

GLOBAL JOURNAL OF ADVANCED ENGINEERING TECHNOLOGIES AND SCIENCES**PERSONAL HEALTH RECORD OF AN INDIVIDUAL IN ETHIOPIA****Dr. Mahammad Shafi. R*, Mengistu Ketema, Prabhakar Gantela**

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ABSTRACT

Personal Health Record (PHR) is a proposed application, which creates and manages patient health/ medical records and allow access at anytime from anywhere. PHR are broadly considered as means by which an individual's personal health information can be collected, stored, and used for diverse health management purposes. It is an electronic record of an individual in Ethiopia, which provides identifiable health information that can be drawn from multiple sources. PHR can be managed, shared, and controlled by an individual or their Care Givers and Health Care Providers.

KEYWORDS: Personal Health Record, Electronic Health Record, Individual, Health Services.**INTRODUCTION**

Personal health records are broadly considered as means by which an individual's personal health information can be collected, stored, and used for diverse health management purposes. In some concepts, the PHR includes the patient's interface to a healthcare provider's electronic health record (EHR). In others, PHRs are any consumer/patient-managed health record. This lack of consensus makes collaboration, coordination and policymaking difficult. It is quite possible now for people to talk about PHRs without realizing that their respective notions of them may be quite different. Recognizing the variety of attributes and possibilities and being very specific about what is being discussed would enable those engaged in collaboration and policymaking to conduct more nuanced discussions of PHRs and to collaborate more effectively.

A framework will provide a foundation for public education efforts to highlight the benefits and risks of PHR, which aimed not only at an individual and patients but also at healthcare providers and other stakeholders.

Today people need to monitor, track and evaluate their individual health strategies as we are identifying increased number of diseases and their cure. By providing complete, updated and easily accessible health records, people can play a more active role in their health care as well as that of family members. PHR offers instant simple affordable solution. PHR is a web-based application, which creates and manages individual health/ medical records and allow access at anytime from anywhere. PHR provides,

- Complete and accurate summary of individual's medical history.
- Facilitates better and timely treatment by Doctors.
- Better communication between patients and doctors.
- In emergencies, a PHR can quickly provide timely medical information for better treatment.

INITIAL FRAMEWORK FOR PHR ATTRIBUTES**Scope and Nature of the Content**

- Some PHR systems just have consumer health information, personal health journals, or information about benefits and/or providers, but no clinical data about the individual.
- Some PHR systems have clinical information. Of these, some are disease specific, some include subsets of information such as lab reports, and some are comprehensive.

Source of Information

- Data in PHR systems may come from the individual, patient, caregiver, healthcare provider, or all of these.
- Some PHR systems are populated with data by EHR.

Features and Functions

- PHR systems offer a wide variety of features, including the ability to view personal health data, exchange secure messages with providers, schedule appointments, renew prescriptions, and enter personal health

data; decision support such as medication interaction alerts or reminders about needed preventive services and the ability to transfer data to or from an electronic health record and the ability to track and manage health plan benefits and services.

Custodian of the Record

- The physical record may be operated by a number of parties, including individual or patient, an independent third party, a healthcare provider, an insurance company, or an employer.

Data Storage

- Data may be stored in a variety of locations, including an Internet-accessible database, a provider's EHR, individual/ patient's home computer, a portable device such as a smart card or thumb drive, or a privately maintained database.

Data Access Control

- Individual or patients always have access to their own data, they do not always determine who else may access it. For example, PHR that are "views" into a provider's EHR follow the access rules set up by the provider. In some cases, consumers do have exclusive control.

METHODOLOGY

The Methodology consists of the following few tasks which are considered for analysis, design and implementation of PHR and addresses lacunae in present manual health record management at Tepi Region. The services of PHR are depicted in Fig-1.



Fig-1: Services of PHR

Timely Access to Health Data

PHR can enable us to,

- View Medicines
- View Lab Results
- View Allergies
- View Problem List and
- Administration and Security necessary to enable timely access

Engage Patients, Families and More

- Patient/ Family Member can create an online account and Logs into PHR
- With the help of unique id of the patient, PHR seeks patient information from PHR Server
- PHR Server displays patient data like Medications, Allergies, Problems, Lab Reports, etc.,
- PHR provides simple quick affordable solution

Increasing Electronic Synergies

- Transmit information about Hospital Administration
- Precautionary measures of some of the diseases
- Export PHR information as a text file or send to a Printer
- Online Videos

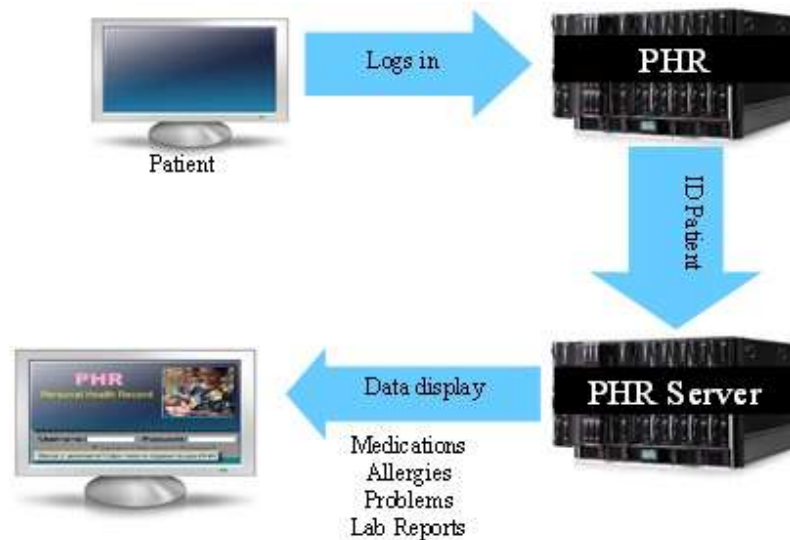


Fig-2: Working Process of PHR

NATIONAL SCENARIO OF PHR IN ETHIOPIA

Ethiopia has a total population of 91.73 million (2014) and is one of the poorest countries in the world, with a per capita annual income of US\$ 90 (2003). Percentage of population living in urban areas is 17% and population proportion between ages 30 and 70 years is 26.4% (2014). The probability of dying between ages 30 and 70 from four main Non-Communicable Diseases (NCD) is 15% (2014). The four main NCDs considered were Cancers, Diabetes, Cardiovascular diseases and Chronic respiratory diseases [2].

In 2004/05, there were 126 hospitals, 519 health centres, 1,797 health stations, 2899 health posts and 1,299 private clinics in the country. Although there is no data available on the number of traditional healers in the country, it is well known that many Ethiopian households use them for various health problems. The population per primary health care (PHC) facility was 24,513 and this was three times higher than the population per PHC in the rest of sub-Saharan Africa. The total number of hospital beds was 13,469, which meant that there was only one bed for a population of 5,276 and this was about five times higher than the average for sub-Saharan Africa. The limited number of health institutions, inefficient distribution of medical supplies and disparity between urban and rural areas have made it difficult to increase people's access to health-care services [4].

Ethiopia is experiencing recurrent problems as a result of droughts and conflicts. Drought has become a chronic occurrence, affecting the country periodically once every 7–10 years since 1983. The current drought is only exacerbating the needs resulting from the 2003 drought, leaving presently 3.8 million people in desperate need for emergency food relief and another 5.2 million chronically food insecure assisted through a productive safety net program [4].

The incidence of certain diseases increases during droughts. The main diseases most commonly encountered are: malaria, diarrhea, intestinal helminthiasis, acute respiratory infections including pneumonia, tuberculosis and skin diseases. Outbreaks of meningitis, measles and diarrhoeal diseases including cholera are also common during droughts.

Periodically, the dry lands experience heavy seasonal rains, which cause flooding leading to internal displacement and increased risk for diseases related to stagnant waters such as malaria and cholera.

The widespread food shortages associated with these natural disasters further results in malnutrition and under-nutrition. In order to address chronic poverty and persisting food insecurity, the Ethiopian government is since 2003 conducting a massive resettlement programme, under which 2.2 million people will be moved to more productive areas.

The progress in health status of the population indicates that about 80% of diseases in Ethiopia are attributable to preventable conditions related to infectious diseases, malnutrition; and personal and environmental hygiene. The prevalence of TB in Ethiopia is estimated to be 241 with incidence of 247 per 100 000 populations. The adult HIV prevalence is 1.5% in 2011 (4.2% for urban and 0.6% for rural) and is higher among females (1.9%) than males (1%). Environmental risk factors contribute to 31% of the total disease burden in the country.

The right to health for every Ethiopian has been guaranteed by the 1995 Constitution of the Federal Democratic Republic of Ethiopia (FDRE), which stipulates the obligation of the state to issue policy and allocate ever increasing resources to provide public health services to all Ethiopians.

Ethiopia follows a decentralized health care system, development of the preventive, promotive and curative health care delivery by public, private for profit and not-for profit players in the health sector. The Ethiopian health care delivery, organized in to three-tier system, puts the health extension program, the innovative community-based service delivery, as a center of focus for the provision of primary health care services to broad masses. Primary health care (PHC) potential coverage stands at 90%, reaching most of the rural areas in the country.

Top 10 Causes of Deaths in Ethiopia

Table-1: Top 10 Causes of Deaths in Ethiopia (Source: [3])

Lower respiratory infections	12%
HIV/ AIDS	12%
Perinatal conditions	8%
Diarrheal diseases	6%
Tuberculosis	4%
Measles	4%
Cerebrovascular disease	3%
Ischaemic heart disease	3%
Malaria	3%
Syphilis	2%

POTENTIAL BENEFITS OF PHR

Individuals and their Care Givers

- Support wellness activities
- Improve understanding of health issues
- Increase sense of control over health
- Increase control over access to personal health information
- Support timely, appropriate preventive services
- Support healthcare decisions and responsibility for care
- Strengthen communication with providers
- Verify accuracy of information in provider records
- Support home monitoring for chronic diseases
- Support understanding and appropriate use of medications
- Support continuity of care across time and providers
- Manage insurance benefits and claims
- Avoid duplicate tests
- Reduce adverse drug interactions and allergic reactions
- Reduce hassle through online appointment scheduling and prescription refills
- Increase access to providers via e-visits
- Improve documentation of communication with patients

Health Care Providers

- Improve access to data from other providers and the patients themselves
- Increase knowledge of potential drug interactions and allergies
- Avoid duplicate tests
- Improve medication compliance
- Provide information to patients for both healthcare and patient services purposes
- Provide patients with convenient access to specific information or services (e.g., lab results, e-visits)
- Improve documentation of communication with patients

Social/ Population Health Benefits

- Strengthen health promotion and disease prevention
- Improve the health of populations

- Expand health education opportunities

To realize the potential benefits of PHR and to improve health and healthcare, significant steps are needed in the areas of privacy, security, and interoperability, in particular, as recommended. The key findings include the following:

- i. It is important to clarify the respective rights, obligations, and potential liabilities of individuals, patients, providers, and other stakeholders in the PHR system.
- ii. Individuals should have the right to make an informed choice concerning the uses of their personal information when signing up to use any personal health record products or services.
- iii. Security is a critical component of a PHR system, especially if it is accessible via the Internet.
- iv. The full potential of PHR system will not be realized until they are capable of widespread exchange of information with Electronic Health Records (EHRs) and other sources of personal and other health data.

There is a scope for broad areas for research and evaluation for PHR system. They include individual, health services, and technical research and the development of metrics to assess the implementation and impact of PHR system on multiple dimensions of health and healthcare [1].

CONCLUSION

This paper portrays the analysis, design and implementation of Personal Health Record (PHR) of an individual in Ethiopia and its recompense over the present PHR in Ethiopia. By means of this performance we can support wellness activities by facilitating better and timely treatment by doctors. It will help the country's economy to reach new heights. PHR provides timely access to health profile of an individual, engage patients, family members and more electronic synergies.

PHR can benefit individuals and their care givers, health care providers and societal/ population health benefits. In the proposed system all information related to the health profile of an individual is stored in database. So, implementing this will be really helpful to the people below poverty line. In future, data mining techniques can be adopted to forecast diseases and precautionary measures can be taken. Even it is possible to develop an expert system to diagnose the disease of the patient and given prescription accordingly.

REFERENCES

- [1] A Report recommendation from the National Committee on Vital and Health Statistics, "Personal Health Records and Personal Health Record Systems", U.S. Department of Health and Human Services, Washington D.C., February, 2006.
- [2] "Country Cooperation Strategy – at a Glance", World Health Organization (WHO) updated on May 2014.
- [3] "Centre for Disease Control and Prevention (CDC)", U.S. Department of Health Human Services, Published on July 2010.
- [4] "Ethiopia Strategy Paper", World Health Organization, Health Action in Crisis, Article Published in May 2005.