

---

## E-HEALTH PRACTICES AND TECHNOLOGIES

Uttekar Shravani V. & Ugale Rutuja V.

HSBPVT's Parikrama Diploma in Pharmaceutical Sciences, Kashti, Tal - Shrigonda, Dist-  
Ahmednagar, Maharashtra, India

1

---

<sup>1</sup>\*corresponding author

Uttekar Shravani, Ugale Rutuja

Parikrama Diploma in Pharmaceutical Sciences, Kashti, Tal- Shrigonda,  
Dist- Ahmednagar, Maharashtra, India.

Email: [shravaniuttekar17@gmail.com](mailto:shravaniuttekar17@gmail.com) & [ugalerutuja015@gmail.com](mailto:ugalerutuja015@gmail.com)

Acknowledgement: Authors are thankful to the Hon. Shri. Babanrao Pachpute Vichardhara Trust's Parikrama Diploma in Pharmaceutical Sciences, Kashti for extending requested facilities in commencement and completion of this work.

---

## E-HEALTH PRACTICES AND TECHNOLOGIES

### ABSTRACT

E-health refers to a collection of internet-based technologies used to deliver healthcare services with the goal of enhancing patient care and improving quality of life. This analysis employs a comprehensive review of the literature of articles published from 2014 to 2019 to identify the most widely used e-health practices around the globe, along with the primary services offered, diseases treated, and related technologies that support e-health practices, due to the paucity of comparable studies on the subject. The four most often utilized activities (mhealth, or mobile healthcare; telehealth services, or telecommunication; software; and others) and the most popular e-health technologies (the Internet of Things, big data, cloud services, safeguards, and infrastructure) were among the main findings. Public health faces both opportunities and challenges as a result of the growing interest in health, health care reform, and the arrival of the Information Age. Improved communication skills, better instruments for analyzing and presenting new knowledge, and timely and accurate information are all necessary for public health practitioners and researchers to make informed decisions and raise the field's image. The study of using information-age technology to meet the specific requirements of public health is known as "public health informatics" (PHI). In this work, we define public health informatics, list certain advantages that could result from its broad use, and talk about the need for and strategy for creating an academic field in the field.

**Keywords** - EHealth, technologies, public health informatics.

---

## E-HEALTH PRACTICES

The advent of new disorders, the adoption of digital technology has proved especially difficult. Therefore, investment for novel therapies is required to ensure that all individuals receive equal utilization to the healthcare system [1, 2, 3]. E-health refers to techniques including online medical care as well as mhealth that use digital gadgets for offering health information, resources, and services. Utilising smartphones and other mobile devices to make requests for services electronically, manage or monitor treatment or challenge or additional health issues, and use apps to verify information has been referred to as mobile health, or mhealth [5]. The use of information and communication technologies for improved patient care and academic research in the field has become recognized as telehealth. As e-health addresses a variety of health care difficulties such as diminishing errors by providing more accurate results with improved services, it has proven to be a fundamental part of the medical field [7]. This is the case when using electronic medical records, wherever all patient data is kept, preventing medication from being applied improperly during medical care and guaranteeing that the patient receives indicate, safe therapy [8]. fortunately for it to be applied along with enable the offer of internet-based medical attention, adequate strategies and ways have to be done. A country's e-health scheme's efficacy is dependent on a variety of factors, including user adoption and the types of systems, processes, and management that are in place [6,9]. Entrepreneurs, medical experts, patients, and those in charge of wellness programs and encouragement regulations are among the four categories of people whom are involved in the findings in the intervening period [10]. E-health strategies, which involve the creation of standards, laws, or laws, must be implemented in a coordinated manner in order to effectively regulate the use of technological innovations in healthcare. This is true for the domains of mhealth and telehealth as well as for specific domains like health instruction (eLearning) or digital health records. The three basic parts of the e-health approach are policies, tools and procedures, and knowledge management. These elements manage equipment and human resources, decrease barriers to health service access, promote community engagement, and integrate medical facilities with networks of support and technological and technical production [13]. A variety of barriers to digital health include the challenges experienced by medical professionals and their clients in utilizing systems and programs, in addition to assuring the safety and privacy of data submitted by users shared within these networks of devices.

---

## APPLICATIONS

The delivery of health services and information over the Internet and related technologies is known as "e-Health," an underdeveloped nation topic at the nexus of public health, business, and medical informatics. When used more broadly, the word "network" refers to a method of thinking and an obligation to networked, international thinking in order to use information and communication technologies in order to enhance health care locally, regionally, and globally. The phrase "e-health" spans a wider range of practices than just telemedicine or telehealth, such as electronic medical records, telecare, also known telehealth, and Internet use. One of the most frequent uses of the Internet by older people involves looking for materials and data related to medical services.

### *Health care system and technology -*

System for controlling records (DBMS) a software management structure made to handle information and perform actions on the knowledge that multiple clients have put forward. Radiology Computerized Information System (RIS), The lab Information System (LIS), and Order/Entry Software are a number of a few instances.

1. CDSS, or Clinical Decision Support System The primary role of CDSS, a program or system application, is to compile, summarize, and interpret transaction data with a particular objective of supporting healthcare providers make judgements. Pharmaceutical information technologies are one example where decisions about healthcare options are made using based on rules information regarding being diagnosed, therapy, and drugs.

2. Network for Maintenance of Medical Information (HIMS) Healthcare executives can use HIMS for the, a systematic collection of current continuously updated information, for planning and supervising corporate and company activities

3. Electronic medical records, or electronic health records An electronic medical record (EMR) comprises a collection of records that contains electronically held onto data about the individual's health and history of illness. It has ability to hold multiple unique records. A physician's clinical practical-based record is a particular instance.

4. Computerized Health Record (EHR) An electronics record of patients (EPR) incorporates information collected by different organizations and is compassionate. By supplying extensive accurate data, practitioner reminders, schedules, and connection to medical knowledge bases that it helps doctors and nurses. electronic files based at hospitals are a perfect instance.

---

5. Healthcare electronic health records (EHR) An online version of a patient's medical record is known as a medical record on the internet. Information about individuals, medical details, and patient health-related issues are all kept in this file. Time sharing, granting the patient power over the care he receives, and promoting health through making use of medical files are hallmarks of e-health records. In 2007 The work of Armstrong along with others.

#### THE AVAILABILITY OF ELECTRONIC HEALTH SERVICES TECHNOLOGICAL INNOVATION -

Despite its numerous benefits, e-health provides hope for improving the healthcare system by utilizing information and communication technologies.

*The advantages of implementing electronic health care are discussed below:*

i. Enhancing care quality: Electronic health enhances healthcare quality by allowing provider comparisons, integrating patients as additional tools for quality assurance, and guiding patient flow to the top quality providers.

ii. Effectiveness: Increased healthcare efficiency additionally culminates in savings, which is one of the major objectives of e-health.

iii. Empowering of the Patients and the customer: This might be accomplished by offering individuals with digital accessibility to individual medical information and a fundamental awareness of healthcare.

IV. Lowering expenses indicators: Other suggested strategy for lowering healthcare expenses

v. Offering of Skills: Teaching customers and physicians through online medical instruction and protective knowledge.

vi. Cultivating an innovative connection between healthcare professionals and clients in the manner of an actual partnership during which judgments are made collectively. vii. Stretching the healthcare the field's scope beyond its conventional the boundaries, both intellectually and logistically.

viii. Equality: Promoting greater justice regarding healthcare is one about the objectives associated with digital health.

viii. Enhancing regular communication as well as data interchange within medical facilities.

CONCLUSION-

---

EHR offers successful techniques for storing and retrieving electronic medical records while eliminating manual labor. The establishment of national health information networks and health information institutions depends on electronic health records. There are numerous issues with the present a paper-based system. Beyond the possible advantages of electronic health records, challenges and disagreements persist. Although clinical decision assistance is still in its infancy, computational intelligence will probably help it advance in the future. For the purpose for it to achieve the objective it set out to achieve, the current study utilized an organized literature evaluation to evaluate 446 papers that were published between 2014 and 2019. In order to examine the available literature about electronic health records habits, six research topics were set out. The following four groups of which are the most prevalent approaches in the field “technology,” “online medical care or remote healthcare,” “mhealth or m health,” and “others” were found through the research process. The primary services supplied by e-health practices include telehealth, mhealth and monitoring, health literacy, and electronically unified systems. The following medical specialties telepsychiatry, teledermatology, telecommuting, teleophthalmology, telecardiology, and teledentistry were recognized as offering appointments via healthcare. It was discovered that more healthcare professions, including older people, general surgery, hormone therapy, child health, fetal medicine, and oncology, additionally provide e-health activities.

#### ACKNOWLEDGEMENT

Authors are thankful to the Hon. Shri. Babanrao Pachpute Vichardhara Trust’s Parikrama Diploma in Pharmaceutical Sciences, Kashti for extending requested facilities in commencement and completion of this work.

---

## REFERENCES-

[1] Kontos, E., Blake, K.D., Chou, W.Y.S. and Prestin, A. (2014) Predictors of eHealth Usage: Insights on the Digital Divide from the Health Information National Trends Survey 2012. *Journal of Medical Internet Research*, 16, e172.

<https://doi.org/10.2196/jmir.3117>

[2] Kim, K.H., Kim, K.J., Lee, D.H. and Kim, M.G. (2019) Identification of Critical Quality Dimensions for Continuance Intention in mHealth Services: Case Study of Onecare Service. *International Journal of Information Management*, 46, 187-197.

<https://doi.org/10.1016/j.ijinfomgt.2018.12.008>

[3] Ekeland, A.G., Bowes, A. and Flottorp, S. (2010) Effectiveness of Telemedicine: A Systematic Review of Reviews. *International Journal of Medical Informatics*, 79, 736-771.

<https://doi.org/10.1016/j.ijmedinf.2010.08.006>

[4] Hilty, D.M., Ferrer, D.C., Parish, M.B., et al. (2013) The Effectiveness of Telemental Health: A 2013 Review. *Telemedicine and e-Health*, 19, 444-454.

<https://doi.org/10.1089/tmj.2013.0075>

[5] Holden, R.J. and Karsh, B.T. (2010) The Technology Acceptance Model: Its Past and Its Future in Health Care. *Journal of Biomedical Informatics*, 43, 159-172.

<https://doi.org/10.1016/j.jbi.2009.07.002>

[6] Dedding, C., van Doorn, R., Winkler, L. and Reis, R. (2011) How Will e-Health Affect Patient Participation in the Clinic? A Review of e-Health Studies and the Current Evidence for Changes in the Relationship between Medical Professionals and Patients. *Social Science & Medicine*, 72, 49-53.

<https://doi.org/10.1016/j.socscimed.2010.10.017>

[7] Kummervold, P., Chronaki, C., Lausen, B., et al. (2008) eHealth Trends in Europe 2005-2007: A Population-Based Survey. *Journal of Medical Internet Research*, 10, e42.

<https://doi.org/10.2196/jmir.1023>

[8] Andersson, G. and Cuijpers, P. (2009) Internet-Based and Other Computerized Psychological Treatments for Adult Depression: A Meta-Analysis. *Cognitive Behaviour Therapy*, 38, 196-205.

---

<https://doi.org/10.1080/16506070903318960>

[9] Kobrinskii, B.A. (2014) E-Health and Telemedicine: Current State and Future Steps. E-Health Telecommunication Systems and Networks, 3, 50-56.

<https://doi.org/10.4236/etsn.2014.34007>

[10] Andrews, G., Cuijpers, P., Craske, M.G., McEvoy, P. and Titov, N. (2010) Computer Therapy for the Anxiety and Depressive Disorders Is Effective, Acceptable and Practical Health Care: A Meta-Analysis. PLOS ONE, 5, e13196.

<https://doi.org/10.1371/journal.pone.0013196>

[11] Tung, F.C., Chang, S.C. and Chou, C.M. (2008) An Extension of Trust and TAM Model with IDT in the Adoption of the Electronic Logistics Information System in HIS in the Medical Industry. International Journal of Medical Informatics, 77, 324-335.

<https://doi.org/10.1016/j.ijmedinf.2007.06.006>

[12] Peek, S.T.M., Luijkx, K.G., Rijnaard, M.D., et al. (2016) Older Adults' Reasons for Using Technology While Aging in Place. Gerontology, 62, 226-237.

<https://doi.org/10.1159/000430949>

[13] Ricciardi, L., Mostashari, F., Murphy, J., Daniel, J.G. and Siminerio, E.P. (2013) A National Action Plan to Support Consumer Engagement via e-Health. Health Affairs, 32, 376-384.

<https://doi.org/10.1377/hlthaff.2012.1216>

[14] Wang, J.B., Cadmus-Bertram, L.A., Natarajan, L., et al. (2015) Wearable Sensor/Device (Fitbit One) and SMS Text-Messaging Prompts to Increase Physical Activity in Overweight and Obese Adults: A Randomized Controlled Trial. Telemedicine and e-Health, 21, 782-792.

<https://doi.org/10.1089/tmj.2014.0176>

[15] Sultan, N. (2014) Making Use of Cloud Computing for Healthcare Provision: Opportunities and Challenges. International Journal of Information Management, 34, 177-184.

<https://doi.org/10.1016/j.ijinfomgt.2013.12.011>



---

[16] Riper, H., Spek, V., Boon, B., et al. (2011) Effectiveness of E-Self-Help Interventions for Curbing Adult Problem Drinking: A Meta-Analysis. *Journal of Medical Internet Research*, 13, e42.

<https://doi.org/10.2196/jmir.1691>

[17] Hoque, M.R., Bao, Y. and Sorwar, G. (2017) Investigating Factors Influencing the Adoption of e-Health in Developing Countries: A Patient's Perspective. *Informatics for Health and Social Care*, 4

h 2, 1-17 <https://doi.org/10.3109/17538157.2015.1075541>

[18] Bol, N., Helberger, N. and Weert, J.C.M. (2018) Differences in Mobile Health App Use: A Source of New Digital Inequalities? *The Information Society*, 34, 183-193.

<https://doi.org/10.1080/01972243.2018.1438550>

[19] Walker, D.M., Hefner, J.L., Fareed, N., Huerta, T.R. and McAlearney, A.S. (2020) Exploring the Digital Divide: Age and Race Disparities in Use of an Inpatient Portal. *Telemedicine and e-Health*, 26, 603-613.

<https://doi.org/10.1089/tmj.2019.0065>

[20] Wind, T.R., Rijkeboer, M., Andersson, G. and Riper, H. (2020) The COVID-19 Pandemic: The "Black Swan" for Mental Health Care and a Turning Point for e-Health. *Internet Interventions*, 20, Article ID: 100317.

<https://doi.org/10.1016/j.invent.2020.100317>

[21] [https://www.researchgate.net/figure/eHealth-includes-a-variety-of-technologies-that-can-be-applied-to-the-health-care\\_fig1\\_354412836](https://www.researchgate.net/figure/eHealth-includes-a-variety-of-technologies-that-can-be-applied-to-the-health-care_fig1_354412836)

[22] World Health Organization. Primary Health Care: Declaration of Alma-Ata International Conference on Primary Health Care. Alma-Ata; 1978.

[23] World Health Organization. Declaration of Astana: Global Conference on Primary Health Care: Astana, Kazakhstan, 25 and 26 October 2018. World Health Organization; 2019.

[24] E-health practices and technologies.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8470487/>

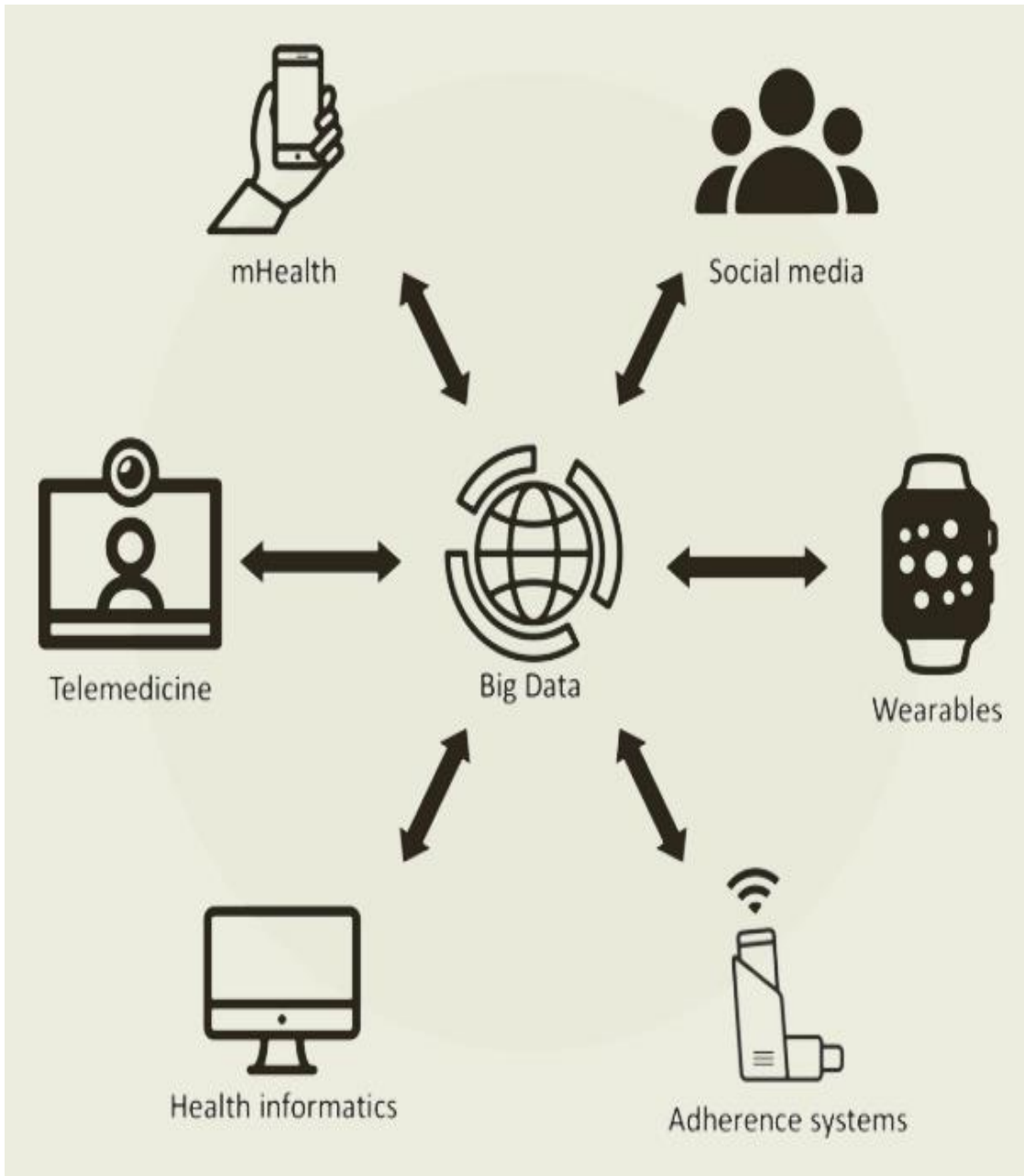


Fig. 1 Technologies involve in E-Health

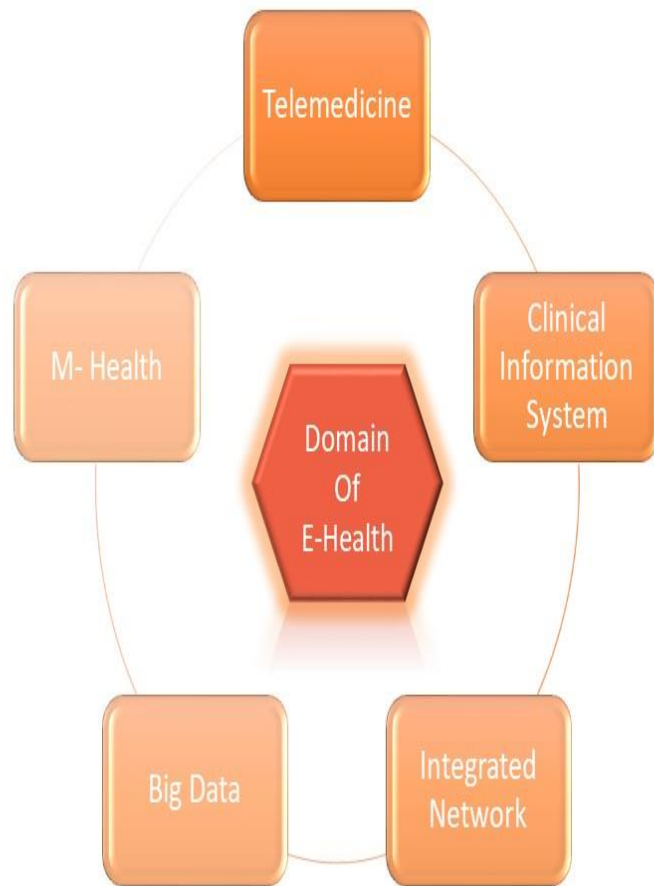


Fig.2 Domain of Health

Table No. 1 E-Health Practices and Fields [25]

<b>Electronic Health Care Procedures</b>	<b>Overview about the type of services provided and other topics relevant to E-Health of Articles</b>	<b>The Articles determined Medical Fields</b>
Technology	Understanding straight, literacy in a healthcare, system testing, telecommunicating, technological devices, others, mHealth, observation of patients, assistance, and projects.	-
Mhealth or Mobile Health	Health awareness, health services, surveillance, knowledge, ecosystems, examination, mhealth, and details.	orthopedics, gastroenterology, anesthesiology, nutrition, general surgery, urology, geriatrics, endocrinology, nephrology, ophthalmology, radiotherapy/radiology, neurology, emergency medicine, pediatrics, cardiology, oncology, psychiatry, neurology, dermatology, gynecology, hematology, infectiology/infectious diseases, and radiotherapy/radiology.
Telehealth or Telemedicine	Technological advances, mhealth, telehealth, interaction, and intervention.	telerehabilitation, telepsychiatry, teledermatology, teledentistry, teleophthalmology, and telecardiology.

Other	Other; review system; effects x cost-benefit; usage and diagnosis; telehealth; mhealth; prices; programs; issues; project; general e-health; quality of services; care; project assessment; rewards; creation; diagnosis; and impediments to understanding and acceptance of mhealth, treatments, opinions of professionals, study groups, intervention evaluations, technological advances, telehealth care, RCTs (randomized controlled trials), and standardization of care.	The profession of nursing psychology, neurology, cardiology, gynecology.
-------	---	--