoL hardly changed over time and detriments were less pronounced compared to controls, except for insomnia
Priyanka et al., 2018) India	To determine the quality of life in regional cancer patients	Breast cancer Cervical cancer Ovarian cancer	Chemotherapy	QoL	Age Sex Type of cancer	Cross-sectional	92 Females and 32 Males from Institute of Oncology and Regional Cancer Centre	Not reported	EORTC QLQ-C-30	The observations have shown that the cancer patients in spite of having better functioning and minimum symptoms, their perception was that they had poor quality of life. It is concluded that the therapy should be individualized for each patient not just based upon the type or stage of cancer but also based on the patient's priorities, concerns and symptoms along with treating the disease. In simple words it can be said that the therapy should be patient oriented rather than disease oriented.

Study (author, year) & Country	Purpose of the study	Type of cancer (by location)	Type of cancer treatment	Dependent variables	Independent variables	Research design	Research sample/Setting	Sampling method	Data Collection (Instrument/s)	Main results
Ximenes et al. (2021) Brasil	To evaluate the impact of age in health-related quality of life (HRQoL) in older adults with cancer.	Breast Prostate Digestive system	Not reported	QoL	Age Sex Lives with a partner Education Family income Smoking Alcoholism	Cross-sectional	608 older adults diagnosed with cancer	Not reported	HRQoL	Cognitive function showed the highest scores (average 87.94 ± 26.87), while physical function showed the lowest ones (68.04 ± 28.63). The highest symptom score was observed for financial difficulties (34.21 ± 39.06), followed by pain (29.47 ± 33.92) and insomnia (28.51 ± 37.03). After adjustment, we observed a decrease in physical function (p = 0.028) and an improvement in emotional function (p = 0.003) with increasing age.
Mardani et al. (2020) Iran	To describe HRQoL among Iranian PCa survivors and compare it with age at cancer diagnosis and time passed from it	Prostate cancer	Radiotherapy	QoL	Age, BMI (body mass index), marital status, education level, employment status, economic status, and need for help in daily living activities	Cross-sectional	186 patients	Not reporting	EORTC QLQ-C30 EORTC QLQ - PR25	The cancer survivors with older age at cancer diagnosis had significantly lower physical (p = 0.001) and sexual function (p = 009), and higher social function (p = 0.03), fatigue (p = 0.02), dyspnea (p = 0.008), urinary (p = 0.007) symptoms and financial difficulties (p = 0.03). Also, statistically significant differences between time passed from cancer diagnosis and physical function (p = 0.03), urinary (p = 0.001) and bowel (p = 0.02) symptoms and urinary aid problems (p = 0.006) were reported
Abegaz et al., (2018) Ethiopia	The present study determined the HRQoL and its determinants among people living with Ca	Colorectal Ca Cervical Ca Lung Ca Blood related Ca Breast Ca	Chemotherapy	HRQoL	Age, gender, functional status & symptom scales	Prospective hospital based study	150 patients from a cancer center	Consecutive	EORTC QLQ-30	The rate of QoL was 52.7 (20.1) (mean ± SD). The highest functional status was emotional functioning 61 (25.5). Patients with no disease metastasis, 92.1 (5.1), had high QoL as compared to metastasis, 22.1 (18.9) (p = 0.03). Patients with affected physical functioning have a 20% reduction in QoL and Adjusted Odds Ratio (AOR) of 0.794 [0.299–891]. Patients with low satisfaction level with the provided care, 0.82 [0.76–0.93], and those with unmet needs, 0.85 [0.80–0.95], experienced reduced level of HRQoL.

Study (author, year) & Country	Purpose of the study	Type of cancer (by location)	Type of cancer treatment	Dependent variables	Independent variables	Research design	Research sample/Setting	Sampling method	Data Collection (Instrument/s)	Main results
Kirca et al. (2018) Turkey	The aim of this study is to evaluate the symptoms experience and quality of life in patients with breast cancer receiving the taxane class of drugs	Breast Cancer	Chemotherapy	QoL	Age, family type, marital status, working status, family history of breast cancer, treatment protocol, number of cures & chronic diseases	Descriptive study	48 patients from the chemotherapy unit of a university hospital	Not reported	EORTC QLQ-C30 EORTC QLQ-BR23	The symptoms they experienced severely were included fatigue and energy loss and being sensitive. The most distressing symptoms were pain, worry, numbness in hands and feet. The overall well-being score of the patients as per the quality of life findings was 46.18±11.66. While the lowest score for the functional scales was in the social function subscale (66.32±15.18), the highest score for the symptom scales was in the pain subscale (42.01±15.37). The lowest score for the EORTC QLQ-BR23 scales was in the sexual life subscale (20.83±20.19); the highest score was in the body appearance subscale (65.8±23.96)
Finck et al. (2018) Colombia	To examine QoL in breast cancer & to explore the relationship between QoL, habitual optimism, & social support	Breast cancer	Surgery Radiotherapy Chemotherapy Hormone Therapy	QoL	Age, marital status, occupational status, habitual optimism & social support	Cross-sectional	95 breast cancer patients treated in a hospital	Random	EORTC QLQ-C30 Test LOT-R	The breast cancer patients showed detriments to their QoL on most functioning scales and symptom scales of the EORTC QLQ-C30, while their general assessments of health and QoL were not worse than those of the controls. Optimism was positively correlated with QoL. Most patients wanted and received social support from their physicians and friends/family
De Melo Filho et al. (2013) Brasil	To evaluate the quality of life of patients dealing with squamous cell carcinoma of the head and neck	Head & neck cancer	Surgery + Radiotherapy Chemotherapy + Radiotherapy Surgery + Chemotherapy + Radiotherapy Radiotherapy alone	QoL	Age Gender Skin color Marital status Income Years of schooling Occupation Treatment type	Prospective analytical study	29 patients	Not reported	EORTCQLQ-C30 QLQ-H&N35	There was a significant quality of life reduction for the patients throughout treatment in relation to some common symptoms in the treatment of cancer, which did not occur in the assessment of the aspects associated with the social, cognitive and physical functions
Šeparović et al. (2018) Croatia	To find out which symptoms are the most associated with a breast cancer patients QoL & depression	Breast cancer	Surgery (lumpectomy & mastectomy)	QoL	Fatigue Pain Nausea & vomiting Insomnia Appetite loss Constipation Diarrhea	Cross-sectional	147 breast cancer patients from University Hospital	Not reported	EORTC QLQ-C30 Beck Depression Inventory II	Fatigue ($\grave{u}$=-0.47, P<0.001), pain ($\grave{u}$=-0.24, P=0.023), and appetite loss ($\grave{u}$=-0.18, P=0.037) were statistically significantly correlated with QoL. Fatigue was the only symptom significantly associated with depression ($\grave{u}$=0.39, P=0.006)

Study (author, year) & Country	Purpose of the study	Type of cancer (by location)	Type of cancer treatment	Dependent variables	Independent variables	Research design	Research sample/Setting	Sampling method	Data Collection (Instrument/s)	Main results
Garcia et al. (2021) Brasil	Investigates whether self-compassion and self-awareness are related to patients' quality of life during chemotherapy	Breast Prostate Colorectal	Chemotherapy	QoL	Mindfulness Self-compassion Common humanity Isolation Self-judgement	Cross-sectional	183 patients from oncology clinic	Not reported	Self-compassion scale Mindful Attention Awareness Scale FACT-G	Mean scores for the study variables were 4.23 (SD = 0.63) for self-compassion, 69.05 (SD = 13.27) for mindfulness, and 80.25 (SD = 12.62) for quality of life. Significant positive correlations were observed between quality of life and self-compassion (r = 0.466, p <0.001), as well as for quality of life and mindfulness (r = 0.325, p <0.001). Higher levels of self-compassion and mindfulness were associated with better quality of life
Liao et al., 2014) Taiwan.	To examine the changes in quality of life (QOL), symptoms, self-efficacy for coping with cancer, and factors related to those changes in patients with newly diagnosed advanced lung cancer	Lung cancer	Chemotherapy [CT], radiotherapy [RT], CT plus RT [CT+RT]	QoL	Age Gender Education Marital status Religion Occupational status Comorbidities Treatment	Longitudinal and correlational	101 patients newly diagnosed from a medical center	Not reported	EORTC QLQ-C30 CBI-B	Patients reported moderate levels of global QOL, symptom severity, and self-efficacy for coping with cancer. They also reported high physical and cognitive functions, but relatively low role and social functions. Factors were significantly related to the most functional dimensions, including self-efficacy, fatigue, pain, sleep difficulties, and demographic- and disease-related factors. Self-efficacy was the most robust factor for predicting QOL.
Yer, Taylor-Stokes & Roughley (2013) France & Germany	To assess patient reported symptom burden and impact on disease specific health related quality of life (HRQOL) in advanced non-small cell lung cancer (NSCLC) patients	Lung cancer		QoL	Age Gender Ethnicity Stage of disease Histology Site of metastases Smoking history Family History of Lung Cancer Time since diagnosis (days)	Cross-sectional	France (n = 613) & Germany (n = 600)	Consecutive	LCSS FACT-L EQ-5D	Majority ofthe patients were male (67%), Caucasian (93%) with an average age of 63 years. Fatigue, loss of appetite, shortness of breath, cough and pain were reported by ≥90% of patients. The mean health utility index score was found to be 0.58 and the mean general health status score was 58.0. Fatigue (` = −0.122; p < 0.001), loss of appetite (` = −0.170; p < 0.001), pain (` =−0.145; p < 0.001), shortness of breath (` = −0.118; p < 0.001) were found to be significant predictors of lung cancer specific quality of life as measured by the FACT-L total score.

than those with lower incomes. So, the quality of life of cancer patients improves with increasing income and is independent of demographic variables, such as age, educational status and type of cancer of their patients and duration of treatment [13].

The overall mean FACT-G quality of life score for illiterate patients was significantly lower (p = .009) and also for those engaged in agriculture/business (P = .04). No significant differences were found when comparing overall mean FACT-G QoL scores in terms of age, income status, cancer type, number of ADRs, and disease stage. The mean social well-being scores of patients who never attended school (illiterate) were found to be significantly lower (P = 0.033. The mean emotional well-being scores of patients having more ADRs were significantly lower (P = .000).The mean functional well-being subscale scores for patients who were engaged in agriculture/business were significantly lower (P = 0.04), [14].

Regarding the quality of life of 80 patients in outpatient chemotherapy, it was found that the fieldsocial and physical were the most endangered, while the environment was the most preserved. Comparison between scores showed a significant difference only in terms of self-rated health. The highest scores were found in the group with the best assessment of their health. The results suggest that self-rated health can be a reliable predictor of quality of life in these patients, being important for further studies on this topic. Furthermore, this study shows the need for health professionals to be aware of the aspects that can affect the physical and psychological domains, as these were the most compromised aspects in this study [15].

Patients with limited rates of metastatic disease had improved HRQoL. Further, the unmet needs of Ca patients and the level of satisfaction with overall care were found to influence the extent of HRQoL. Therefore, early detection of the neoplasm to arrest metastasis is warranted to achieve a better QoL. In addition, it is recommended to address the unmet needs of these patients and ensure the highest degree of satisfaction to maintain adequate HRQoL [16].

In the studies of Özkorumak E et al. [17], it was found that there was a relationship between the educational status of the patients and their quality of life. In parallel with the increase in the level of education, the results of the quality of life of the patients also increase. In a study conducted by Sarÿÿen on quality of life, it was found that the physical functioning scores of high school graduates were significantly lower. When QLQ BR23 quality of life scores were examined, university graduates were found to have lower body image, arm symptoms, and side effect scores. These results, similar to the literature, suggest that increasing the level of education con-

tributes to the patient's access to information, the level of awareness and the development of effective coping methods.

In a study investigating quality of life in hematology and oncology patients undergoing chemotherapy, there was no significant relationship between quality of life and patients' work status. Unlike this study, when examining the results of the study of Acil H, et al. [18] it was found that as the educational level of the patients increased, the quality-of-life scores also increased among working women.

In the study Kirca et al. [19], those who were not working were found to have significantly lower physical functioning and social functioning scores than working women. This finding can be interpreted as follows: in the treatment process, working patients have fewer financial worries than those who do not work, their attention is focused on the other side and they interact with other individuals and thus use the methods of coping effectively and their state of well-being has increased. Compared to the relevant literature, most studies emphasize that marital status has effects positive on perceived level of social support, shared emotional burden, early cancer detection, treatment and survival. Additionally, support for medical assistance from partners in managing anxiety-related symptoms related to cancer is reported to result in less worry, anxiety, and depression. Hasfield et al. [20] also reported that the support of family and friends helped create a strategy to cope with the intensity of side effects. Aizer et al. [21] investigated the relationship between marital status and cancer survival and found that unmarried cancer patients were at increased risk for cancer-related metastasis and death compared with married individuals. Findings related to the QLQ-BR23 showed that body image and sex life outcomes decreased in those aged 45 years and older [20].

DISCUSSIONS

In the study of Nayak et al. [13] most physical well-being of cancer patients was affected by pain (72.9%), sleep problem (71.7%) and fatigue (91.8%). Psychological well-being was affected by feeling very depressed among 54.4% of participants and 98.3% were not satisfied in attending social functions. Most of them, therefore (76.2%, were afraid of the recurrence of the disease, 98.3% felt that their income status was reduced due to the physical condition/disease and 85.7% of them were not satisfied with their body image [13].

These results are supported by Gandhi et al. [22] who conducted a study of 100 patients with advanced incurable head and neck cancer who were offered palliative radiation and suffered from many symptoms such as pain, insomnia, loss of appetite

and fatigue. Findings from other studies also show that there was a decrease in quality of life due to common symptoms resulting from cancer. Many authors reported that side effects of treatment affect quality of life in patients depending on individual circumstances, type of cancer and its treatment [23].

A significant positive association was seen between the government/private employee group and overall QoL. Studies also show a contradictory relationship between employment status and QoL.51 Employment may provide financial means to control illness, but may worsen QoL for due to frequent hospital visits and workload. While unemployed patients may face financial difficulties, they may attend hospital visits in a more comfortable manner than those who are employed. In addition, friends and colleagues in the workplace can also play a crucial role in improving QoL [13].

The findings of this review indicate low QoL among cancer patients on anticancer therapy. Functional well-being was most affected among cancer patients, followed by emotional well-being among cancer patients on cancer therapy. From our study, it was found that the overall quality of life of the patients was influenced by the education and professional status of the patient. Unemployed and illiterate patients have worse QoL than employed and educated patients [13].

Mardani et al. [24] concluded that participants with older age at cancer diagnosis reported lower physical function and sexual activity. Age is the most important factor affecting HRQoL in prostate cancer patients Porreca et al., [25]. Similar to these findings, Mardani et al. [24] showed that patients with prostate cancer and a younger age at diagnosis had better physical function and sexual activity than those with an older age (>70 years).

In the 2015 American Cancer Society guidelines, fatigue, impaired sexual function, weight loss, neuropathy, oral health problems, hair loss, change in libido, and pain are among the symptoms that can be associated with cancer chemotherapy of the breast [26].

In a study by Yeÿilbakan et al. [27], who investigated the effects of chemotherapy treatment on patients' symptoms and quality of life, it can be seen that patients suffered from loss of appetite (39.8%), fatigue (39.8%), and symptoms of lack of energy (38.8%) in a "soft" level. More than half of the patients (51%) had symptoms of hair loss at a "very high" level. When psychological symptoms experienced by patients during treatment were assessed, 45.6% stated that they were "a little" angry during treatment and 35.9% were "somewhat" nervous [27].

In the study by Yildirim et al. [28].most patients rated their symptoms of difficulty paying attention, pain, loss of energy, self-irritability, dry mouth, difficulty sleeping, anxiety, and loss of appetite as "moderate". In the same study, most patients reported that these symptoms were "a little more" bothersome [28]. Cancer-related fatigue is a common symptom. Pain, anemia, sleep problems, and mood disorders are symptoms that can accompany fatigue [28]. Pain, which is another symptom that patients most often experience during and after chemotherapy treatment, can be due to muscle pain, joint pain, gastrointestinal pain, mucositis, cardiomyopathy, pancreatitis, extravasation, and peripheral neuropathy [29].

Psychological and social problems such as depression, anxiety, feelings of sadness, adjustment disorder, anger, hopelessness, worsening body image, and social isolation may accompany physical problems in women diagnosed with breast cancer and receiving treatment. The frequency, severity, and level of distress of these problems are influenced by variables such as the patient's personality, attitude toward illness, support systems, and treatment protocol, and thus patient adaptation to treatment becomes difficult. Along with ineffective treatment, the meaning patients attribute to the disease, fear of disease recurrence, future anxiety, and treatment-related symptoms increase psychological problems [27]. In a study conducted by Özkorumak et al. [17], psychological distress in breast cancer patients was found to be similar in severity during treatment and remission. Patients in high school and lower education level groups are thought to have less information about treatment-related symptoms, low health care control behavior, insufficient access to social support system, and incidence of symptoms. Psychological aspects of ineffective coping [30].

CONCLUSION

From the reviewed literature we understand that the term quality of life is defined in an individual as the perception of life, values, objectives, standards and interests in the framework of culture. It is the subjective assessment of life as a whole or the patient's evaluation and satisfaction with their current level of function compared to what they perceive as possible or ideal. Quality of life is a multidimensional construct that captures the subjective well-being (both positive and negative aspects) of patients in the physical, emotional, functional and social domains.

In an individual, all areas of quality of life can be affected by cancer. Deterioration in quality of life begins after diagnosis of malignancy and continues due to the vigorous nature of treatment. Cancer patients receive chemotherapy to fight the disease. By

the majority of the cancer population, chemotherapy is being used as the first line of patient management. Although chemotherapy has a therapeutic effect, it is associated with the development of severe adverse drug reactions, which can have negative effects on an individual's quality of life. Moreover, anti-cancer therapy requires time after administration to obtain the desired effect.

Ultimately, cancer patients experience many symptoms that affect quality of life. Therefore, their management is a critical issue in the care of cancer patients. All health professionals must ensure that patients receive timely and appropriate education and care.

In the future there is a need to develop measures for effective symptom management and to improve quality of life. Key issues are symptom management and the need to use strategies that will empower patients to have a better sense of control over their illness and treatment.

It is necessary to initiate programs for patients in anticancer therapy in order to alleviate their physical and emotional suffering and consequently to improve the quality of life.

REFERENCES

1. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer.* 2015 Mar 1;136(5):E359-86. doi: 10.1002/ijc.29210.

2. Paleri A, Kumar S, Thankam K. Principles of Palliative Care. In: Cherian Varghese, Ed. Manual for palliative care. 1st ed. New Delhi: Directorate general of health services Ministry of health and family welfare; 2005.

3. Heidrich SM, Egan JJ, Hengudomsub P, Randolph SM. Symptoms, symptom beliefs, and quality of life of older breast cancer survivors: a comparative study. *Oncol Nurs Forum.* 2006 Nov 3;33(2): 315-22. doi: 10.1188/06.ONF.315-322.

4. Heidrich SM, Brown RL, Egan JJ, Perez OA, Phelan CH, Yeom H, et al. An individualized representational intervention to improve symptom management (IRIS) in older breast cancer survivors: three pilot studies. *Oncol Nurs Forum.* 2009 May;36(3):E133-43. doi: 10.1188/09.ONF.E133-E143.

5. Jacobsen PB, Davis K, Cella D. Assessing quality of life in research and clinical practice. *Oncology* (Williston Park). 2002 Sep;16(9 Suppl 10):133-9. PMID: 12380963.

6. Katz SJ, Belkora J, Elwyn G. Shared decision making for treatment of cancer: challenges and opportunities. *J Oncol Pract.* 2014 May;10(3): 206-8. doi: 10.1200/JOP.2014.001434. PMID: 24839284; PMCID: PMC5795654.

7. Khan FA, Akhtar SS, Sheikh MK. Cancer treatment - objectives and quality of life issues. *Malays J Med Sci.* 2005 Jan;12(1):3-5. PMID: 22605940; PMCID: PMC3349406.

8. Urruticoechea A, Alemany R, Balart J, Villanueva A, Viñals F, Capellá G. Recent advances in cancer therapy: an overview. *Curr Pharm Des.* 2010 Jan;16(1):3-10. doi: 10.2174/138161210789941847. PMID: 20214614.

9. Zhang B, Nilsson ME, Prigerson HG. Factors important to patients' quality of life at the end of life. *Arch Intern Med.* 2012 Aug 13;172(15): 1133-42. doi: 10.1001/archinternmed.2012.2364. PMID: 22777380;PMCID: PMC3806298.

10. Wright AA, Zhang B, Keating NL, Weeks JC, Prigerson HG. Associations between palliativechemotherapy and adult cancer patients' end of life care and place of death: prospective cohort study. *BMJ.* 2014 Mar 4;348: g1219. doi: 10.1136/bmj.g1219. PMID: 24594868; PMCID: PMC3942564.

11. López-Gómez M, Malmierca E, de Górgolas M, Casado E. Cancer in developing countries: the next most preventable pandemic. The global problem of cancer. *Crit Rev Oncol Hematol.* 2013 Oct;88(1):117- doi: 10.1016/j.critrevonc.2013.03.011. Epub 2013 Apr 19. PMID: 23602800.

12. Braun DP, Gupta D, Staren ED. Predicting survival in prostate cancer: the role of quality of life assessment. *Support Care Cancer.* 2012 Jun;20(6): 1267-74. doi: 10.1007/s00520-011-1213-x. Epub 2011 Jun 28. PMID: 21710307; PMCID: PMC3342489.

13. Nayak MG, George A, Vidyasagar MS, Mathew S, Nayak S, Nayak BS, et al.Quality of Life among Cancer Patients. *Indian J Palliat Care.* 2017 Oct-Dec;23(4):445-450. doi:10.4103/IJPC.IJPC_82_17. PMID: 29123353; PMCID: PMC5661349.

14. Ramasubbu SK, Pasricha RK, Nath UK, Rawat VS, Das B. Quality of life and factors affecting it in adult cancer patients undergoing cancer chemotherapy in a tertiary care hospital. *Cancer Rep* (Hoboken). 2021 Apr;4(2):e1312. doi: 10.1002/cnr2.1312. Epub 2020 Dec 9. PMID: 33295136; PMCID: PMC8451381.

15. Mansano-Schlosser TC, Ceolim MF. Quality of life of cancer patients during the chemotherapyperiod. Texto & Contexto-Enfermagem. 2012;21: 600-7.

16. Abegaz TM, Ayele AA, Gebresillassie BM. Health Related Quality of Life of Cancer Patients in Ethiopia. *J Oncol.* 2018 Apr 15;2018: 1467595. doi: 10.1155/2018/1467595. PMID: 29849628; PMCID: PMC5925207.

17. Özkorumak E, Tiryaki A, Arslan FC, Yavuz MN. Psychological distress of women with breast cancer: remission versus treatment. *Meme Sagligi Dergisi/Journal of Breast Health.* 2012 Apr 1;8(1). https://cms.eurjbreasthealth.com/Uploads/Article_42389/ejbh-8-29-En.pdf.

18. Acil H, Cavdar I. Comparison of quality of life of Turkish breast cancer patients receiving breast conserving surgery or modified radical mastectomy. *Asian Pacific Journal of Cancer Prevention.* 2014; 15(13):5377-81. doi: 10.7314/apjcp.2014.15.13.5377. PMID: 25041005.

19. Kırca K, Kutlutürkan S. Symptoms Experience and Quality of Life in The Patients With Breast Cancer Receiving The Taxane Class of Drugs. *Eur J Breast Health.* 2018 Jul 1;14(3):148-155. doi: 10.5152/ejbh.2018.3785. PMID: 30123880; PMCID: PMC6092149.

20. Haisfield-Wolfe ME, McGuire DB, Soeken K, Geiger-Brown J, De Forge B, Suntharalingam M. Prevalence and correlates of symptoms and uncertainty in illness among head and neck cancer patients receiving definitive radiation with or without chemotherapy. *Support Care Cancer.* 2012 Aug;20(8):1885-93. doi: 10.1007/s00520-011-1291-9. Epub 2011 Oct 4. PMID: 21964642.

21. Aizer AA, Chen MH, McCarthy EP, Mendu ML, Koo S, Wilhite TJ, et al. Marital status and survival in patients with cancer. *J Clin Oncol.* 2013 Nov 1;31(31):3869-76. doi: 10.1200/JCO.2013.49.6489. Epub 2013 Sep 23. PMID: 24062405; PMCID: PMC4878087.

22. Gandhi AK, Roy S, Thakar A, Sharma A, Mohanti BK. Symptom Burden and Quality of Life in Advanced Head and Neck Cancer Patients: AIIMS Study of 100 Patients. *Indian J Palliat Care.* 2014 Sep;20(3):189-93. doi: 10.4103/0973-1075.138389. PMID: 25191005; PMCID: PMC4154165.

23. de Jong N, Candel MJ, Schouten HC, Abu-Saad HH, Courtens AM. Prevalence and course of fatigue in breast cancer patients receiving adjuvant chemotherapy. *Ann Oncol.* 2004 Jun;15(6):896-905. doi: 10.1093/annonc/mdh229. PMID: 15151946.

24. Mardani A, Razi SP, Mazaheri R, Dianatinasab M, Vaismoradi M. Health-related quality of life in prostate cancer survivors: implications for nursing care. *Int J Caring Sci.* 2020;13(2);2-1322. http://www.internationaljournalofcaringsciences.org/docs/57_mardani_original_13_2_1.pdf.

25. Porreca A, Noale M, Artibani W, Bassi PF, Bertoni F, Bracarda S, et al; Pros-IT CNR study group. Disease-specific and general health-related quality of life in newly diagnosed prostate cancer patients: the Pros-IT CNR study. *Health Qual Life Outcomes.* 2018 Jun 13;16(1):122. doi: 10.1186/s12955-018-0952-5. PMID: 29898750; PMCID: PMC6001046.

26. Runowicz CD, Leach CR, Henry NL, Henry KS, Mackey HT, Cowens-Alvarado RL, et al. American Cancer Society/American Society of Clinical Oncology Breast Cancer Survivorship Care Guideline. *J Clin Oncol.* 2016 Feb 20;34(6):611-35. doi: 10.1200/JCO.2015.64.3809. Epub 2015 Dec 7. PMID: 26644543.

27. Usta Yeşilbalkan Ö, Durmaz Akyol A, Çetinkaya Y, Altın T, Ünlü D. Studying the symptoms that are beıng experienced due to treatment by the patients who receive chemotheraphy and their effects on the quality of life. *Ege Üniversitesi Hemşirelik Yüksek Okulu Dergisi.* 2005;21(1):13-31. https://dergipark.org.tr/tr/pub/egehemsire/issue/49611/635861.

28. Yildirim Y, Tokem Y, Bozkurt N, Fadiloglu C, Uyar M, Uslu R. Reliability and validity of the Turkish version of the Memorial Symptom Assessment Scale in cancer patients. *Asian Pac J Cancer Prev.* 2011;12(12):3389-96. PMID: 22471486.

29. Durna Z, Ozcan S. Evaluation of self-management education for asthmatic patients. *J Asthma.* 2003 Sep;40(6):631-43. doi: 10.1081/jas-120019034. PMID: 14579994.

30. Movsas B, Scott C, Watkins-Bruner D. Pretreatment factors significantly influence quality of life in cancer patients: a Radiation Therapy Oncology Group (RTOG) analysis. *Int J Radiat Oncol Biol Phys.* 2006 Jul 1;65(3):830-5. doi: 10.1016/j.ijrobp.2006.01.004. Epub 2006 Mar 29. PMID: 16564646.