VIEW POINT

AFFORDABILITY AND ACCEPTABILITY OF WEARABLE TECHNOLOGY IN HEALTHCARE AND THE GAPS BETWEEN CONSUMERS, PHYSICIANS, AND THE PAYERS.

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Introduction

In 2019, the global wearable technology market was valued at USD 32.63 billion, and it is expected to grow at a CAGR of 15.9% from 2020 to 2027. North America leads the market in the highest number of connected wearable devices followed by Asia pacific and Western Europe, respectively.

Based on recent estimates, wearable technology should be able to reduce about $200 billion (about $620 per person in the US) in healthcare costs in the next 25 years. This cost saving is possible due to increased investment towards making wearable devices more accurate with better prediction capability. For insurance companies, integrating wearable devices into their insurance plans translates into healthier clients and fewer claims. There are different types of wearable devices available such as smartwatches, fitness trackers and wearable health devices such as CGMs, hearing aids, skin patches and vital sign monitoring devices, which are used in diagnosis, monitoring and treatment of chronic conditions and assisting the patients in keeping the track of their medical data. The consumers are using wearables to monitor and manage their health and/or share the data with their physicians to initiate a conversation while consulting. And because of sharing of the data, virtual doctor visits have become more effective promoting remote patient monitoring, diagnosis, and treatment.

Not only personal health management, but wearables are also found to be helpful in conducting clinical trials with benefits such as patient retention, real time data and reduced cost. According to Gartner's latest projection, global end-user spending on wearable devices would reach $81.5 billion in 2021, up 18.1 percent from $69 billion in 2020. The COVID-19 pandemic is a crucial factor driving market growth was the surge in remote work and increased interest in

But there are some gaps in the wearable's ecosystem with respect to the affordability of the devices between consumers and payers, and acceptability of wearables to interpret medical data by physicians and consumers.

Consumer Perspective

According to a survey conducted in U.S. population, the adaption rate of wearables among adults which are 50 years and older has grown from 7% in 2016 to 17% to 2019 which is faster growth than the age group of 18-49 years Highlighting the fact that consumers are becoming more tech savvy and are using wearable technology in their daily lives. However, one main concern that remains is the elderly population as they are not used to adopting fast-changing technology on daily basis.

The overall perception in consumers is that wearable devices are useful in understanding and monitoring of personal health conditions and conditions of their loved ones as well. Further, these devices have helped Patient-Physician communication, thereby improved the quality of care, and increased patient satisfaction. Reduction in the cost of healthcare was also found to be one of the factors that was helping the patients.

The adoption of wearables by patients can be attributed to the wide array of wearable devices helping in the diagnosis and treatment of chronic diseases. Across the health management spectrum, there are several examples. According to a survey of a health app Cardiogram, diagnosis percentage of chronic diseases is higher in wearable owners; An FDA approved smartwatch allows patients to monitor their blood pressure multiple times a day and the corresponding application offers insights on how to maintain blood pressure by doing simple changes in behavior; a device that helps in diagnosis of sleep apnea by monitoring the sleep patterns, positions and quality of breathing of the user which can help in diagnosis and treatment; FDA approved Apple watch which monitors heart rhythm and helps in detection of atrial fibrillation; and last but not the least a continuous glucose monitoring devices collects the real-time data which helps in avoiding episodes of low blood sugar and to calculate right insulin dosage while the same can be shared with the physician. In recent surveys, the cost of continuous glucose monitoring devices has been identified as a major barrier in adoption of these devices by Type I Diabetic users and requires efforts to gain approval for insurance coverage. Also, users need extensive training for usage and interpretation of data produced by these devices.

Physician's Perspective

Physicians play a key role in the wearable device ecosystem. So, their perspective of this technology is significant. According to the survey conducted by WhiteCoats, wearable devices help physicians in real-time monitoring of multiple health parameters in patients, improved follow-up and tracking, prevention of complications in chronic diseases, improved storage of medical records, and detection of multiple diseases. Physicians also believe that wearable devices can help in encouraging healthier habits in patients, improving their understanding of the condition and improved compliance.

Although physicians consider data from wearables as a useful source of information, but lack of awareness and technical knowledge, financial constraints, lack of trust, and reliability are considered as some of the major barriers in improving the use of wearables. Patients carry the data from the wearables on their doctor visits, but doctors are not comfortable with raw data. Physicians also need training in understanding and interpretation of data produced by wearable devices. Many physicians are now appreciating the importance of early diagnosis using wearable technologies and are open to learning data and interpretation of data generated by the devices, but still, there is a long way to go.

So, there is an unmet need of a mediator or an interface that helps in capturing streaming device data, storing it, and providing interpretation in the form of insights about patients to physicians.

Payer's Perspective

As Physicians and consumers consider financial constraints as one of major barriers in adapting to wearable technology, the role of the Payer's become more important in providing the devices at an affordable cost to the consumers. Insurance companies such as Blue Cross/Blue Shield, Aetna, Cigna, Humana, United Healthcare, Kaiser Permanente, and Wellpoint provide cover for CGM (Continuous Glucose Monitoring) systems on some qualification conditions.

They leverage the data from wearables to provide customized premiums and rewards to their customers. Customers can avail themselves of discounts and rewards based on the goals achieved. For example, UnitedHealth Group rewards nearly $1,500 a year to members who reach specified wellness goals and John Hancock provides up to 15% off premiums for achieving goals. This helps them with increased customer engagement and satisfaction leading to customer retention and down the line reducing in number of claims. The customers are encouraged to use wearables and be fit, which is beneficial for the insurance companies as the data helps in early prediction and diagnosis of diseases at initial stages and can lead to potentially reduced claims costs.

Data Privacy and Compliance

While most of the consumers are open to sharing their data with the physicians, there are still some with concerns over data privacy. HIPAA (Health Insurance Portability and Accountability Act) states that the physician cannot share patient's data with anyone without the consent of the patient. Also, most of the cloud data platforms and insurance providers are compliant with HIPPA. But HIPPA only covers health information received from physicians and health plans, data from health apps and wearables are not covered under HIPPA rules.

The FTC (Federal Trade Commission) and HITECH (Health Information Technology for Economic and Clinical Health) (Health Information Technology for Economic and Clinical Health Act) has more exposure to the compliance related to the wearable data than HIPPA but in 2017, FTC found most of the companies do not include cross device sharing in their privacy policy. So, there is ambiguity and loopholes that can be exploited in storage and use of patient data. Also, the adaptability of the physicians towards wearable technology has increased significantly which is influencing patients to use wearable devices and making the data vulnerable.

Table1: Summary of unmet needs of consumers, physicians, payers

Unmet Needs	Solution

For Consumers-
• Consumer's data privacy
• High cost of wearable technologies and devices
• Training of Consumers related to:
  • Understanding the working of devices
  • Usage of apps connecting their data to cloud systems
  • How to access of their data.
	For Consumers-
	• There is a need to establish a new set of rules on storage and use of wearable data that should be complied with by all the stakeholders and can be included with HIPAA rules. The FDA is also addressing the regulation of software for data protection through SaMD (Software as Medical Device). The sensitive information of the patients should be protected with enhanced encryption to avoid any leakage or hacking of data.
	• The consumers should take advantage of health insurance policies which cover wearable devices and wellness and preventive care programs offered by providers.
	• The training and awareness of the consumers regarding the use and effectiveness of these devices needs to be increased. These devices need to have user friendly UI applications for effective user interaction.

For Physicians- • Need training related to usage and reliability of wearable devices. • Need for training of Physicians in interpretation of patient specific insights generated by cloud-based IT-systems.	**For Physicians** • The data obtained from the devices needs to be shared with the physician with easily understandable and usable health insights about patients, which can be further used for proper diagnosis and treatment designs.
For Payers- • Acceptability of devices in wellness programs, making wearable devices more affordable to consumers. • Encouraging consumers to use wearable devices in preventive care programs to maintain health.	**For Payers-** • Including wellness programs in their policies and providing customized premiums to the consumers. • Accept more wearable devices in their policies which will result in consumers using wearables to maintain their health and the payers will have lesser cost of claims.
Data privacy and compliance • A cloud-based IT system capable of protecting and analyzing the huge amount of patient data • An AI based system which provides insights on the analyzed data	**Data privacy and compliance** • SaMD (Software as Medical Device) IT systems can be solution of this problem. These systems provide insights using Patient data in a secure way, posing no privacy issues to patients or physicians.

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