Mobile Social Networking Health (MSNet-Health): Beyond the mHealth Frontier

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Abstract. The purpose of this conceptual paper is to introduce the concept of Mobile Social Networking Healthcare (MSNet-Health). The paper defines MSNet-Health and provides a working scenario of MSNet-Health. The paper suggests various potential domain area applications for MSNet-Health, such as diabetes, antenatal education, smoking cessation, weight loss, and arthritis. Challenges and future research areas are also discussed.

Keywords. MHealth, Mobile Health, Social Networking, MSNet-Health.

Introduction

For years, there has been a disconnect in the literature between the field of Mobile Health (mHealth) and social networking for healthcare. Much of the literature on mHealth has focused on interventions at the individual level without considering the influence of group social interactions and their impact on behavioral change. Recently, there has been an increase in mHealth applications that incorporate social networking elements to promote healthy group behavior [1]. Nevertheless, the field remains in its infancy, with no frameworks, models, or definitions for the integration of social networking into mobile health applications. The use of social networking in mobile health applications will shift the focus from the individual's attempts to modify or monitor their health to group support for the individual through social networking. Consequently, the individual will receive various levels of support from various individuals, which may result in improved health. Systematic reviews within the health field have shown that group interventions improve health outcomes in comparison with individual interventions [2-5].

To promote the use of social networking within mobile health applications, this conceptual paper will be the first to define the field, which the author calls Mobile Social Networking Healthcare (MSNet-Health). This paper also provides a working scenario of the concept as well as potential domain applications, challenges, and future research.

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1. Background

Mobile phones and social networking sites have seen rapid user growth over the past few years. Current figures show that there are approximately five billion users of mobile phones alone [6], which is equivalent to 70% of the world's population. In the year 2000, *unwired e-med* was the term used to describe what practitioners in the field refer to today as Mobile Health (mHealth) [7]. It was not until 2003 that authors Istepanian and Lacal coined the term mHealth and defined it as "emerging mobile communications and network technologies for healthcare systems" [8, 9]. A systematic review by Fjeldsoe et al. focused on behavioral change interventions delivered by mobile telephone SMS and found that SMS interventions had positive behavioral outcomes for preventive health behaviors (smoking cessation, physical activity, and anti-obesity behavior modification) and clinical care studies (diabetes self-management, asthma self-management, hypertension medication compliance, and bulimia nervosa outpatient care) [10]. Evidence is beginning to emerge on the benefits of mHealth in various patient groups.

There has been recent growth in the use of social media, especially online social networking, within healthcare. One of the earliest studies on the use of social media in healthcare examined the Bulletin Board System for nurses' education [11]. The study found that major impediments to implementing this system were cost, maintenance, and the lack of preparation for this technology within the nursing profession. With the widespread use of the internet and its relatively inexpensive bandwidth, social media, especially social networking, are beginning to be used by healthcare professionals and patients. In a commentary published by the Journal of American Medical Association, Shachak and Jadad argue that the use of social networks will eventually lead to a more people-centered health care system that will improve communication and information flow between patients, providers, and administrators [12]. Other studies have shown that users of Facebook seek health information [13], and websites for social networking, such as Patients Like Me, are beginning to cater to the needs of social networks for health information support.

Despite the increase in the use of social networking for health and the use of mobile health interventions to support the needs of patients and healthcare professionals, there is no available literature, to our knowledge, that addresses the relationship between Mobile Health and the use of social networking. Many studies on mobile healthcare focus on individual needs, whereas social networks focus on group needs. The missing link is the use of mobile healthcare to target groups through the use of social networks.

2. Definition

Social networking plays a significant role in the daily lives of individuals and has revolutionized global interactions. The creation of Mobile Healthcare applications that incorporate elements of social networking for patients can help to promote group and community health. Based on these assumptions, we propose the use of the acronym MSNet-Health to describe the emerging field of what the author refers to as mobile social networking healthcare. A working definition of MSNet-Health is as follows: The use of mobile health applications that incorporate social networking tools to promote and support healthy behavior and awareness among patient groups and communities.

3. Scenario

Below is a scenario of how MSNet-Health would occur:

John, 14 years old, has been recently diagnosed with Type 1 diabetes. For treatment, John was prescribed insulin replacement and was encouraged to exercise and to follow a nutritious diet. John was provided with a new home blood glucose monitoring (HBGM) system with Bluetooth capabilities that could upload blood sugar levels to the mobile application. To encourage and monitor his physical activities, John was provided with a Bluetooth pedometer that could also upload his physical activity data to the mobile application. Furthermore, John was placed on a diet, specifically designed for him by the hospital nutritionist, that sent him text messages throughout the day about what to eat, portion sizes, and motivational messages. To provide emotional and educational support, John was encouraged to use the social networking application included in the mobile health application. The social networking tool connected him to other adolescents living with Type 1 diabetes who were also using mobile health applications to assist in the management of their condition. A forum leader, a nurse educator, and a physician were available to support John and the group by answering questions and providing educational materials and emotional support. All adolescents participating in the social networking site were encouraged to share their health progress and were provided with tools depending on how many times per day, week, or month they wanted to share their physical activity progress, the history of their blood sugar levels, their weight loss, and their mental state. A reward system was developed that would provide each of the forum participants with points for continuously exercising and controlling their sugar levels and weight. Each month, the person with the highest reward was recognized for his or her achievement, and a small gift certificate was provided as well as recognition from the group. Additionally, the mobile health application was connected to the diabetes outpatient clinic at the local hospital where John's blood sugar levels were sent from the mobile application and transferred to the hospital's electronic medical record. If there was an inconsistency in his blood sugar levels, an alert would be sent to a nurse educator, who would follow up by telephone with John and, if necessary, would ask him to come to the hospital for a follow-up appointment.

The above scenario provides an overview of how the mobile health application shifts the focus from the individual to a group effort to help, educate, support, monitor and reward a patient. The social networking element is the key that is missing from much of today's mobile health applications.

4. Potential Areas of Application

Much of the literature in health research neglects group health interventions [14]. Only a few studies focus on the impacts of group interventions on health, and these studies have various research limitations. Hoddnott et al found that systematic reviews focusing on group treatment interventions or behavioral change have found positive effects from group interventions related to smoking cessation, antenatal education for childbirth or parenthood, weight loss, breastfeeding, diabetes, and arthritis [14]. These

areas offer potential applications of MSNet-Health because the literature suggests that group interventions are effective in these population groups.

5. Challenges

Various challenges may arise from the implementation of MSNet-Health. First, it is important to define the working population groups that would benefit from a social networking element. As noted earlier, various population groups, such as diabetics, may benefit from a group-related intervention. It is important to identify other patient groups, especially those with chronic conditions, such as asthma, COPD, and congestive heart failure, as well as the impacts of group interventions on addressing their healthcare needs.

Second, it is important to understand group behavioral theory and to avoid assuming that a group is formed by social networking alone. Group dynamics, such as group size, leadership, the attributes of the participants, and group relationships, must be studied when these interactions occur through social networking. Allowing the group to develop on its own may lead to failure. It is important to prioritize careful planning when developing mobile health social networking groups. It is also important to include healthcare practitioners who can support various group functions, such as education, monitoring, and emotional support.

Third, there may be various technological challenges with the implementation of MSNet-Health that should be considered. The use of existing social networks, such as Facebook or Patients Like Me, or the specific development of mobile health social networking within the mobile health application should be considered. The implementation must assess which would be beneficial for patients and which type of application patients would be inclined to use.

Fourth, the privacy and security of health information, especially when shared within a social network, are important aspects. Househ found that sensitive health information (e.g., psychological, genetic, or sexual information) is shared publicly by Facebook users who reveal their identities [13]. It is important to make users aware of the importance of keeping their information private and not sharing it outside of the network. Implementing such measures will ensure the safety, security, and privacy of the patients and the health information that they share online.

6. Conclusion

This paper provided an overview of Mobile Social Networking Healthcare (MSNet-Health). This term was defined, and a scenario of its application was provided. The author suggests that MSNet-Health may be beneficial to patients in the areas of smoking cessation, antenatal education for childbirth or parenthood, weight loss, breastfeeding, diabetes, and arthritis. Other areas and chronic diseases should also be considered for future work. Future research in this domain should include 1) evaluation of MSNet-Health applications; 2) evaluations of group behavior and dynamics; 3) studies of interventions in other potential patient groups; 4) the development of privacy and security protocols; and 5) the study of the impacts of MSNet-Health on health outcomes. Overall, the area of MSNet-Health, as a subset of Mobile Health (mHealth), is a new area with significant potential that should be seriously considered.

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