

The Role of Educational Interventions in Improving the Quality of Life of Cancer Patients: Review the Literature

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ABSTRACT

Objective: Being diagnosed with cancer can be very distressing for patients and may have an impact on the emotional and physical aspects of their lives, both at the time of diagnosis and throughout their treatment. Studies have shown that reduced quality of life has a detrimental effect on disease progression and is related to feelings of hopelessness and helplessness. Educational interventions, for example, self-care education or educating the 'caregiver's family were related to an improved quality of life after cancer treatment. The objective of this article is to review the clinical research articles focused on implementing educational interventions as a means to improve the "Quality of Life" [QoL] of cancer patients.

Material and Methods: The data in this study were collected from Scopus, Med line, Science Direct and Hinari databases. An in-depth search and advanced search of keywords "Quality of life", "Cancer Patients", "education", "Oncology Patients", "Patients with Cancer", "Quality of life", "Intervention" was executed based on Inclusion and exclusion criteria. A total of 291 articles were identified. The final 13 articles were included in the review.

Results: All analyzed studies have included some educational component in their intervention plan, during or after the cancer treatment. Patient education included different aspects like nutrition counseling, diet plan, and prevention of side effects related to cancer treatment in patients by patient self-care and education. Muscular progressive relaxation techniques were used to counteract nausea and emesis. Music was used to distract the patients throughout the whole chemotherapy treatment as well as before and after. One of the main elements of the self-care education was training about nutrition. Educational techniques such as instructing to perform abdominal massage, abdominal exercises to manage emesis and constipation associated with treatment, educational interventions also included daily text-messages and web based education. Out of 13 studies analyzed, 10 showed a positive outcome.

Conclusion: We can conclude that educational interventions may be useful in maintaining and improving cancer patients' quality of life.

Keywords: Quality of life, Cancer, education, Oncology, Intervention

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INTRODUCTION

With an increasing incidence of both cancer and survival rates worldwide, due to early screening options available and with the advancement of cancer treatment in many countries, there is also a requirement to focus not only on the pharmacological treatment of cancer, but also to consider the patient's quality of life after their treatment. Being diagnosed with cancer can be very distressing for patients and may impact emotional and physical aspects of their lives, both at the time of diagnosis and throughout their treatment (1). Patients may worry about the effect of the disease on their body, treatment options and the side effects of treatment, such as nausea, vomiting, and diarrhea; all of which can cause anxiety, fatigue, loss of appetite, constipation, Insomnia, and emotional changes (2, 3, 5, 6). Symptoms and their severity vary from patient to patient (4). Maintaining and improving the quality of a patient's life not only benefits the patient but can additionally decrease the burden on their caregivers (7). Over the years, the quality of life (QoL) has been an assessment of the patient's health-related quality of life (QoL), and it is changing to encompass all aspects which can be proven to affect a patient's physical and mental health (8).

Studies have shown that reduced quality of life has a detrimental effect on disease progression and is related to feelings of hopelessness and helplessness (10). The cancer burden significantly imposes stress not only on the patients, but also on their spouses (9). Educational interventions, for example self-care education or educating the caregiver's family were related to an improved quality of life after cancer treatment (7, 9). One possible reason for a decreasing QoL among cancer patients was unanswered questions and an uncertain future (11). Providing sufficient information about the treatment, along with the side effects and self-care strategies, has proven to decrease some treatment-related complications and psychosocial outcomes (11, 12). Patient education by using verbal, written, or audiovisual formats could help them to understand and manage cancer-related fatigue (13, 14, 15, 16). The objective of this review article is to review the clinical research articles focused on implementing educational interventions as a means to improve the "QUALITY OF LIFE" (QoL) of cancer patients.

MATERIAL AND METHODS

The current article is a review study. The data in this study was collected from Scopus, Med line, Science Direct and Hinari databases. An in-depth search and advanced search of keywords "Quality of life", "Cancer Patients", "education", "Oncology Patients", "Patients with Cancer Quality of life", "Intervention", and "Chemotherapy" was executed based on Inclusion and exclusion criteria. Inclusion criteria of article selection included the following: Articles published 2010-2020, Articles in English, Research articles, Full-text Open access, quality of life as primary/secondary outcome, Adult solid cancer patients Educational interventions. A total of 291 articles were identified, out of which: 228 were removed at abstract screening, 28 were removed at title screening, and 21 were removed on full-text screening. The final 13 articles were included in the review (**table1**). The results were broken down and analysed based on the Symptoms and negative effects of cancer treatment addressed, Educational Interventions used, QOL ASSESSMENT TOOLS used. Studies with positive and negative outcomes are analyzed separately. We summarized the finding on the **table 2**. Thirteen articles were obtained after an in-depth and advanced search from different articles and databases from 2010 to 2020 by applying the inclusion and exclusion criteria of our study. All of these articles were clinical trials conducted on patients undergoing cancer treatment to analyze the effect of related treatment side effects on quality of life.

Table 1: Searched literature sources

	Medline	Scopus	Hinari	Science Direct	Summary
Total records identified	25	83	90	93	291
Records removed at abstract screening	21	66	73	66	226
Records removed at title screening	2	4	9	13	28
Records removed at full-text screening	1	4	5	11	21
Studies included in systematic review	1	6	3	3	13

RESULTS AND DISCUSSION

Studies included mostly breasts, CNS, GI, colorectal and lung cancer patients (1, 4, 5, 10, 17). Different symptoms/effects of cancer treatment that may have a detrimental effect on the QoL of cancer patients were addressed in the studies. Breast cancer was the most common studied disease in the studies analyzed (6, 9, 11, 15, 16). Studies have suggested that breast cancer treatment is related to symptoms, such as emesis and constipation, which may affect the patient's quality of life, while using serotonin antagonists as antiemetic treatment may promote constipation (6). Other patients reported lymphedema, pain, restricted range of motion in their shoulders and arms, as well as arm weakness after surgery (1). Nausea and vomiting are the main symptoms reported in GI, breast, and lung cancer patients after receiving chemotherapy, which leads to a decrease in quality of life (1, 4, 10). Fatigue was also one of the self-reported symptoms (1, 5). In a study of colorectal cancer, Late radiotherapy toxicity symptoms such as flatulence, abdominal distension, and diarrhea were also addressed, affecting the quality of life mainly in nutrition deteriorated patients (17). Lung cancer patients were noted to have fatigue, loss of appetite, shortness of breath, cough, pain, and bloody sputum, which are distressing to the patient (10). Gynecological cancer patients receiving chemotherapy also reported a decrease in their quality of life in terms of physical and social activities (18). Patients who are treated with chemotherapy frequently have a sarcopenic weight gain, which also has a deleterious effect impact on quality of life (10). Quality of life is further worsened by concomitant depression and anxiety, which are very common in patients at the time of diagnosis, as well as after the treatment (19).

Educational Interventions

Various kinds of interventional methods were used to reduce the side effects of the treatment received by the patient. The interventional methods included patient health education, physical training, nutritional counseling, different self-care techniques, psychological support, physiotherapy to improve the patient's overall quality of life(QoL,) (4, 5), and also providing caregivers and spousal support for better handling of the situation, to cope with the stress and thereby improve quality of life of the patient., (7, 9). All studies analyzed have included some educational component in their intervention plan, during or after the cancer treatment. Patient education included different aspects like nutrition counseling, diet plan, and prevention of side effects related to cancer treatment in patients by patient self-care and education.

Table 2: Literature Samples

#	Authors	Title	Diagnoses	Intervention	QOF assessment Tools	outcomes
1	Jun Xie1 , Tingli Zhu2*, Qun Lu	The effects of add-on self-care education on quality of life and fatigue in gastrointestinal cancer patients undergoing chemotherapy	GI cancer	Visual aids, muscular progressive relaxation techniques, nutritional training	EORTC quality of life questionnaire QLQ-C30.	positive
2	Chi-Chin Huang1 & Han-Pin Kuo2,3 & Yueh-E Lin1,4	Effects of a Web-based Health Education Program on Quality of Life and Symptom Distress of Initially Diagnosed Advanced Non-Small Cell Lung Cancer Patients: A Randomized Controlled Trial	NSCLC	Web-based health education program	EORTC quality of life questionnaire QLQ-C30.	positive
3	Paula Ravasco, Isabel Monteiro-Grillo, and Maria Camilo	Individualized nutrition intervention is of major benefit to colorectal cancer patients: long-term follow-up of a randomized controlled trial of nutritional therapy	Colorectal cancer	Individualized nutritional counselling	Median quality-life dimensions scores	positive
4	Akiko Hanai1 • Hiroshi Ishiguro1 • Takashi Sozu	Effects of a self-management program on antiemetic-induced constipation during chemotherapy among breast cancer patients: a randomized controlled clinical trial	Breast cancer	self management program to manage their emesis and constipation	health-related quality of life (HRQOL).	No differences between groups
5	Fabrice Kwiatkowski1, Marie-Ange Mouret-Reynier2, Martine Duclos3,	Long-term improvement of breast cancer survivors' quality of life by a 2-week group physical and educational intervention: 5-year update of the 'PACThe' trial	Breast cancer	daily group supervised training, dietary education, physiotherapy and psychological support	SF36 questionnaire	positive
6	TimóteoMatthies Rico1 & Karina dos Santos Machado2 & Vanessa Pellegrini Fernandes3	Use of Text Messaging (SMS) for the Management of Side Effects in Cancer Patients Undergoing Chemotherapy Treatment: a Randomized Controlled Trial	Various	Text messages about managing side effects of chemotherapy	EORTC quality of life questionnaire QLQ-C30.	positive

Table 2: Literature Samples

#	Authors	Title	Diagnoses	Intervention	QOF assessment Tools	outcomes
7	Rita Rezaee1, Nasrin Shokrpour2, Maryam Rahimi	The effect of peer education on the self-efficacy and mental adjustment of breast cancer patients undergoing chemotherapy	Breast cancer	Peer education groups with one session, mental adjustment and self efficacy.	EORTC quality of life questionnaire QLQ-C30.	positive
8	Jolien M. Admiraal, MSc, Annette W.G. van der Velden, MD, Jenke I. Geerling, MANP	Web-Based Tailored Psychoeducation for Breast Cancer Patients at the Onset of the Survivorship Phase: A Multicenter Randomized Controlled Trial	Breast cancer	ENCOURAGE program which relies on automated problem solving strategies, and services for presenting problems.	EORTC quality of life questionnaire QLQ-C30 and breast cancer specific Quality of Life Questionnaire (QLQ-BR23).	No differences between groups
9	Marcela dos Reis Bigatão1, Fernanda Maris Peria2, Daniela P. C. Tirapelli1	Educational program on fatigue for brain tumor patients: possibility strategy?	CNS	Study introduced a leaflet based on four types of contents: informational, energy conservation, physical exercise (walking) and sleep management.	The FACIT-F questionnaire	No differences between groups
10	F. KwiatkowskiM.A. Mouret-ReynierM. Duclos	Long term improved quality of life by a 2-week group physical and educational intervention shortly after breast cancer chemotherapy completion. Results of the 'Programme of Accompanying women after breast Cancer treatment completion in Thermal resorts' (PACThe) randomised clinical trial of 251 patients	Breast cancer	physical training, dietary education and physiotherapy.	SF36 questionnaire	positive
11	María JoséYusteSánchezMaríaTorresLacombaBeatrizSánchez	Health related quality of life improvement in breast cancer patients: Secondary outcome from a simple blinded, randomised clinical trial	Breast cancer	physiotherapy intervention combined with a therapeutic education program;	EORTC quality of life questionnaire QLQ-C30 and breast cancer specific Quality of Life Questionnaire (QLQ-BR23)	positive
12	IBénédictBelgacemab Candy AuclairabMarie-ChristineFedor	A caregiver educational program improves quality of life and burden for cancer patients and their caregivers: A randomised clinical trial	Various	The caregiver educational programme	SF36 questionnaire	positive
13	SaadeCómezÖzgülKarayurt	The effect of web-based training on life quality and spousal adjustment for women with breast cancer and their spouses	Breast cancer	Breast Cancer and Quality of Life website	Functional Assessment of Cancer Therapy-breast cancer scale and the Dyadic Adjustment Scale.	positive

Patient education about self-management of symptoms by muscle relaxation techniques was performed, which has been shown to be useful for preventing nausea and vomiting in GI cancer patients (4). The patients were first instructed using visual aids regarding the management of their conditions. Muscular progressive relaxation techniques were used to counteract nausea and emesis. Music was used to distract the patients throughout the whole chemotherapy treatment as well as before and after. One of the main elements of the self-care education was training about nutrition (4). Nutritional counseling, including dietary supplements and avoidance of fatty foods in the diet for breast and non-small cell lung cancer, educating patients to prevent anti-emetic induced constipation and prevent fatigue in brain tumors by implementing energy conservation methods (5, 6). Educational techniques such as instructing to perform abdominal massage, abdominal exercises to manage emesis and constipation associated with treatment (6), and Interventional therapy in hydrothermal centers in breast cancer patients included daily group supervised training, dietary education, physiotherapy, and psychological support (20). Providing information to reduce fatigue in brain tumor patients through physical exercise, managing their daily activities to conserve energy with the help of occupational therapy sessions and sleep management (5). Intervention for breast cancer patients includes physiotherapy, physical training, dietary education, nutrition counseling and group support provided to them to improve side effects of the treatment and help to maintain the quality of life in those patients in the long-term (21). Non-small cell lung cancer patients were offered a web-based health education program in Chinese teaching them about the thorough details of their lung cancer, including basics such as vital signs and symptoms to the anatomy and pathophysiology and all associated lab tests. Patients were also taught in regards to their treatment protocols as well as symptomatic management (10). In other studies - Breast, colon, and lung cancer patients received text messages about the side effects of chemotherapy and its management. Patients in the intervention group received text messages about managing side effects of chemotherapy from the beginning of treatment to cycle 4 that they attested to have read daily. The messages were delivered via the specially designed program- cHEmoTHERApp (2). Web-based educational counseling was also provided to the caregivers and spouses about the patient's diagnosis, and treatment (7, 9). The caregiver educational program was based on the teaching of care classified into four categories: meal support, nursing care, welfare care, and symptom management (7).

QoL ASSESSMENT TOOLS

The most commonly used tool was the Research and Treatment of Cancer (EORTC) quality of life questionnaire QLQ-C30 (1, 23, 5, 10, 3) which was developed by The European Organization for Research and Treatment of Cancer - QL group as a combined assessment system composed of a generic core questionnaire, EORTC QLQ-C30, which evaluates issues common to different cancer sites and treatments, and a range of supplementary modules designed to assess specific issues, according to the type of treatment or disease site, or to dimensions like fatigue (22). Another important used questionnaire was the 36-Item Short Form Survey. The SF-36 was designed for use in clinical practice

and research, health policy evaluations, and general population surveys. The SF-36 includes one multi-item scale that assesses eight health concepts: limitations in physical activities because of health problems, limitations in social activities because of physical or emotional problems, limitations in usual role activities because of physical health problems, bodily pain, general mental health (psychological distress and well-being), limitations in usual role activities because of emotional problems, vitality (energy and fatigue) general health perceptions (23). Two studies analyzed the QoL of patients using The Functional Assessment of Cancer Therapy (4,6) research (24), the organization offers validated questionnaires for almost all cancer types. Two questionnaires were used during our research - The Functional Assessment of Cancer Therapy - Breast (FACT-B) and The Functional Assessment of Chronic Illness Therapy - Fatigue (FACIT-F). The Functional Assessment of Cancer Therapy - Breast (FACT-B) is a 37-item instrument designed to measure five domains of HRQOL in breast cancer patients: Physical, social, emotional, and functional well-being as well as a breast-cancer subscale (BCS). The Functional Assessment of Chronic Illness Therapy - Fatigue (FACIT-F) (4) FACIT is a 40-item measure that assesses self-reported fatigue and its impact on daily activities and function. It is a subset of the longer Functional Assessment of Cancer Therapy - Anemia (FACT-An). This 20-item subscale, referred to as the anemia subscale, comprises 13 items that assess fatigue and anemia. Another interesting QoL assessment tool was the Health-Related Quality of Life Scale (25*) Developed by the Centers for Disease Control and Prevention, the Health-Related Quality of Life (HRQOL-14) scale has 14 items that give a complete overview of a person's health and wellbeing. The scale consists of three modules. The Core Healthy Days module, The Activity Limitations module, and The Healthy Days Symptoms module.

OUTCOMES

In some of the studies, cancer patients undergoing treatment have positive outcomes in terms of improving their overall quality of life by preventing side effects (2, 3, 4, 7, 9, 10, 17, 19, 20, 21). For example, a study of gastrointestinal patients undergoing chemotherapy has beneficial effects with self-care education in improving quality of life such as nausea, emesis, and constipation with patient education, physical therapy, nutritional counseling, and diet plans (4). In studies Implementing methods like patient self-care education to prevent fatigue and side effects of the treatment (4). Another example of web-based health education to teach patients about their diagnosis, explain the pathophysiology of their disease, and about treatment has shown a significant impact on lessening the distress caused by the disease (10). Nutritional therapy and education among colorectal cancer patients have a favorable outcome (17). In breast cancer patients physical training in hydrothermal centers, dietary education, physiotherapy, psychological support, and peer education had an improvement in quality of life both after the treatment and in long term (19, 20, 21). Web-based training not only improved patient care but also had a positive impact on their spouses which helped them to understand the patient's needs and make adjustments according to the patients' needs (9). Caregiver education in terms of patient care, welfare, meal support, and symptom management has also improved patient's quality of life and decreased

caregiver's burden (7) and it was also reported that patients receiving chemotherapy who received text messages(SMS) to manage their side effects had a favorable outcome in their side effects prevention by better management with the help of intervention method (2).

Other studies showed no benefit from educational intervention or required further research for final results: Self-management techniques for the management of anti-emetic induced constipation and emesis by abdominal massage, exercise, and education about defecation position do not improve patient's symptoms and thereby no improvement in their quality of life(6). There was also no improvement in patient's outcome through the educational program on fatigue prevention in brain tumor patients with the use of non-pharmacological interventions by providing information on energy conservation, physical exercise and sleep management strategies (5). In the breast cancer study patients, no significant difference in the web-based psychoeducation and health-related quality of life changes were noticed between the intervention and control group patients. However, an improvement in quality of life was observed in both groups by alleviating the distress (11). In gynecological cancer patients, chemotherapy causes a decrease in quality of life but Art therapy may help in improving the patient's quality of life QoL during chemotherapy. FACT-G (Functional assessment of cancer therapy-general) assessment does not show significant improvement in QoL Further more studies are required to have more evidence on it (18)

CONCLUSION

Out of 13 studies analyzed, 10 showed positive outcomes (Table 1). Studies with positive outcomes showed the improvement in patient's quality of life during or after cancer treatment and educational interventions proved to be beneficial in improving patients' Physical, Emotional, and Social well-being and helping them to cope with the stress and trauma due to the cancer diagnosis and treatment. Self-care education proved effective in improving both quality of life and antifatigue in gastrointestinal cancer patients undergoing chemotherapy. Self-care education could be considered as a complementary approach during combination chemotherapy in gastrointestinal cancer patients.(4)Web-based health education and peer education as well as text messaging, may be a tool for supporting side effect management in cancer patients (2, 9, 19). Daily group supervised training, dietary education, physiotherapy, and psychological support. Therapeutic education, support groups, self-care education, web counseling, DIET and nutritional counseling, sharing the importance of physical exercise or physical activity, and providing information and support to the family, spouse, and other caregivers can help them to know about the patient's condition. They may provide their support in the patient treatment process. Therefore, by acknowledging family, spouse and caregivers needs, we can have better results for patient care and can also decrease their burden. Monitoring and prevention of treatment-related side effects are really important in the care of the patient. We can conclude that educational interventions may be useful in maintaining and improving cancer patients' quality of life.

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