The effect of telemedicine and social media on cancer patients' self-care: A systematic review

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ABSTRACT

Introduction: Cancer is an incurable disease that affects people regardless of age, sex, race and social, economic and cultural status. Most cancer patients are treated with a combination of treatments based on the type of tumor, the extent of the disease, and their physical condition. Self-management programs empower people to deal with illness and improve their quality of life. Telemedicine in the form of mobile applications, websites and social networks is one of the effective tools to achieve this goal. The aim of this study was to investigate the impact of telemedicine and social media on self-care of cancer patients.

Material and Methods: English related articles were searched based on keywords in the title and abstract using PubMed and Scopus databases (from 1963 to December 2020). Keywords included telemedicine, social networking, self-care and m-health. Inclusion criteria included all studies published in English that examined the impact of telemedicine and social media on cancer patients' self-care. Review articles and non-intervention articles were excluded from the study.

Results: A total of 516 articles were selected by title. After reviewing the abstract, 80 articles remained to be reviewed. After evaluating the full text of these articles, 9 eligible articles were selected for final review. In terms of the type of cancer among these studies, prostate cancer had the largest share (33%). In line with the main purpose of this study, in 7 articles (77.8%) telemedicine had a significant positive effect on self-care of cancer patients and increased self-care. In one article (11.1%) this effect was negative and reduced self-care. In 1 article (11.1%) no effect was observed.

Conclusion: According to the results of the present study, it seems that web-based interventions and mobile health in most articles have been effective in increasing patients' self-care. However, due to the increasing number of cancers as well as the increasing use of telemedicine in the field of chronic diseases and cancer, the need for further studies is felt in this field.

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INTRODUCTION

Cancer is one of the most feared diseases of the twentieth century and a major public health problem [1, 2]. Cancer is one of the leading causes of death in the world with an outbreak of more than 10 million deaths annually. According to 2020 statistics, 19.3 million new cases of cancer have been diagnosed, the most common of which are breast (11.7%), lung (11.4%) and colon (10.0%) cancers, respectively. The

most common cancers in men are lung cancers (14.3%), prostate (14.1%) and colon (10.6%) and the most common cancers in women include breast (24.5%), colon (9.4%) cancers. And lungs (8.4%). Current epidemiological data show an increasing trend in cancer incidence and mortality over the next 40 years [3-5]. The side effects of breast, prostate and colon cancers and their various treatments on the recovery of these cancers are very high and there is a possibility of cancer recurrence or subsequent

cancers. After recovering, cancer patients experience symptoms such as pain, fatigue, distress, and anxiety, and if left unmanaged, it can affect their health and quality of life. Prevalence of self-management among cancer patients is one of their empowerment strategies [6, 7]. A review of studies shows that treatment teams provide patients with little information about the management of treatment-related side effects. Most people start cancer treatment on an outpatient basis and manage the side effects of the disease and treatment at home. As a result, increasing the ability and knowledge of patients in the field of self-care is essential for the experience of safe and quality care at home [8]. In a study conducted by Sanne et al., it was found that self-management can be one of the ways to treat and thus save more people with this disease [9]. Today, the world's technology is the most widespread and its ubiquity and various features have led to its use in the field of health under the name of mHealth [8, 10]. The role of mHealth in cancer care has evolved with the rapid development of digital technology [10, 11]. When telemedicine is used for palliative care, the results indicate an improvement in symptom management as well as patient and family satisfaction [12, 13]. Also, the results of examining the information of people who have used health self-management programs are positive and show their ability to promote health. Due to the widespread use of social networks, they can also be used for this purpose [14]. In addition, the increasing population load in medical centers, especially in densely populated areas, poses barriers to treatment for many patients. Telemedicine makes it possible to reduce these barriers by increasing skills in specialization and minimizing travel burden [15]. Among these applications, WhatsApp plays a prominent role in health education interventions [16]. Telemedicine, on the other hand, involves the provision of health care services through communication technologies. Therefore, telemedicine technology and social media can be used for self-care of cancer patients [9]. The aim of this study was to investigate the impact of telemedicine and social media on self-care of cancer patients.

MATERIAL AND METHODS

English language articles were searched based on keywords in the title and abstract using the PubMed and Scopus databases from 1963 to 2020 (Fig 1).

The search strategy used is as follows:

Analysis of the list of articles found completed the search. In other words, article list analysis was performed to increase search accuracy. The titles and abstracts of the articles were reviewed separately by two browsers and the differences and shortcomings were resolved by the third researcher.

Inclusion criteria included all studies published in English that examined the impact of telemedicine and social media on cancer patients' self-care. Review and non-intervention articles were excluded from this study.

Fig 1: PRISMA flowchart

RESULTS

The search of the PubMed and Scopus databases yielded 17,294 articles. After a preliminary review of the title and abstract, 80 articles were eligible for full text evaluation. By reviewing the full text of the articles, 71 articles were deleted and 9 articles were selected for more detailed analysis. The characteristics of these studies are reported in Table 1.

According to Table 1, out of 9 studies, prostate cancer had the largest share in terms of type of cancer (33%). In terms of study type, most cases were related to RCT studies (77.8%). These 9 articles were published between 2014 and 2020, with the highest frequency belonging to 2019 articles (33%).

In line with the main purpose of this study, in 7 articles (77.8%) telemedicine had a significant positive effect on self-care of cancer patients and increased self-care. In one article (11.1%) this effect was negative and reduced self-care and in one article (11.1%) no effect was observed.

DISCUSSION

Due to the lack of systematic review articles on the impact of telemedicine and social media on the self-care of cancer patients, the present study investigated the role of these technologies in the self-care of cancer patients. In summary, out of 9 reviewed articles, in 7 articles (77.8%) telemedicine had a significant positive effect on the self-care of cancer patients and increased self-care. In one article

(11.1%) this effect was negative and reduced self-care and in one article (11.1%) no effect was observed.

Frankland et al. showed that their self-management and remote monitoring program has a positive effect in solving prostate cancer problems in men [17]. In another study by Ekstedt et al., the ePATH self-management program showed that people living with prostate cancer, their families, and health care professionals have access to a digital tool. Establishes

a link between the patient and health care providers and supports self-care and empowerment during the care and treatment period. This study also increased knowledge about how to support patients in self-care and the feeling of involvement in self-care [18]. In line with the main objectives of this study, Papadopoulou et al. reported in their study that self-efficacy in patients undergoing chemotherapy is a good center for educational and behavioral interventions and is recognized as an effective tool on patient-reported outcomes [19].

Table 1: Characteristics of the studies reviewed

Ref	Author name	Country of study	Year of study	Study Design	Sample size	Type of cancer	Outcome: Self-care
[8]	Rico	Brazil	2020	RCT	118 patients	-	SMS-based intervention has the ability to manage side effects.
[17]	Frankland	UK	2019	RCT	627 patients	prostate	Effective in self-care
[18]	Ekstedt	Sweden	2019	RCT	242 patients	prostate	Increase the feeling of participation in self-care
[20]	Knoerl	United States	2019	RCT	752 patients	-	There was no significant difference between the self-care of the intervention and control groups
[21]	Giesler	Germany	2017	RCT	205 patients	Colorectal	Reduce self-care
[22]	Cnossen	Netherlands	2015	Feasibility and satisfaction	55 patients	Laryngeal	Effective in self-care
[23]	Børøsund	Norway	2014	RCT	167 patients	Breast	Tendency to increase self-efficacy
[24]	Zargarzadeh	Iran	2018	Mixed method	19 apps	prostate	Effective in self-care
[25]	Xie	China	2020	RCT	86 patients	gastrointestinal	Beneficial effects of self-care education

Xie et al. showed that self-care education has beneficial effects on the quality of life of patients with gastrointestinal cancer undergoing chemotherapy [25]. In addition, text messaging may be a tool to support the management of side effects in patients receiving chemotherapy [8]. Self-care education can also be considered as a complementary method during chemotherapy in patients with gastrointestinal cancer [25]. It seems that providing education to patients can be effective in increasing self-management and thus improving their quality of life.

However, in Knoerl et al.'s study, participants' adherence to physicians' recommendations or the use of additional self-management strategies did not improve compared with controls [20]. Giesler et al. also stated that the results of this study do not support the hypothesis that the website under study may increase the effectiveness of coping with cancer or patient competencies such as self-regulation or control of emotional distress. The reason could be the characteristics of the website, its use by participants or methodological reasons [21]. In contrast, a study by Borosund et al. showed that a web-based tool

could significantly reduce depression in cancer patients and could be promising. It was also stated that providing support through the web or telemedicine as part of regular care can be a powerful tool to help patients in self-management of their disease [23]. In line with the objectives of this study, Zargarzadeh et al. stated that the mobile application can also help in the self-care of patients in need of prostate cancer treatment [24].

On the other hand, a study by Cnossen et al. showed patient satisfaction with online self-care education. It should be noted that satisfaction with this program was associated with the level of education and health literacy skills and its use was possible for patients who had access to the Internet [22]. It seems that the level of education and having the necessary facilities to use online self-care programs is related to their level of satisfaction with these programs.

One of the strengths of the present study was the no limitation to a specific type of cancer and covered all types of cancers. The limitation of this study was investigating English language studies only. The reason was the greater number of articles in English than in other languages.

In general, telemedicine seems to increase self-care in cancer patients. Digital tools also provide a platform for patient support. These programs are a powerful tool in self-care during the course of treatment and management of disease side effects. In addition, patients' satisfaction with online self-management training programs is high. It also seems that the characteristics of the website and the psychological characteristics of the patients who use these websites can affect the degree of self-regulation or control of their emotional distress.

CONCLUSION

Telemedicine and social media play a significant role in the self-care of cancer patients. Self-care education increases the quality of life of cancer patients and can be used as a complementary method during treatment, especially chemotherapy. Self-care

programs for cancer patients provide a digital tool that enhances patient empowerment.

AUTHOR'S CONTRIBUTION

All authors contributed to the literature review, design, data collection and analysis, drafting the manuscript, read and approved the final manuscript.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this study.

FINANCIAL DISCLOSURE

No financial interests related to the material of this manuscript have been declared.

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