

Health at hand: A review of importance of smart watches for health care.

Sakshi Vaidya¹, Neha Deshmukh^{2*}, Milind Kahile³, Pratibha Dawande⁴, Shriram Kane⁵, Bharat S Sudame⁶

¹Department of Pharmacy, Datta Meghe College of Physiotherapy, Nagpur, India

²Department of Musculoskeletal Physiotherapy, Datta Meghe College of Physiotherapy, Nagpur, India

³Department of Community Physiotherapy, Datta Meghe College of Physiotherapy, Nagpur, India

⁴Department of Pathology, Datta Meghe Medical College, Shalinitai Meghe Hospital and Research centre, Nagpur, India

⁵Department of Medicine Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences Sawangi (Meghe) Wardha, Nagpur, India

⁶Engineering Assistant Professor, Yeshwantrao Chavan College of Engineering, Nagpur, India

Abstract

Introduction: Smart watches can possibly uphold wellbeing in ordinary living by empowering self-checking of individual movement; getting criticism in light of action measures; taking into account in-situ reviews to recognize examples of conduct, and supporting bi-directional correspondence with medical care suppliers and relatives. In any case, savvy watches are an arising innovation, and exploration with these gadgets is at a beginning stage. **Strategies:** We directed a precise audit of savvy concentrates that drew in individuals in their utilization via looking through PubMed, Embrace, IEEE Xplore, and ACM Digital libraries. Member socioeconomics, gadget highlights, watch applications and techniques, and specialized difficulties were disconnected from included investigations. **Results:** Seventy-three investigations were returned in the hunt. Seventeen investigations distributed were incorporated. Included examinations were distributed from 2014 to 2016, except for one distributed in 2011. Most examinations utilized the utilization of buyer-grade brilliant watches (14/17, 82%). Patient-related examinations zeroed in on movement checking, pulse observing, language training adherence, diabetes self-administration, and recognition of seizures, quakes, scratching, eating, and drug-taking practices. Most understanding-related investigations selected members with few prohibition standards to approve savvy work (10/17, 58%). Just examinations that zeroed in on Parkinson's infection, epilepsy, and diabetes the executives enlisted people living with designated conditions. One review zeroed in on nursing work in the ICU and one zeroed in on CPR preparing for laypeople. **End:** Consumer-grade savvy watches have entered the wellbeing research space quickly starting around 2014. Savvy specialized capacity, adequacy, and viability in supporting wellbeing should be approved in bigger fields that concentrate on select genuine members living with the circumstances these gadgets target.

Keywords: Health intercession, Smart watch, Smart watch, Systematic survey, Translational exploration.

Introduction

Clever band (smart watches) have the capacity to guide health in ordinary dwelling via: allowing self-monitoring of personal day to day pastime. However, clever watches are an emerging era and studies with these gadgets is at nascent stage. smart watches have the possible to convert fitness care due to the fact those are: well known to the majority, increasingly more available as purchaser tool, qualify to near real continuous monitoring of bodily pastime, help to customizable messaging and reminders, enable communicate between affected person and healthcare companies for higher understanding and data series about health of patients.

These will allow continuous recording of patients, like exercise intensity, posture, eating behavior, heart rate detection, detect seizures in epilepsy patient [1]. Not like smart phones, smart watches may be surely wearable without interrupting our daily lives. Wearable tool adopts and has this new technology of state-of-the-art biosensors and Wi-Fi statistics communication between this device and smart band, that permit wearer to get right of entry to and transmit records in all sectors of human enterprise including physiological data. Most of review article studies based on chronically ill elderly, and my review article mostly used platform in healthcare research that is android wearer like smart watches. Smartwatches are unobtrusive for consumers clothing and convenient to wear as it also

*Correspondence to: Neha Deshmukh. Department of Musculoskeletal Physiotherapy, Datta Meghe College of Physiotherapy, Nagpur, India, E-mail: deshneha00@outlook.com

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help to show time, date like any other simple watches and comfortable for purchaser. To be comfortable dressed along with daily clothing its miniaturization and unobtrusiveness are considered to be helpful long term and uninterrupted monitoring and can be worn during activities of daily living [2].

Fall detection in elder people

Among elderly people due to various reasons like disturbed vision, poor balance, tremors chances of fall has been increased which can further disturbed their health conditions. Various products are available now in market which helps to monitor automatic fall. Devices are usually worn over higher and lower limb and maximum not unusual placement is found to be on waist.

Detection of seizure like movements

Healthcare providers of human beings with epilepsy are generally worried about unobserved seizures which came up suddenly despite of any situation or condition and not even shows any witness signs which can help to detect it earlier causing injury to patients or even death. This done with the help of accelerometer measured by tri-axial accelerometer was the most prominent sensing method which is un build in smart watches [3].

Individuals admitted for non-stop video/EEG tracking wore a wristwatch size device that changed into programmed to come across the rhythmic actions which includes those arise for the duration of tonic-clonic seizures. Whilst such movement turned into detected, the device dispatched a Bluetooth sign to a laptop registered the time and period of the moves. This device alerts the caregivers when a seizure occurs.

Analysis and diagnosis of tremors

Distinguishing the postural re-emergent which emerges after some delay while maintain posture, such tremor of Parkinson's disease from essential tremors can be difficult. We can use Smart watches to record and differentiate these tremors in an outpatient clinic. Parkinson's patient has two types of tremor resting tremors and intentional tremors.

This device helps to calculate the tremors peak frequency, peak power, and power of the first four harmonics. Mean energy at the first 4 harmonics is used to categories tremor. Whether they are parkinsonian or essential. Hence smart watches can provide accurate and relevant information to diagnosis about postural tremors.

Remarks machine for enhancing bystander CPR

Clever watch utility

Those tool is capable of screen the frequency and depth of Cardiopulmonary Resuscitation (CPR) which applied by rescuer and provide interactive corrective feedback for proper application [4]. With the CPR watch around half of topics controlled to stay in the encouraged variety for each parameter like accurate frequency and compression. when they performed CPR as compare to without assistance of watch.

CPR watch is most effective at three main functionalities like frequency, compression depth and counting. Where frequency of 100-120 cpm (compression according to min) at the same time as the effectiveness reduces whilst the frequency exceeds one hundred twenty-five (compression according to min). While 50 mm or more depth of compression is require to improve chances of survival. Counting recommend as 30/2 compression/rescue breath ratio. Clever watch base CPR assistance has remarkable ability for enhancing bystander CPR overall performance and application and could truly saves many lives.

Smart watches for neurological diseases

In patients with neurological diseases like Alzheimer's diseases which affect memory in elderly people, epilepsy and stroke and Parkinson's disease [5]. These diseases cause major disabilities among the people in daily living activities and occupation which eventually lead the patient towards depression and poor living, some disabilities may get benefitted from assistive technologies like smartwatches. In Alzheimer's patients these watches assist to recognize familiar people, help to analyzed and diagnosis of tremors and type of seizures in elder and youth, help to patient with Parkinson's Disease with voice and speech difficulties.

Smart watch diabetes diary application

Smart watch has spread out new opportunities in the diabetes self-control subject by monitoring blood glucose level, insulin injection reminders to the diabetic patient, physical activity counting and dietary information of patients daily including daily calories intake directly from the wrist [6]. Diabetes diary changed into the most effective end result attempting to find diabetes apps in smartwatch this software permit customers to go into new registrations in addition to view ultimate BG measurements, insulin registration, lively insulin, cumulative carbohydrate consumption for the day.

Smart watches replace smartphones for posture tracking

Smart watch primarily based gadget help in tracking the posture of customers carrying wrist worn platform in day to day activities. They found greater accuracy in assessing the posture of consumer with smart watch records than pocket carried smart phone accelerometer. Smart phones have advantage to tracking posture from hip. Smart watch should see sizeable interest in all three phases (sitting, status and mendacity down) of posture as a consumer would possibly pass her/his arms at the same time as sitting. Smart watches helps to asses posture in transitions like sitting to stand position, stand to siting position, sit-lie, lie-sit, also helps to asses posture in standing during activity like using phone, brushing teeth, lifting cup, swinging arm, walk, open door, look at wrist, in sitting during typing, reading, bicep curl, using tv remote, asses the posture during walking during stepping forward or backward and in lying.

Speech and voice treatments for Parkinson's disease patients

Smartwatches technology helps to treat voice and speech disorders. Most people experience decreased and disturbed

purposeful conversation capabilities due to the presence of voice and speech problems related to dysarthria that may be characterized with the aid of monotony of pitch (or frequency) decreased loudness, irregular fee of speech, imprecise consonants and alternate in voice exceptional [7]. Echo- put on a smart-watch based totally machine, which remotely monitor speech and voice sporting activities as prescribed by using speech language pathologists (SLPs). Echo-put on uses the aggregate of smartwatch and a smartphone for speech remedy. In destiny, this tool additionally assists to deal with dysarthria in sufferers with stroke, cerebral palsy, disturbing brain damage and down syndrome.

Smartwatch for nurses to check vital signs and checklist reminder

Computerized devices like smartwatches which are wearable are valuable nursing tool. These watches provide actual time vital sign tracking of affected person, threshold alarms and to do reminders for nurses about patient specific medication and food [8]. It helps to take the quick method of taking pulse in 60 sec using pulse scale. Nurses have many shifts and responsibilities during night and day shifts to set reminders and alarms seen as decision support tools. Help to maintained and improve patient outcomes, decreased medical error which is fatal to patient, increase compliance and standards of care.

Clever watch machine facilitates for assessing feature of speech in humans with dysarthria

Pathologist like speech and language regularly used vocal physical games in the remedy of patient with speech issues. Dysarthria it's a form of speech ailment ensuing in abnormalities in speech of person like velocity, electricity, rang of movement, stability and accuracy of movement of muscle mass of face which needed for speech production. Speech language therapist or pathologist is worried in assessment, prognosis and treatment of human beings with dysarthria. Affected person need and get hold of treatment in medical environment and additionally need to guidance outside of the scientific putting to reap speech for higher functional conversation. Technology has been exceptionally developed that help to capture mixed speech indicators in a collection placing device and permits pathologist (SLP's) examine speech indicators relative to remedy dreams. The blended alerts of speech of patients with speech problems were given separated blindly into individual alerts that underwent method of pre-processed earlier than computation of loudness, pitch, shimmer, jitter, semitone popular deviation and sharpness. Echo put on is a wearable speech tracking gadget designed so it is able to provide a tool for patients in addition to SLP's to asses speech even out facet of the scientific setting. It enables the far flung collection of speech information with smartwatch worn by means of sufferers, these days many speech therapists additionally receive the generation of tele rehabilitation services to improve transport of speech treatment [9].

Integration of clever watches and Geographic information gadget (GIS) to discover submit-earthquake critical rescue area

Disaster control is a system to store lives and residences advanced underneath massive costs and efforts of years. Catastrophe management is based totally on saves lives and decrease vulnerability. Its miles then mandatory to initiate rescue response within restrained resources and abilities.

Now days the generation and current gear are providing incredible support for rescue team to assess the initial state of affairs just after an earthquake, which consist of faraway sensing (RS), Unmanned Aerial car (UAVs), Emergency Calls, Social media and so on. Additionally emergency managers and rescue teams are the use of GIS gadget because of its capability and capability in all levels of earthquake catastrophe control. GIS used as a trademark and identifier for the earthquake emergency groups for coping with for earthquake state of affairs with powerful and in extra energize manner for reaction. GIS has the capability decrease the effect of earthquakes with the aid of speedy threat assessment and location tracking inside the comparison of populace, belongings, and herbal assets. In all type of GIS, the smartphone, smartwatch, smart notebook and clever television are some powerful gear used for emergency response in disaster control making the 21st century as the age of smartness. Smart watch allows hitting upon the location and condition of disaster sufferer. Smart watch software is developed to switch the coronary heart rate and region I.e. latitude and longitude of the users from their smart watch to internet database. The utility is evolved the use of an android studio (AS) with an estimated period of a hundred, 000 MS. This application is likewise able to transfer person bio data and similarly records [10]. For additional correct trapping an algorithm of heart charge and sufferers motion after earth quake is also developed for crimson victims (i.e. existence-threatening situations) in the condition of light absorption failure. The situation of trapped victims might be taken into consideration for rescue if 1) victim's coronary heart rate is less than 60 bpm or higher than a hundred and twenty bpm 2) after an earthquake if victims position does now not change for extra than 30 min.

Drawbacks

Limited battery power which states it require to charge regularly.

Signal noise, sign generated by way of the watch can interfere with accelerometer data collection and intrude with correct statistics series.

Data quality

It should be wear properly, with proper placement on patient body if not of is a capacity hassle of smartwatches for some kind of sensors.

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