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Review

From chronic disease management to person-centered eHealth; a review on the necessity for blended care

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ABSTRACT

Background: A growing need for structural changes in the organization of the health care system has emerged from the fast-growing number of people with chronic illnesses. eHealth supported self-management programs offer a way to change the traditional approach to person-centered care.
Objective: Inclusion and evaluation of the studies e-Vita and PORTALS, which focused on the necessary elements for implementation of eHealth supported self-management for Chronic Obstructive Pulmonary Disease (COPD) and Oral Anticoagulation Therapy (OAT) patients.
Summary: Based on this narrative review of the e-Vita COPD study and the PORTALS study, we conclude that eHealth supported self-management integrated into usual care can help patients with COPD and OAT to manage their disease better. We assume that blended care with total integration of eHealth and usual care will provide better quality of care in the long term. While eHealth-supported self-management was not superior to usual care for health status, the studies reported no negative effects, suggesting that eHealth is a safe option for delivery of self-management support and high quality disease management.
Summary: Usage of the eHealth platforms is better under conditions of perfect integration into usual care and with personal assistance and coaching of patients. The usage is the highest for the patients with platforms that add high practical value to day to day life.
Summary: The need to educate and coach patients in the use of web-based platforms and to educate healthcare professionals to take a different role, is of great importance. Furthermore, eHealth supported self-management programs need to be offered for a sufficient period to give patients the chance to change their behavior, and finally achieve a better health status.
Implications for future research and clinical practice: More studies are needed (preferably with larger sample groups, and including non-users) to gain more insight into the optimal combination of usual care and eHealth based self-management, the preferences and needs of various patients, the necessary education for healthcare professionals and patients, the best platform for patients that is easy to use, as well as the related costs.

The number of individuals with chronic illness and multimorbidity is growing due to rapid aging of the population and a longer life expectancy of individuals. By 2050 the number of persons aged 80 or over will be tripled and all major areas of the world, except Africa, will have nearly a quarter or more of their populations aged 60 or over.[1] This rise will be associated with an increase in the rate of chronic illnesses; already in 2010 eighty-six percent of all health care expenses in the US was intended for people with one or more chronic medical conditions.[2] In the Netherlands thirty-two percent of the total population had a chronic illness in 2014, which is thought to rise to forty percent in 2030.[3] Chronic illnesses are expected to be the primary cause of death and disability in the world by 2020.[4]

The increase in chronic diseases leads to a higher workload in health care, a substantial impact on society and an enormous burden on patients' lives,[5–9] which results in a growing need for structural changes of the organization of the health care system. High quality management of chronic illnesses can only be achieved if patients take responsibility. Therefore, it is important to empower them to take charge of their own health. This concept is reflected as self-management and provides more autonomy for the patient, improves quality of life and self-efficacy and it reduces the burden

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of specialized centers.[10,11] eHealth interventions can be effective to stimulate self-management[12,13]; patients that use self-management programs are nowadays usually supported by tailored eHealth platforms.[14] The necessity to implement self-management through eHealth is immense as the number of individuals with chronic illness and multimorbidity is growing fast. Self-management is not only a convenient way to organize care differently, it also offers patients significant benefit by providing them with more knowledge about their disease and involvement to be able to accept and maintain a healthier lifestyle. eHealth provides the means to facilitate communication between health care providers and patients, to transfer information and to facilitate the patient to become more self-managed. Research findings on eHealth supported self-management are conflicting within and between different conditions, with positive effects on self-management in some chronic diseases such as reduction in mortality in heart failure and improvement of glycemic control in diabetes, but with insufficient or inconsistent evidence of benefit for COPD, asthma and cancer.[15]

Based on the available knowledge in literature, we identified relevant factors to stimulate the use of self-management eHealth platforms to empower patients in self-management.[16] These proved to be: good organizational conditions with integration of self-management eHealth platforms in Integrated Disease Management (IDM), 'blended care' (combination of digital and regular care)[17,18]; conditions for education, coaching, training and support for healthcare professionals and patients[19]; and optimal technical conditions with a customized and user friendly eHealth platform.[20] Another necessary ingredient for self-management is a good relationship between the patient and health care professional with a role for the professional as a teacher or coach.[21] Unfortunately, the implementation of self-management (with or without eHealth) in daily practice is complex and difficult, partly because of inadequate consideration of the relevant attitudes and possibly skills of healthcare professionals, the obstacles of time and competing priorities and because of the plurals of all necessary factors to enhance self-management.[22]

Because of these difficulties of implementation in daily practice, we aimed to investigate the effect of different approaches to eHealth implementation on the use of platforms and on health status. Moreover, we aimed to examine if the effect depends on (1) subjectively experienced practical added value for patients, thereby making their everyday lives easier; and (2) the level of organization as an integral part of existing care. Therefore, we designed the studies e-Vita and PORTALS to study the effectiveness of different implementation methods of eHealth platforms into disease management of Chronic Obstructive Pulmonary Disease (COPD) and Oral Anticoagulation Therapy (OAT) patients.[23,24] We consider the results of both studies, we interpret them in the light of developments in the current literature and discuss the clinical implications of the findings.

Methods

Methods of the narrative review

In this narrative review, we included and evaluated two studies which focused on the necessary elements for implementation of eHealth supported self-management.

We described the methods of the studies, the results and compared them with the literature.

Methods of the included studies

The e-Vita COPD study is a multi-level study of an eHealth intervention integrated into primary care disease management for Chronic Obstructive Pulmonary Disease (COPD) patients. In the e-Vita COPD study, three levels of integration into usual care were used; high and medium level of integration ('blended care') and no integration (independent self-management component). High level of integration meant tailored education for the healthcare professionals on COPD, theory and practice of self-management and coaching of patients; a tailored start of the intervention for patients supported by a specialized nurse; and the eHealth platform as an integrated element of the disease management program. Medium level of integration meant a standard education for the healthcare professionals on COPD, a tailored start of the intervention for patients supported by a specialized nurse, and the eHealth platform as an integrated element of the disease management program. No integration meant a single offer and question to patients to use the eHealth platform. Furthermore, we used different levels of personal assistance and training for the patients; the support varied from home visits by a research nurse who coached and assisted in use of the platform, telephone consultation by a research nurse who explained the use of the platform, no support at all and explanation of the primary care nurse how to use the platform. The supportive elements were used in different combinations[24]

The PORTALS study is a study on the effectiveness of support by an eHealth platform for OAT. Three different programs were offered to three groups of patients, with standard usual care as the baseline for all patients. Two groups received a self-management program (including self-monitoring and self-dosage of medication) for OAT patients including the use of an eHealth platform, organized as blended care. For those two groups, different implementation methods were used; after inclusion patients were randomly divided into subgroups with e-learning as their education and with group training as education. Both trainings were developed tailor-made by experts in OAT. The platform was necessary for the patients in the self-management groups to monitor the diagnostic test results of blood clotting and to calculate and determine the dosage of the medication. The third parallel cohort group received only regular care.[23]

Results

The e-Vita COPD showed that patients used the self-management web-based platform significantly more in the blended care groups (high and medium level of integration in IDM) than the patients in the group without any integration of the eHealth platform (no integration in IDM).[25] The usage of the platform was higher when patients received more personal assistance in learning how to use the platform. Furthermore, no changes in health status were found before and after introduction of the eHealth platforms, and no differences were found between the groups with a high vs. a low level of personal assistance for patients. There was also no deterioration of the health status.[26]

The strength of this study lies in the combination of different study designs, thereby enabling simultaneous investigation of clinical effects, as well as the effects of different organizational implementation methods. The design was tailor-made for implementation in real-life healthcare settings, with a good support from healthcare professionals. Randomization was carried out for the level of assistance of patients.

The limitations are associated with the relatively new field of research in eHealth. The eHealth platforms are not perfectly matched to the needs of healthcare professionals and patients; usability, adaptability and compatibility with existing systems were insufficient. Because general practitioners, as well as patients, were free to volunteer, bias might have occurred in our research groups. Users were self-selected and were presumably motivated to use the platform, as would be expected in a real-life setting.