Smart Healthcare Apps for Quality Cancer Patient Support

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ABSTRACT

This paper analyzes the clinical and technological characteristics of cancer mobile apps that enable patients to securely record, manage, and share their information. It proposes an integrated approach towards developing quality mobile health apps for cancer and discusses issues relevant to the enhancement of patient experience and acceptance, adherence to treatment, and effective support of coordinated care. Regulation, standardization, and interoperability together with the existence of useful, accurate, and reliable tools for active patient engagement are important aids towards efficient cancer disease management. Improving quality of life and well-being, in a secure and safe manner that respects the patients’ privacy, seems to be a key challenge, together with the exploitation of the outcomes of recent research projects, relevant to end user digital engagement towards an integrated approach for the introduction of trustworthy, interoperable, usable, adaptable, and quality mobile health apps.

KEYWORDS

Big Data, Data Regulations, Electronic Health Record, Interoperability, Modular Architecture, Patient Data Privacy, Patient Empowerment, Personal Health Record, Quality of Life, Self-Management

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INTRODUCTION

Cancer is a generic term used to describe a large group of diseases that can affect any part of the body and is a leading cause of death worldwide (https://www.who.int/news-room/fact-sheets/detail/cancer). Cancer incidents have increased from 12.7 million in 2008 to 14.1 million in 2012 and 18.1 million new cases in 2018, and this trend is projected to continue (Bray et al., 2018). The different phases in the cancer care continuum are prevention, early detection, diagnosis, treatment, survivorship, and end-of-life care. Advances in medicine help patients increase their survival rate, or eventually be cured, when cancer occurs (McGuire, 2016). As cancer is perceived more as a chronic, rather than an acute disease, concepts of patient empowerment and self-management become relevant also in the oncologic field (Kushi et al., 2012).

Cancer patients require supportive care during and after treatment. These relate to physical, emotional, and social needs that vary over time and between treatments. Care and support for patients with cancer should include early recognition of signs and symptoms, support for self-care, personalized care planning, and routine use of patient-reported outcome (PRO) measures (Maher, 2013). Routine reporting of patient outcomes greatly facilitates the identification of present problems and impact of treatment. Patient-reported outcomes (PROs) also enhance patient-clinician communication that promotes shared decision-making (Kotronoulas et al., 2014; Valderas et al., 2008). Reporting of outcomes and interacting with physicians over a digital application or app has been shown to lower overall symptoms of distress, improve quality of life (QoL), and result in fewer emergency visits and improved overall survival (Basch et al., 2016; Denis et al., 2017).

Mobile devices are becoming an integral part of the healthcare industry, changing how care is delivered and received. In recent years, the Internet of Things (IoT) has emerged as a new computing paradigm, in which a continuum of devices, sensors and objects are interconnected with a variety of communication solutions. IoT can help improve the living standard of citizens. It is anticipated that more than 50 billion devices, ranging from smartphones, laptops, sensors, and game consoles, will be connected to the Internet through several heterogeneous access network technologies such as radio-frequency identification and wireless sensor networks (Triantafyllidis et al., 2016; Yaqoob et al., 2017).

Healthcare systems around the world are becoming increasingly interested in strengthening the role of patients in their care. Empowerment occurs when patients increase their capacity to think critically and make autonomous, informed decisions. In that process, the role of healthcare providers, technology providers, citizens, and policy-makers is of paramount importance. An increasing trend shows a shift of healthcare models towards prediction, early detection and monitoring.
Prediction of Heart Disease Using Random Forest and Rough Set Based Feature Selection
www.igi-global.com/article/prediction-of-heart-disease-using-random-forest-and-rough-set-based-feature-selection/209737?camid=4v1a

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