



## Review article

## Effects of eHealth for patients and informal caregivers confronted with cancer: A meta-review



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## ABSTRACT

**Background:** eHealth can be defined as information provision about illness or health care and/or support for patients and/or informal caregivers, using the computer or related technologies. eHealth interventions are increasingly being used in cancer care, e.g. to support patients and informal caregivers in managing symptoms and problems in daily life.

**Objectives:** To synthesize evidence from systematic reviews on the effects of eHealth for cancer patients or their informal caregivers.

**Materials and Methods:** A systematic meta-review, in the sense of a systematic review of reviews, was conducted. Searches were performed in PubMed, Embase, CINAHL, PsycINFO, and the Cochrane Library. All steps in the review process were either performed by two reviewers independently or checked by a second reviewer. Disagreements were resolved by consensus.

**Results:** Ten systematic reviews were included. All reviews focused on the effects of eHealth for patients and none on effects for informal caregivers. Except for one review of high methodological quality, all reviews were of moderate methodological quality. Evidence was found for effects on perceived support, knowledge levels, and information competence of cancer patients. Indications of evidence were found for health status and healthcare participation. Findings were inconsistent for outcomes related to decision-making, psychological wellbeing, depression and anxiety, and quality of life. No evidence was found for effects on physical and functional wellbeing.

**Conclusion:** There is evidence for positive effects of eHealth on perceived support, knowledge, and information competence of cancer patients. For effects on other outcomes in cancer patients, findings are mainly inconsistent or lacking. This meta-review did not find relevant reviews focusing on or including the effects of eHealth on informal caregivers, which seems a rather unexplored area.

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## 1. Introduction

Cancer and its treatment make a great demand on patients as well as on informal caregivers. Cancer patients often suffer from problems and symptoms such as pain, fatigue, depression, anxiety, and hopelessness [1]. In addition, their informal caregivers often experience a high care burden, psychological problems, and a decrease in social activities [2]. Professional support can help them in dealing with these symptoms and problems. However, given that many people prefer to keep control over their own life and in view of increasing healthcare costs, it is not self-evident that all support should be given in face-to-face contacts between professionals and care recipients. EHealth may complement or replace traditional professional support to some extent [3,4]. We define eHealth as the provision of information about illness or health care and/or support for patients and/or informal caregivers using computers or related technologies. Our definition is inspired by Eysenbach's well-known statement describing eHealth as "...an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the internet and related technologies" [5].

Nowadays, various computer-based and internet-based eHealth interventions are available for patients and informal caregivers confronted with cancer. These interventions provide information about cancer and its treatment (e.g. [www.oncolink.org](http://www.oncolink.org)), support in decision-making (e.g. [www.prostaatkankerkeuzehulp.nl](http://www.prostaatkankerkeuzehulp.nl)), support in self-management, (e.g. [www.oncokompas.nl](http://www.oncokompas.nl)), support for physical and emotional problems (e.g. [www.helpforcancer caregivers.com](http://www.helpforcancer caregivers.com)), and peer support (e.g. [www.cancerstories.info](http://www.cancerstories.info)).

Given the growing importance of eHealth in modern health care, it is relevant to see what evidence already exists regarding the effects of eHealth in people confronted with cancer. Since several systematic reviews had already been published, we performed a meta-review in which we analyzed and synthesized the evidence from existing reviews. In this meta-review we address the following primary question:

1. What evidence can be derived from existing systematic reviews about the effects of eHealth for patients with cancer and/or their informal caregivers?

The secondary question is:

2. What specific types of eHealth interventions for patients with specific types of cancer and/or their informal caregivers are addressed in the relevant systematic reviews?

## 2. Material and methods

### 2.1. Design

We conducted a meta-review, i.e. a systematic review of reviews. This review type is suitable for describing the quality, discerning the heterogeneity, and identifying lacunas in the current evidence base, since it synthesizes evidence from relevant previous systematic reviews [6].

### 2.2. Eligibility criteria

References were eligible for inclusion if they concerned a literature review that satisfies all of the following four criteria, namely if it:

- 1) reports on the effects of eHealth. As stated before, we define eHealth as the provision of information about illness or health care and/or support for patients or informal caregivers using computers or related technologies;
- 2) concerns the effects on adult patients diagnosed with cancer and/or their informal caregivers. Reviews that also include studies among non-cancer groups were only eligible for inclusion if they reported the effects on cancer patients separately;
- 3) is a systematic review. We considered a review 'systematic' if the following criteria were satisfied: (a) search terms are presented; (b) searches are done in Pubmed/Medline or Cancerlit and at least one other international literature database;
- 4) has an overall methodological score of  $\geq 3$  (see Section '2.5 Quality assessment').

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