

Mobile-Health (Medical Applications)

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Abstract

This project is trying to indicate how mobile phone specifically smart phone applications can affect and improve our health in general. By reading this article we will have more knowledge about how smartphone (m-Health) can improve our health life, how many applications provide these capabilities, how this technology works and how they can improve palliative homecare. Also we will talk about legal, social and ethical aspects and benefits of it. Therefor this project will cover all information about m-Health, digital medicine, and FDA regulation of mobile health. In other words, m-Health refers to healthcare practices that rely on mobile. In general, apps are pieces of software that can be installed and run on a variety of hardware platforms, including smartphones, tablets, laptops, and desktop computers. Medical apps, in particular, refer to a wide variety of software that focuses on health care. Some apps by providing home-based therapies, tutorials, and health care information, tend to improve health while bringing ER (Emergency Room) costs down.

Keyword: m-health, medical applications, smartphone and health

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As it can be seen smartphones are an undividable part of today's world, especially in developed countries. As a result of this phenomenon, cell phones, tablet computers, and other wireless devices all play a role in shaping m-Health. Question is what exactly m-Health do? The answer is m-Health covers our health life from all communication between patients and physicians (back to 1984 SMS) to measure our heart rate or even count our steps in dietary applications (Today). In other words, Mobile health is the use of smartphone applications for medical purposes, including diagnosis, treatment, or support of general health and well-being. Some apps with diagnose function, allow users who have diabetes to tracks insulin doses and send alerts for abnormally high or low blood sugar levels or some others allow patients to use their smartphones to record electrocardiograms, and transmit results to their cardiologists for further diagnosis. Some applications with health-management purposes like medication reminders and symptom checkers have a role in health improvement. The popular RunKeeper app, which makes use of a smartphone's GPS to track its users' running speed, measures their weight, and uses wristbands that keep record of daily activity. All of this data is then pulled together into an easy-to-read graph that offers a more complete picture of users' health. According to "How to set up your emergency Medical ID with iOS 8's new Health app" by Hughes (2014), in emergency situations, Medical ID which is in iOS 8 for iPhone tries to decrease wrong diagnosis or any other risks in emergency time. Medical ID is a digital medical ID that allows users to submit health info like medical conditions, any allergies, reaction and medication or blood type, weight and height; and personal info, name, date of birth, and contact emergencies.

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The technology could also be a broad help to people who struggle with long-term problems, such as hypertension, by allowing them to track their progress over time and potentially address issues before they become too serious.

Mone (2014) found “Today we have a sick care system, not a wellness system,” says Stephen Intille, a computer scientist in the Personal Health Informatics group at Northeastern University in Boston, MA (p.18). He is trying to say, this sort of technology could change health care system toward a fundamental shift in the way patients communicate with their doctors. Instead of seeing physicians only when something goes wrong, patients using these apps and devices could work together with their providers to live healthier lives and reduce the frequency of sick visits.

Palliative care comes to a new level of management by communication between patient, palliative doctor, caregiver and local family physician by applications like WhatsApp messenger, which allows the user to share clinical images, video, photo of reports and medication in a cheaper and more accessible way compared to teleconferencing systems. This technology will also be beneficial for the patients lacking access to medical services due to both debilitating medical condition and geographic isolation (Dhiliwal, Salins, 2015).

Security aspects

In considering that mobile products incorporating clinical-decision support, there is a strong need of FDA supervision in order to protect the public health, sustain consumer confidence in m-Health products and encourage appropriate control. Majority of m-Health Products are safe to use but some evidences indicates through independent evaluation that some

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apps do not work as claimed or they make mistakes. In 2012, Sanofi Aventis recalled its diabetes app because it was miscalculating insulin doses, which might lead to dangerously low or high blood glucose levels in diabetics.

The FDA's true challenge is creating an administrative framework in order to prevent the market from being overloaded with products that are ineffective or unsafe with in house technical proficiency to supervise proceeding chain of m-Health products by approval fee for m-Health products like user fees for drugs; to achieve its attempt, the FDA may need to dedicate a center or office to control mobile applications and other software devices (Hamel, Cortez, Cohen, and Kesselheim, 2014, p.379). As m-Health products become more global and ambitious, FDA supervision will aid to preserve the public health, support user's confidence in m-Health products, and encourage high-value innovations.

Ethical and social aspects

As it seems, smartphone applications have positive effects in our health life but they might have some ethical issues for elderly people who doesn't have a technical knowledge to work with new technologies or even people who can't afford to have one.

Simultaneously digital technology briefly m-Health is not exciting to everyone. "many health care provider express concerns about the idea of patients tracking their own clinical measurements" said Steven Steinhubl, director of Digital Medicine at the Scripps Translational Science Institute (Mone, 2014, P.20) They worry these devices could have a negative impact on the doctor-patient relationship, and that doctors will end up seeing their patients even less than they do today.

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Some other concerns come with patients not knowing what to do with the bulk of data they collect, and that all these numbers could increase tension rather than health. On the other hand, doctors would be confused about how to deal with all that information as well.

Some other ethical issues come with elderly or individuals without advanced technical skills in new technologies. While smartphone devices remain flexible to participate patients via written, spoken (text-to-speech technologies such as the iPhone's Siri), or even video interactions, there is a need to consider required level of literacy to use text and apps within this population.

For low income users, mobile user society and the worldwide deployment of mobile and wireless networks and the wireless infrastructure in health care are able to provide healthcare to anyone, anytime, and anywhere without constraints of location or time.

Future use

There are opportunities for the inclusion of m-Health to improve public health. The future for m-Health remains bright and may include fundamental and great changes in the existing health care paradigm in a better and more convenient way.

Medical apps spread quickly in app market and diversity of their products are vast. In the article called “FDA regulation of mobile health technologies” by Hamel, Cortez, Cohen, and Kesselheim, 2014, p 372) Some sources are indicating that more than 97,000 m-Health apps were available as of March 2013, according to one estimate the number of m-Health apps, downloads, and users almost doubles every year. Some other predict that by 2018 there could be

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1.7 billion m-Health users globally. Therefore, m-Health technologies could have an extreme effect on patient care and health improvement.

Smartwatches from HTC and Apple and other companies, would open the doors for better results in health related data. Since it would regularly be in contact with our skin, a watch could potentially gather more accurate data on stress levels and offer continuous heart rate monitoring.

Despite the fact that m-Health technologies develop so fast, never forget that all these devices may not result in a quick improvement process. “I do believe that this is the future of healthcare, but you can’t just throw the technology out there and hope it will cure everything,” says Steinhubl.

Conclusion

Overall, the principle function of m-Health products is improving health outcomes, reducing medical errors, avoiding costly medical care, and easy access to care. Like other digital devices, m-Health has some advantages and disadvantages. In one hand mobile Health tries to improve health by providing home-based therapies (palliative care), tutorials, and health care information, and bringing down any risk of an emergency situation by monitoring heart rate and measuring blood pressure regularly or tracking insulin in diabetics. On the other hand, it might have some negative possible outcomes like some apps do not work accurately by miscalculation (overestimate or underestimate). Also some apps don’t have high security which in some cases reveals users’ medical data.

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As a medical point of view, applications that are under supervision of FDA (Food and Drug Administration) are highly recommended which means before using any medical app, first make sure if they have FDA approval.

In conclusion, the way that mobile Health works is impressive and it can be used by any one in anywhere for any purposes from daily diet and exercise control by measuring your weight, height or tracking your daily steps to communicating properly with physician or medical aims (measuring blood pressure, tracking insulin dose, etc.) in order to prevent unnecessary hospitalization. In other words, Smartphone applications are a cost-effective approach in providing timely and effective care in today's world.

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Annotation

Smartphone applications in palliative homecare

This source is from an Indian journal about palliative homecare. This a great article about how m-Health can have a positive effect on homecare especially for patient who can't move easily. This kind of patients need special supervision from their physician which can be provided by m-Health using apps like WhatsApp messenger that is much cheaper than telecommunication.

FDA regulation of mobile health technologies

As it comes from its subject name this is a scholarly journal which talk about all FDA regulation in order to prevent of overflow useless medical app. It indicates how m-Health could put public health on risk if it won't be under supervision of FDA.

How to set up your emergency Medical ID with iOS 8's new Health app

This is article in Apple insider magazine which talk about Medical ID which is locate on health app on iOS 8. This medical emergency ID that allowed you to put all medical info such as allergies, blood type, etc. in order to prevent of any wrong diagnoses in emergency situation.

Assessing m-Health: Opportunities and barriers to patient engagement

This is a scholarly journal which cover about all devices (cellphone, tablet, compute) role in shaping m-Health and introduce it as low-cost option for decreasing communication between patients and provider, include sharing of data.

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The new digital medicine

This source is from a Scholarly Journal which is talking about smartphone as medical devices in today's world with a fundamental shift in the way patients interact with a doctors. Also talking about technology as a key factor today from measuring heart rate to count your steps.

Commercial smartphone-based devices and smart applications for personalized healthcare monitoring and management

This is scholarly journal about commercial SBDAs that are being widely used for personalized healthcare monitoring and management. And future of Smartphone-based devices and applications (SBDAs).