



Evaluation of the Effect of Patient Education on the Quality of Life Cancer Patients Undergoing Radiotherapy: A Review Article

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Authors' contributions

This work was carried out in collaboration among all authors. Author MM designed the study, wrote the protocol and wrote the first draft of the manuscript. Author SP performed the statistical analysis.

Author MN managed the analyses of the study and performed sampling. Author FE managed the literature searches, performed sampling. Author MM managed of the study, edited the manuscript wrote the manuscript. Authors FE and SP wrote, submitting and editing manuscript.

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Review Article

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ABSTRACT

Background: Currently, cancer is a major problem of human societies. Different methods are used for cancer treatment including radiotherapy. Radiotherapy affects patients in different ways and makes changes to the quality of life of cancer patients undergoing radiotherapy.

Objectives: The purpose of this article is to assess the effect of education on the quality of life of cancer patients undergoing radiotherapy.

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Methods: This is a review article with key words including “Education”, “Quality of life”, “Patients”, “Cancer”, and “Radiotherapy” in some Data bases such as Medline, Scopus, Science direct and Ovid during 2000 to 2019.

Results: Of the 928 original articles, six papers were selected based on the main criteria, such as English and Persian language, articles of clinical relevance, and articles after 2000. In this study, articles were based on clinical trials on women and men patients with different cancers. Results of this study proved that education is the major component in improving these patients' quality of life.

Conclusion: Radiotherapy, alone or in combination with other therapeutic methods, is among main treatments of cancer patients. Despite its beneficial effects, it is associated with some side effects reducing the quality of life of these patients. Physical and mental complications were equally involved in reducing their quality of life. Based on this finding, it is suggested that the use of educational methods and training and rehabilitation programs can influence the quality of cancer patients treated with various methods, especially radiation therapy.

Keywords: Education; quality of life; cancer patient; radiotherapy; systematic review.

1. INTRODUCTION

Nowadays, cancer is one of the leading causes of mortality all over the world [1]. According to the World Health Organization, Cancer is the second leading cause of death globally, and is responsible for an estimated 9.6 million deaths in 2018. Globally, about 1 in 6 deaths is due to cancer [2]. Based on the latest statistical and epidemiological investigations in Iran, cancers are the third mortality cause in Iran after cardiovascular diseases and accident which lead to more than 98 daily deaths [3]. The most prevalent cancers in the world and in Iran were breast cancer, prostate cancer, gastrointestinal cancer, and head and neck cancers in 2012 [4]. Many factors are involved in cancer incidence, the most important of which are aging, race, and heredity [5]. Fatigue, mental and spiritual issues, disease denial, disorder of mental image due to alterations in body organ functions and course of disease are among general effects of cancers. Other cancer characteristics that affect the quality of life of cancer patients include type of cancer, stage of cancer, time of initial diagnosis, patient's disease acceptance, cancer-caused pain, mental stress, and care providers' behavior [6]. Different treatments are available for different types of cancers including the three main treatments which are surgery, chemotherapy, and radiation therapy (also called radiotherapy). Radiotherapy is a key element in anti-cancer treatment and is a part of treatment in approximately 4 of 10 cancer patients [7]. Cancer is not always curable, different treatments improve significantly the survival. Scientific-technological advances in the last half of twentieth century significantly changed the course of disease which led to detection of the main mortality causes and increased life

span. Yet, this increase life span has brought a different kind of concerns regarding limitations of living with chronic diseases. Generally, a longer life span is not always associated with improved quality of life [8]. In this regard, quality of life issues has particularly attracted attention and widely studies in different fields, especially oncology. Severe physical, mental, social, emotional and spiritual effects resulted in individual's vulnerability and modified meaning of life which may lead to patient's pain and suffering [9].

“Quality of life” is multi-dimensional structural compassion with good physical, social, and functional aspects [10] which points to individual's mental evaluation of general health and quality of life [11]. Different treatments of breast cancer may limit patient's daily activities leading to long-term disturbance in the life situation [12]. These disorders include nausea, vomiting, loss of sexual quality, pain and fatigue in women with breast cancer [13]. Additionally, any prostate cancer treatment is associated with side effects: active treatments such as prostatectomy or radiotherapy often causes urinary, bowel, and sexual complication and thus reducing health-related quality of life and increases mental and physical anxiety [14]. Life of these patients is associated with a significant uncertainty about cancer progression which affects their health-related quality of life, especially mental welfare [15]. While side effects of different treatment choices vary in oncologic point of view, most urinary and sexual complaints are reported for surgery and sexual and rectal disorders for radiotherapy [16]. In addition, cancer related symptoms and mental disorder affects the quality of life of survivor patients of gastrointestinal cancers [17]. Gastrointestinal

cancer diseases who have undergone treatment experienced surgery-related complications such as dysphagia, and chemotherapy and radiotherapy related complications such as diarrhea, urinary or bowel disorders, sexual dysfunction, and paresthesia [18].

When cancer is diagnosed, patients often face complicated medical information on their disease and treatment [19]. Many people do not have enough information about cancer symptoms and treatment [20]. Education is an important factor in health literacy and health-related quality of life of cancer patients [21]. Providing appropriate information is an important aspect of supporting cancer survivors. Providing appropriate information, e.g. regarding diagnosis, treatment, long-term effects, and health care services can lead to informed decision making, therapeutic recovery, low anxiety levels, and higher satisfaction with received care and information [22]. So, the purpose of this article was to assess the role of education on the quality of life of cancer patients.

2. METHODS

Current article is a review study. The data in this study was collected from PubMed, Scopus, Science Direct and Ovid databases. Comprehensive or combined search of key words “Education”, “Quality of life”, “Patients”, “Cancer”, and “Radiotherapy” was performed based on inclusion and exclusion criteria presented in Table 1 and the results were reported in Tables 2 and 3.

3. RESULTS

Six studies were achieved after searching different studies during 2000 to 2019 in different databases. All of these articles were clinical trials in which the effect of different methods of education on the quality of life of cancer patients was evaluated. Three studies were conducted in china and the other studies were conducted in Iran, Australia and Germany. In all studies, education was the key component in improving

Table 1. Synonymous and inclusion and exclusion criteria for selection of studied articles

Exclusion criteria	Inclusion criteria
Articles published before 2000.	Articles published during 2000 to 2019.
Articles in languages except English and Persian	Articles in English and Persian
Health policies, textbooks, conferences, posters	Review articles, thesis
Words	Synonymous
Quality of life	Learning, Improvement, Teaching, Training
Education	Sick person, Sufferer
Patients	Neoplasms, Carcinoma, Oncology
cancer	Irradiation, X-ray therapy, Phototherapy
Radiotherapy	radiation, Radiation therapy, Curietherapy therapy, Radium therapy, Actinotherapy

Table 2. Search strategy similar to the sample article table

Search term	Medline	Scopus	Science direct	Ovid
1 Quality of life	286,117	51,829	26,143	12,639
2 Education or Learning, or Improvement, teaching, or Training	1,993,360	33,742	40,219	48
3 Integrate two search strategies 1 and 2	1,970,567	1,943	21,621	5,415
4 Patients or sick person or sufferer	4,692,366	328,223	19,458	58,387
5 Cancer or Neoplasms or Carcinoma or Oncology	3,538,497	45,942	25,149	762
6 Integrate two search strategies 4 and 5	1,273,135	19,779	19	68
7 Radiotherapy or Irradiation or X-ray therapy or phototherapy radiation or radiation therapy or Curietherapy therapy or radium therapy or Actinotherapy	335,458	79,223	281,246	316
8 Total	4	790	55	79

quality of life of cancer patients undergoing radiotherapy, chemotherapy, or surgery. Finally, findings of these studies are briefly presented in the following Table 3.

4. DISCUSSION

Cancer and its different therapeutic methods negatively affect patients' quality of life [8,12]. Different factors affect the quality of life of cancer patients undergoing radiotherapy. Evaluation of these studies showed that education can improve the quality of life cancer patients undergoing radiotherapy. Effects of education with different methods on the quality of life of patients have been evaluated. For example, self-efficacy can improve the quality of life of cancer patients undergoing radiotherapy. This was found in Lu et al. study on the upper part of the pharynx of patients in 2017 [27].

Cancer patient who are undergoing radiotherapy often have negative emotions, depression, and anxiety [14,23,25]. According to Huang et al. study, practical education can reduce the effect of these emotions and improve the quality of life of patients [26]. This study is consistent with Dunn et al. study in 2004 on education of cancer patients undergoing radiotherapy through digital media [23].

Different approaches may help improve the quality of life of cancer patients. Rehabilitation is a very effective method to for quality of life improvement. There are numerous rehabilitation interventions for these patients. Domnick et al. assessed the effect of nutritional rehabilitation and reflexology on cancer patients undergoing chemotherapy and radiotherapy. They reported improved quality of life in short period of time [28].

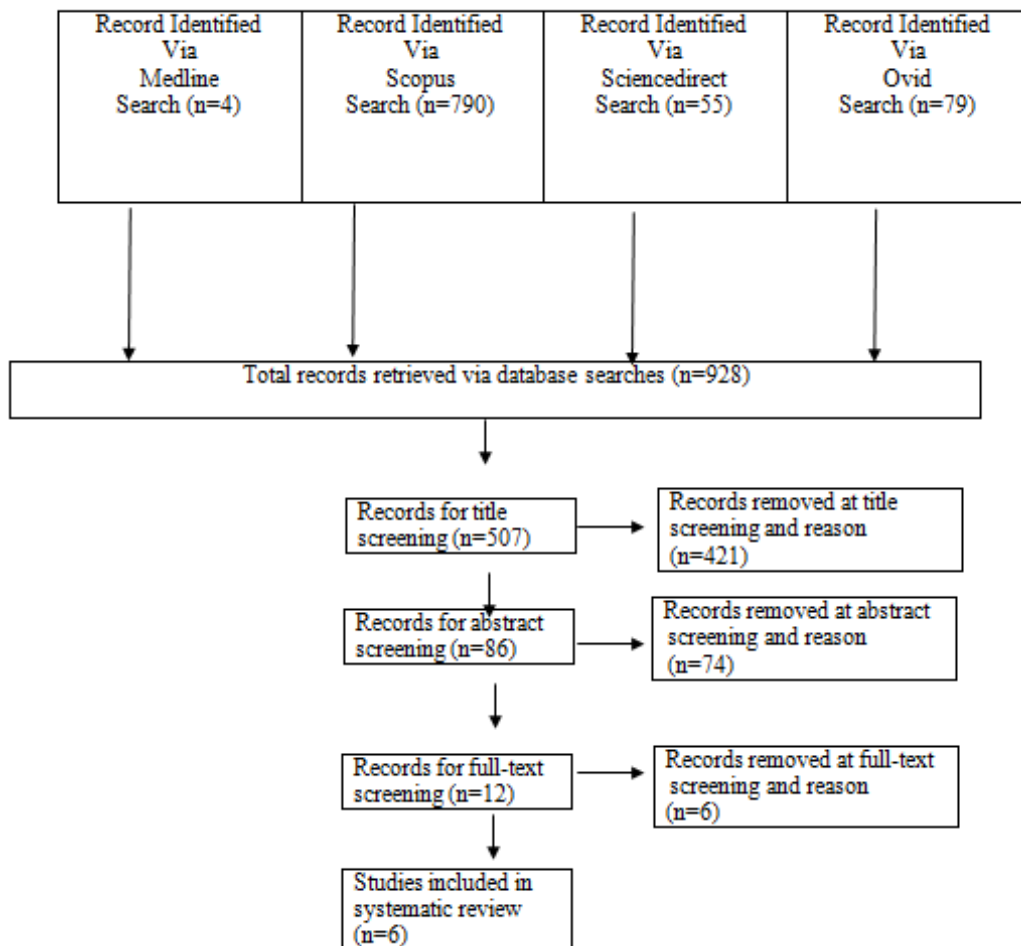


Fig. 1. Article screening process flow char

Table 3. Summary of the final articles reviewed

Authors	Publication year	Title	Study design	Tools	Methods	Results
Dunn et al.	2004	Evaluating patient education materials about radiation therapy	Quasi-experimental	1-The knowledge of radiation therapy scale 2-The psychological distress subscale of the psychosocial adjustment to illness scale 3-The cognitive judgmental aspect of patients' psychological distress was measured with the Constructed Meaning Scale 4-Physical wellbeing was measured using the SF36 physical functioning subscale 5-Coping self-efficacy was assessed using the Cancer Behaviour Inventory	26 patients with head and neck cancer and 66 patients with breast cancer undergoing radiotherapy were divided into intervention and control groups. Patients in interventions group received video educations for psychological anxiety, self-efficacy, physical symptoms, and adoptability with treatment side effects. Afterwards, patients were evaluated.	No significant difference was observed between control and interventions group regrading each variable. Yet, patients in intervention group reported a high satisfaction level of video education and all of them suggest video education for all patients undergoing radiotherapy. Also, 90% of patients in intervention group reported that they were not aware of some information presented in the videos [23].
Sharif et al.	2010	The effect of peer-led education on the life quality of mastectomy	Randomized clinical trial	General quality of life questionnaire for cancer patients	99 patients with breast cancer stage I and II after mastectomy,	For intervention group, results showed significant improvement in all aspects

Authors	Publication year	Title	Study design	Tools	Methods	Results
		patients referred to breast cancer-clinics in Shiraz, Iran 2009		(QLQ-30), quality of life questionnaire for breast cancer patients (QLQ-BR23), Questionnaire of European Organization for cancer quality of life (EPRTC QLQ-30)	chemotherapy, radiotherapy, and hormone therapy were divided into intervention group (50 patients) and control group (49 patients). Intervention group received one-month education (one session per week) on the cancer concept, breast cancer, diagnosis, treatment, complication, self-care, relaxing techniques, and disease adoptability. These patients were evaluated before intervention, after intervention and two months after intervention.	of quality of life and symptom reduction (P<0.001). While no significant difference was observed in any aspect of quality of life. Results of this study proved education as an effective intervention for women after mastectomy to improve their quality of life [24].
Chen et al.	2013	Qigong improves quality of life in women undergoing radiotherapy for breast cancer: results of a randomized controlled trial	Randomized clinical trial	Centre for Epidemiologic Studies Depression Scale (CES-D) ·Brief Fatigue Inventory (BFI) ·Pittsburgh Sleep Quality Index (PSQI) · Functional Assessment of Cancer Therapy-General (FACT-G)	Ninety-six women with breast cancer were selected from a cancer center in Shanghai in China and randomly divided into intervention group (49 patients) and control group (47 patients). women in intervention group had 5 educational sessions during 5 or 6 weeks of radiotherapy. Initial results of quality of life	Mean age of women in this study was 46 ranging from 25 to 64 years. Fifty-four percent of women undergone operation. Multilevel analysis revealed that women in intervention group reported depression symptoms less frequently compared with case group (P=0.05). women with depression symptoms at the beginning of

Authors	Publication year	Title	Study design	Tools	Methods	Results
				questionnaires	(i.e. signs of depression, fatigue, sleep disorder, and general quality of life) and cortisol range, was evaluated at the beginning of the course, during treatment, one month, and three months after treatment.	radiotherapy, reported less fatigue (P<0.01) and better general quality of life (P<0.05) in intervention group compared with control group. No significant difference was observed in terms of sleep disorder or cortisol range [25].
Huang et al.	2017	Effect of resourcefulness training on symptoms distress of patients with nasopharyngeal carcinoma	Randomized clinical trial	General quality of life questionnaire for cancer patients (EORTC QLQ-30), Self-rating anxiety score (SAS), and Self-rating depression scale (SDS)	This study was performed during 2015 to 2017 on 224 patients which were randomly divided into two groups with 112 members. Case group participated in some educational sessions up to one week before hospital discharge.	Education was effective in reducing anxiety and depression and improving quality of life, while routine intervention had less effects on the quality of life of patients [26].
Lu et al.	2017	Effectiveness of an Intervention to Promote Self-Efficacy on Quality of Life of Patients with Nasopharyngeal Carcinoma of the Zhuang Tribe Minority in Guangxi, China	Randomized clinical trial	General quality of life questionnaire for cancer patients (QLQ-30) and general self-efficacy scale	In this study, 120 patients with nasopharyngeal carcinoma (60 patients in intervention group and 60 patients in control group) who were undergoing chemo radiotherapy in 2013, received 5 educational sessions on health, behavioral therapy, and psychological interventions at	Results demonstrated no significant difference in the quality of life at admission (all P-values>0.05). Quality of life improvement was significantly different in the two groups during two years of study. Quality of life score reduced in both groups during hospital admission, though this was more significant in control group (general

Authors	Publication year	Title	Study design	Tools	Methods	Results
					admission day, 2 nd or 3 rd day, before chemotherapy, before radiotherapy, and three days before hospital discharge. Questionnaires were completed at discharge, 6 month, one year, and two years after discharge.	quality of life: control: - 39.31 vs. self-efficacy: - 27.04, P<0.05). After hospital discharge, quality of life score improved in both groups. Quality of life and self-efficacy lasted longer in intervention group (all P-values<0.05) [27].
Domnick et al.	2017	Evaluation of the Effectiveness of a Multimodal Complementary Medicine Program for Improving the Quality of Life of Cancer Patients during Adjuvant Radiotherapy and/or Chemotherapy or Outpatient Aftercare	clinical trial	General quality of life questionnaire for cancer patients (EORTC QLQ-30)	100 patients with advanced cancers undergoing radiotherapy and chemotherapy, and outpatient treatment were divided into intervention group (50 patients) and control group I (33 patients) and control group II (17 patients). Intervention group received 3 weeks of rehabilitation interventions such as nutrition and reflexology and evaluated after 3 months. Control group I received poor interventions while control group II received no interventions.	Quality of life significantly improved in intervention group three months after rehabilitation interventions in comparison with control group II (P=0.022) but not compared with control group I. Other parameters indicated significant improvement in cognitive function (P<0.05 in comparison with control groups I and II) and social function (P<0.05 in comparison with control group II) [28].

Most studies were conducted in countries in East Asia. In these studies, the effect of their culture should be considered that is among limitations of this study. The other limitation of this study is that patients were receiving different treatments such as chemotherapy or surgery besides radiotherapy. Thus, we cannot firmly conclude the effectiveness of education on the quality of life of patients who are merely undergoing radiotherapy.

5. CONCLUSION

As it is shown, the quality of life of cancer patients is affected by many factors. Thus, it is suggested that a comprehensive plan be designed for these patients from the first therapeutic session so that these patients have a comfortable life despite their disease and treatment.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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