

## **Global Overview of Mobile Technology in the Area of Chronic Disease Management**

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**ABSTRACT:** *The research conducted was descriptive as well as exploratory in nature. To carry out this survey, online questionnaire method was used along with the online interviews to obtain the required information. Probability sampling (stratified sampling) was used as the mode of conducting the research. Care was taken that the respondents were as diversified as possible, with all the continents given equal weightage. In carrying out this research, a sample size of 100 was taken. Out of these 100 participants, focus was on collecting at least 20-25 responses of nonprofit healthcare & research organizations working in the area of Chronic Disease Management from five continents i.e. (Asia, America, Africa, Australia & Europe) to get the data globally. The research includes only educated and thus it eliminates any chances of biasness on the basis of educational background. An objective type questionnaire was formed and sent online to the professionals to know about their viewpoints and remarks. Side by side, personal interaction was also given space. Later on, all the information so generated from the survey & interaction was compiled in the form of a presentable and highly comprehensible report. This study will be helpful to improve the mobile technology in the area of chronic disease management.*

**Keywords:** *online questionnaire, Chronic Disease Management, professionals.*

### **I. INTRODUCTION**

In the last decade, with emergence of globalization, healthcare industry is moving around the world entering new verticals and catering to diverse communities. As a result, competition is increasing tremendously and hence to survive better, yet to prosper in this environment, companies must have a contemporary understanding of the dynamic business world, including its healthcare. Today healthcare management courses have received great importance; this is because it exposes the potential managers to the actual working situations to give student a rich insight into what practically goes on in the healthcare industrial environment. Chronic diseases are defined as the diseases of long duration and generally slow progression. Chronic diseases, such as HIV/AIDS, Heart disease, Leprosy, stroke, cancer, chronic respiratory diseases and diabetes, are the leading cause of mortality in the world, representing 63% of all deaths. Out of the 36 million people who died from chronic diseases in 2008, nine million were under 60 and ninety per cent of the premature deaths occurred in low and middle-income countries.

Mobile technology is defined as a term which includes all types of communications performed by mobile. These days, mobile health or mHealth is an emerging field which uses mobile technology to deliver better healthcare services and also useful in health researches which helps to meet the global health challenges of today. One of the best example of mobile health is “Medline plus” which is user friendly and customized technology, so that user can have direct and instant access to number of medical information like a full medical encyclopedia about various diseases, syndromes, conditions their diagrams, images, drug information, health and fitness tips and even user can browse a lot more using search engine. This is one of the easiest ways to bring medical information and awareness to the public with the help of mobile technology. Innovative applications of mobile technology are expected to increase over time in community management of chronic disease such as cancer, heart disease, asthma and diabetes.

Mobile technology has revolutionized the way healthcare is delivered around the globe. It strengthens the healthcare provider and patient relationship. mHealth is used to promote healthy lifestyle changes, encouraging patients’ active involvement in their time period of treatment, and also improve a healthcare provider’s access to patient information all with the goal of improving healthcare outcomes. In another way mobile technologies can make life better not just for patients but for doctors too by reducing the amount of time we waste waiting: waiting to see doctor, waiting for doctor’s prescription, waiting for investigation results.

mHealth applications are helpful in gathering community and thus collecting large clinical health data with real time monitoring of patients vital signs, delivering healthcare information to the patients as well as practitioners, researchers. It has ability to actively engage patients in their healthcare programme. Mobile-

enabled programs can keep remote health workers up-to-date through distance learning programs, and health alerts and can provide patients with the information they need to live healthier lives. The emerging mobile applications, bypassing the fixed-line solutions, and are creating new pathways for sharing health-related information, even in the most remote and resource-poor environments.

Mobile technology plays an important role in clinical research, which is a ground component of healthcare sector that bridges the gap between development of the drug and its sale in the market. Mobile technology results in overcoming some of the challenges of conducting a drug trial like monitoring patient progress, compliance to drug consumption and drug protocol adherence.

In this case with the help of this technology sponsors are largely benefited by cost reduction in trial and procuring correct and quality data. In conclusion mobile technology is a cost effective, time saving, accurate, accessible and feasible solution to deliver quality healthcare services.

### **Use of cell phones in chronic disease management**

These days hospitals and healthcare are using mobile applications in the area of chronic disease management to achieve health goals and patients satisfaction. Real time vital signs monitoring and the transmission of diagnostic test results for patients with chronic conditions are recognized as increasingly important roles for mobile technologies and the simplicity and standard format of short message services (SMS) promoted them as backbone mobile phone services for the present and coming future. SMS services could also boost the impact of public health, health fitness and lifestyle messages within the context of preventative care. The increasing use of mobiles in healthcare marketing and greater understanding of marketing techniques helps in motivating developing countries to achieve health goals.

## **II. OBJECTIVES OF THE STUDY**

- To measure the percentage of Healthcare Professionals, who are aware of Mobile Technology throughout the globe.
- To find out the chronic disease area in which Mobile Technology can be implemented.
- To identify the level of acceptance of Mobile Technology by Patients & Healthcare providers.
- To know about the nonprofit organizations which are using Mobile Technology in the area of Chronic Disease Management

## **III. RESEARCH METHODOLOGY**

- A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. This study helps in knowing global overview of mobile technology in the area of chronic diseases management.
- It is a conceptual structure within which research is conducted; it constitutes the blue print for the collection, measurement and analysis of data. The design includes an outline of what the researcher will do from the hypothesis and its operational implication to final analysis of data.
- Universe size: **600**
- Sample size: **100**
- Sampling unit: **Non-profit Organizations working in Chronic Disease.**
- Sample Location: **Asia, America, Africa, Australia & Europe**
- Sampling method: **Probability Sampling (Stratified Sampling)**
- Research type: **Descriptive and Exploratory**
- Data collection instruments: **Online Questionnaire and Online Interviews.**
- Data type: **Primary & secondary**

## **IV. DATA ANALYSIS & INTERPRETATION**

**Q: Do you agree with the following statements regarding Mobile Health Software's in Chronic Disease Management?**

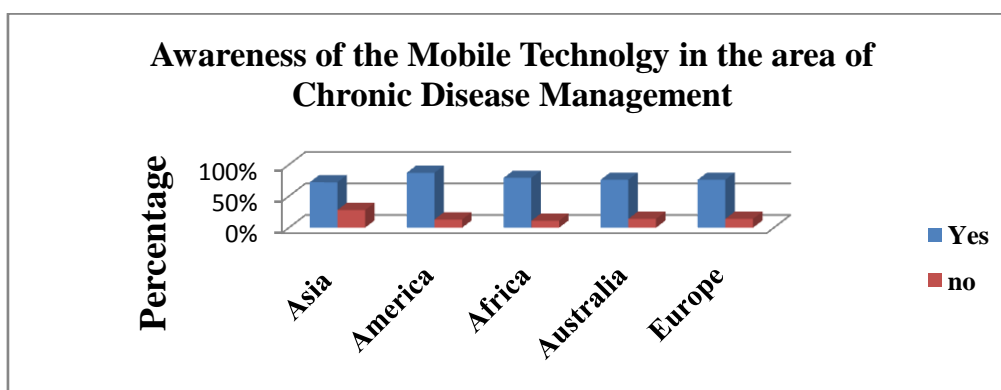
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Have the potential to be cost effective	35%	46%	17%	2%	0%
Have the potential to be wide reaching	45%	49%	5%	1%	0%
Have the potential to target large patient population	39%	45%	15%	1%	0%
Have the potential to monitor rural patient pool	27%	33%	34%	5%	1%
Have the potential to reduce stress incurred in traveling & Hospital stay	30%	41%	25%	3%	1%

**Q: According to you, how useful is Mobile Technology in addressing the Following Healthcare Delivery mechanisms?**

	Reducing waiting time	Providing effective & attractive ways of motivating patients	Reducing the no. of working staff	Getting real time patients vitals	Decreasing medical errors	Point of care	All of the above
Extremely Useful	28%	23%	12%	26%	13%	14%	15%
Very Useful	47%	31%	31%	35%	18%	22%	20%
Useful	20%	34%	33%	29%	36%	50%	42%
Not useful	2%	10%	19%	6%	21%	5%	3%
Can't Say	3%	2%	5%	4%	12%	9%	20%

**Q: According to you, how useful is Mobile Technology in addressing the following Healthcare Delivery mechanisms?**

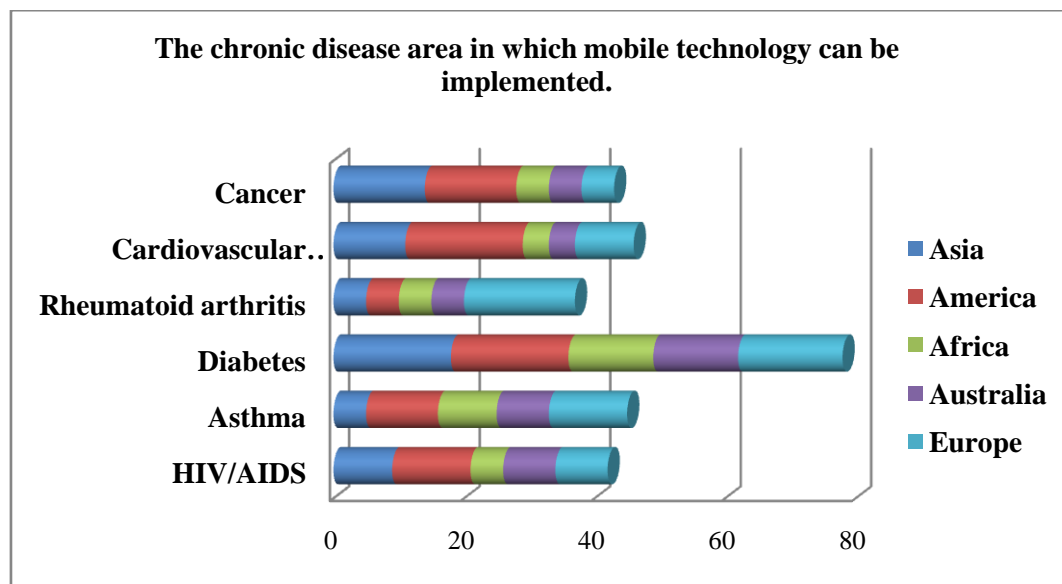
	Reducing waiting time	Providing effective & attractive ways of motivating patients	Reducing the no. of working staff	Getting real time patients vitals	Decreasing medical errors	Point of care	All of the above
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Very Useful	47%	31%	31%	35%	18%	22%	20%
Useful	20%	34%	33%	29%	36%	50%	42%
Not useful	2%	10%	19%	6%	21%	5%	3%
Can't Say	3%	2%	5%	4%	12%	9%	20%



Today, millions of people use mobile devices to access the health, beauty tips and for many other functions, Chronic Disease Management is also the field where Mobile technology is evolving day by day with new medical applications. According to the survey results, it can be interpreted that Australia followed by America has the highest number of professionals who are aware of the use of Mobile Technology in the area of Chronic Disease Management.

**Table 1: To find out the chronic disease area in which Mobile Technology can be implemented.**

	Asia	America	Africa	Australia	Europe	Total
HIV/AIDS	9	12	5	8	8	42
Asthma	5	11	9	8	12	45
Diabetes	18	18	13	13	16	65
Rheumatoid arthritis	5	5	5	5	17	37
Cardiovascular disease	11	18	4	4	9	56
Cancer	14	14	5	5	5	46



Implementation of Mobile Technology software in healthcare organizations cuts the waiting time improves data collection and helps in meeting regulatory requirements. From the above concluded data we can interpret that more than average people from each continent think that mobile technology can be implemented very easily in Diabetes and least in rheumatoid arthritis. Comparatively, a high percentage of healthcare professionals from America think that cardiovascular disease is the best disease area where this technology can be implemented very easily.

## V. FINDINGS

The survey has depicted that most of the healthcare professionals were Doctors and healthcare management professionals from nonprofit healthcare & research organizations of five continents i.e. Asia, America, Africa, Australia & Europe respectively mostly having sound knowledge of technology in healthcare and thus the majority of the responders were in a better condition to judge the services accurately. So, as per the survey:

- Most of the Healthcare Professionals are well aware of the use of Mobile Technology in the area of Chronic Disease Management, and some organizations are using it in healthcare delivery.
- According to the participants' responses, there is a role of mobile technology in several therapeutic areas such as diabetes, cardiovascular disease, asthma, HIV, cancer etc which can use mobile technology for better improvising the treatment pattern as well as for ensuring the follow-up by the patient.
- Most of the responders find the use of mobile technology in medication reminders, follow ups, health promotion, and health monitoring and feedback assessment.
- Some of the responders think that this technology would be difficult to be used by the nurses & non-medical staff, whereas very easily acceptable by patients & Doctors group.
- It was found in the study that non –medical staff like operators etc. are least interested in using mobile technology in chronic disease management.
- Around half of the responders found use of mobile technology in point of care.
- Majority of healthcare professionals find mobile technology to be very useful in reducing waiting time.
- Most of the participants responded that mobile technology has major potential to be wide reaching and potential to be cost effective.
- Most of the healthcare professionals around the globe think that Asia is the region where mobile technology can be best implemented for managing chronic disease, since it is a developing countries and having wide variety of healthcare services present which has the potential to get digitalized and implement such technology to deliver quality healthcare services.
- Most of the responders strongly agree that mobile technology helps in encouraging better patient and healthcare provider relationship.
- According to responses most of the Americans' are aware of mobile technology in the area of chronic disease management followed by Africa.
- Most of the responders from Asia and America think that mobile technology is highly acceptable by Patients and Doctors whereas least acceptable by non-medical staff.

## **VI. CONCLUSION**

The entire study about the “Global overview of mobile technology in the area of chronic disease management” has been made through online survey and personal online interaction with the Healthcare professionals of various countries. The survey has depicted that the higher percentage of the responders are aware of the use of mobile technology in the area of chronic disease management.

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