

# Internet-based support programs to alleviate psychosocial and physical symptoms in cancer patients: A literature analysis

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## Abstract

In this review the effect of internet-based support programs on psychosocial and physical symptoms resulting from cancer diagnosis and treatment is analyzed. Selection of studies was based on the following criteria: (non-)randomized controlled trials, performed in adult cancer patients, comparing quantitative psychosocial and/or physical outcomes of an internet-based support program with (a) comparison group(s). Literature search yielded 2032 studies of which 16 fulfilled the eligibility criteria.

Three different internet-based support programs were identified: social support groups, online therapy for psychosocial/physical symptoms, and online systems integrating information, support, and coaching services. Outcomes improved by these programs in nine studies. Especially

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fatigue, social support, and distress improved, regardless of the program type. All online systems showed positive effects, mainly for social support and quality of life.

This analysis indicates that internet-based support programs are effective in improving psychosocial and physical symptoms in cancer patients.

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*Keywords:* Oncology; Internet; Online; Support; Therapy; Effectiveness

## 1. Introduction

A diagnosis of cancer often has a disruptive impact on a patient's life. Cancer patients frequently experience psychosocial and/or physical distressing symptoms [1–3]. The importance of supporting patients adequately regarding symptoms resulting from diagnosis and treatment has been widely recognized [4,5]. However, supportive care needs still go unnoticed frequently [6,7]. To detect and meet the needs of this rapidly expanding patient population, the health care system is urged to develop and employ (cost-) effective programs to educate and support patients.

The internet is a viable medium by which patients can be supported regarding psychosocial and/or physical symptoms. Already in 2007, a Dutch cross-sectional survey on cancer-related internet use demonstrated that 60% of patients frequently used internet by themselves and 9% via others [8], reflecting the high acceptance of internet as a support and information channel. It has important advantages given its wide availability and accessibility, cost-efficiency, and ability to provide tailored information and support [8–13]. During the last years, many new eHealth technologies have been introduced in cancer patient care, such as internet-based support programs addressing psychosocial/physical problems, internet-based communication and decision aids to promote shared decision making [14] and mobile applications providing survivorship care plans [15].

Internet-based support programs seem particularly well-suited to fulfill the unmet supportive care needs [4]. These programs have been linked to positive outcomes such as increased knowledge, perceived social support, and improved health behaviors for people with chronic diseases [16]. Given the comparable nature of chronic diseases and cancer, these outcomes may also apply to cancer patients [17]. Additionally, several studies showed the feasibility and acceptability of internet-based support programs for both psychosocial and physical symptoms in these patients [4,18,19].

Despite these promising findings, the effects of internet-based support programs specifically designed for cancer patients are less clear. Reviews on the effects of internet-based support programs are scarce in the field of oncology. This paucity is due to the heterogeneous nature of these programs as well as measured study outcomes which renders rigorous evaluation of the effects difficult. The available reviews are either rather broad, for example, summarizing all types of internet-based support including non-professional

resources [20], or specifically focus on a single type of support program (e.g. online psychological therapy [4]) or tumor type [12]. Also, assessment of study quality has received limited attention. Therefore, the aim of this review was to analyze published clinical trials to assess the effects of internet-based support programs. More specifically, it was examined whether these programs are capable of alleviating psychosocial and/or physical symptoms resulting from cancer diagnosis and treatment. Additionally, the (methodological) quality of the included studies was evaluated.

## 2. Methods

### 2.1. Eligibility criteria for article selection

Articles were selected based on the following eligibility criteria.

*Study design.* Eligible studies were randomized controlled trials (RCT) and non-randomized controlled trials (CT), performed in adult cancer patients ( $\geq 18$  years), comparing quantitative psychosocial and/or physical outcomes of an internet-based support program with (a) comparison group(s). ‘Cancer patients’ were defined as individuals diagnosed with any solid cancer type, irrespective of disease stage, treatment phase, type of treatment, and time since diagnosis. Studies in mixed populations were only included if data for cancer patients were reported separately. Studies must have reported original data. Letters to the editor, patient stories, posters, thesis, review studies, and non-English records were excluded.

*Internet-based support program.* An internet-based support program was defined as any program that aimed to rehabilitate or support cancer patients regarding psychosocial and/or physical symptoms resulting from diagnosis and treatment. Programs that were not primarily designed to support/rehabilitate (e.g. treatment decision aids and health behavior change interventions) were beyond the scope of this review and excluded. Programs focusing exclusively on education were only included if the education aimed to support/rehabilitate cancer patients. The internet-based support program should have been designed by (a) health care professional(s). Studies regarding social support groups were eligible if the groups were moderated by a health care professional. Studies that described programs without access to the internet (e.g. CD-rom or DVD) or to a website (e.g. therapy via e-mail) were excluded.

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