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# The Personal Health Record (PHR): The Effects on Patient Healthcare Outcomes?

Bonita R. Payne

*University of Tennessee Health Science Center*

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The Personal Health Record (PHR): The Effects on Patient Healthcare Outcomes?

Bonita R. Payne, RHIA

University of Tennessee Health Science Center

College of Health Professions

Department of Health Information and Informatics

Advisor: Sajeesh Kumar, PhD.

November 2015

### Abstract

Electronic transmission of data is on the rise, due to the Affordable Care Act and provisions to make healthcare information more accessible, complete, and transparent. The Personal Health Record (PHR) application is a tool used to provide assistance to the goal of patient-centered and patient-centric care. Its purpose is to encourage consumers to become more participatory and informed in their healthcare treatment and healthcare needs. Since its inception, it has been questionable as to whether consumers and providers are seeing any improvements in the services provided or the care rendered. Since, the development and implementation of PHR applications, there has been some resistance from consumers for concerns of privacy and security of their information. This paper will discuss the uses of the PHR among consumers and providers and whether its use has impacted accessibility, services, and overall healthcare treatment/outcomes.

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**List of Abbreviations**

PHR Personal Health Record /Protected Health Record

ACA Affordable Care Act

EHR Electronic Health Record

IOM Institute of Medicine's

## **Chapter 1-Introduction**

In this era, electronic transmission/communications delivers instantaneous correspondence worldwide. In fact, in 2011, The Affordable Care Act (ACA) signed into law by President Barack Obama, legitimized this concept into the healthcare industry. Within the passing of this law, the mandate to develop electronic health records (EHR) was implemented. One objective of this enactment is to provide patient-centered care. As a result, development of additional technologies (ie. applications) was created to allow patient/consumer-centered care. The Personal Health Record (PHR) application is a tool used to provide assistance to the goal of patient-centered/centric care. Its purpose is to encourage consumers to become more participatory and informed in their healthcare treatment and healthcare needs. As, a new technology, the PHR can increase positive healthcare outcomes for patients, physicians, and the healthcare industry as a whole. Currently, there has been low participation and advertisement of the PHR, due to patients/consumers concerns: data security, accuracy of the clinical information stored in the PHR, and challenges with keeping information updated (Cocoslia, Archer, 2014). The PHR is a tool designed with the objective to encourage consumers to share the responsibility of managing and participating in their healthcare treatment. The PHR as defined by the Markle Foundation:

An electronic application through which individuals can access, manage and share their health information, and that of other for whom they are authorized , in a private, secure and confidential environment (Tang, Ash, Bates, Overhage, 2006).

### **Background**

Since, the development and implementation of PHR applications, there has been some resistance from consumers for concerns of privacy and security of their information. Since its

inception, it has been questionable whether consumers and providers are seeing any improvements in the treatment or services provided. Although, the PHR is a relatively new tool in the healthcare industry; it can provide consumers with some timesaving benefits such as, access to a wide variety of credible health information, data, and knowledge (Tang *et al*); however, there has been minimal use.

### **Purpose of Study**

Historical findings indicate that there has been minimal use of PHRs among consumers. The objective of this study is to determine whether the PHR will and/or can ultimately promote healthier patient healthcare outcomes.

### **Significance of Study**

The quality of healthcare services has been a key component in providing patient satisfaction. It has been named as the focal point in decreasing healthcare cost in the United States. Patient-centered care is a core component of the Institute of Medicine's (IOM) quality aim and the Affordable Care Act (ACA) of 2011 (Agarwal, Anderson, Zarate, Ward, 2013). Determining whether maintaining a PHR promotes healthier patient outcomes is critical to patient-centered healthcare. By establishing uses of this technology, healthcare providers can educate consumers of its benefits, as well as, increase patient communication, provider-patient relationships, patient compliance, and empower the patient to become an active player in their own healthcare treatment.

### **Research Question**

The intent of this study is to determine whether patient participation and accessibility to

healthcare information has effectively or ineffectively resulted in healthier patient outcomes.

The research question is:

- Does Maintaining a PHR promote healthier patient outcomes?

The analysis of the survey will focus on the familiarity of PHRs, it uses, and impact on patient care.

### **Definitions of Key Terms**

The terms patient and consumer are used synonymously as beneficiaries/users of healthcare services, as well as, healthcare professionals and providers are used in a similar fashion to describe individuals that provide services (ie. Hospital, physician, etc.).

## Chapter 2 Review of Literature

### Research Design

A questionnaire of 10 questions was developed to collect information to examine the awareness and uses of PHRs. The data instrument contained the following variables:

- 1) What is your gender?
- 2) What is your age?
- 3) What is your ethnicity?
- 4) What is the highest level of school you have completed or the highest degree you have received?
- 5) What is your approximate average household income?
- 6) Are you familiar with Personal Health Records (PHRs)?
- 7) How many health care providers do you have (ie. Dermatologist, PCP, orthopedics, podiatrist, cardiologist, etc)?
- 8) Collectively, How much time do you spend on requesting medical records to provide assistance in your healthcare treatment?
- 9) How often do you travel to another city or state?
- 10) If you were asked, today, for your allergy record, how likely is I that you would have that information?

### Variables and Rationale

Five demographic variables were selected to identify population sample surveyed:

- Level of Education
- Gender

- Age range
- Income range
- Ethnicity

The other five questions pertain to knowledge and uses of Personal Health Records

(PHRs):

- Familiarity
- Number of Healthcare Providers
- Frequency of Travel
- Number of Hours Spent Requesting Healthcare Documentation
- Awareness of pertinent medical information

### **Chapter 3-Methodology**

#### **Findings**

Research for this proposal was conducted via the University of Tennessee Health Science Center's library e-databases: CINHALL AND PubMed. PubMed offered a variety of full-text articles from the basic definition of the PHR to a variation of chronic illnesses (ie. Diabetes, CHF, etc.). It was found that CINHALL had fewer articles pertaining to the PHR health benefits or outcomes.

The search for articles with the key words PHR or Personal Health Records was conducted and yielded 11 articles. Of those 11 articles, five of the articles contained information relative to the topic. The six articles that were excluded contained subject matters with same acronyms but different subject (ie. Protected Health Record) and were none supportive of my topic.

#### **Database Selection**

After approval of the survey tool, selection of a database was initiated. Upon review of the available databases, it was found that SurveyMonkey, an online cloud-based tool used for developing and conducting surveys, would meet the needs of this study.

#### **Data Collection Instrument**

A data collection instrument was developed in SurveyMonkey incorporating the variables outlined in the research design section. The survey was administered through SurveyMonkey utilizing a Web link that provided access to the survey tool. This data collection method was found to straightforward and efficient.

### **Population and Sample Design**

The subject sample selected was of convenience and selected to give a diverse distribution to the hypothesis and reliability of the study. Participants were randomly selected based merely on their willingness to participate in the survey. Population and sample chosen is due to time constraints and the necessity to develop a deeper understanding of consumer uses.

### **Data Collection Procedures**

A questionnaire of 10 questions relating to the uses of PHRs was dispersed and/or administered via face-to-face interview and online Web-link via SurveyMonkey. Survey data will be analyzed by tabulating response rates, frequencies of variables, and statistical testing.

For the face-to-face survey participants, a consent form along with hard copies of questionnaire were administered to members of the National Society of Black Engineers (NSBE) that indicated an interest in participating in the survey on October 14, 2015. Seven questionnaires were distributed and completed. On October 25, 2015, a link to the survey with cover statement attached was dispersed to 347 e-mail addresses. Forty-three surveys were completed by the deadline of November 1, 2015.

### **Data Analysis**

After the deadline, SurveyMonkey's data export tool was used to export the aggregated data to Microsoft Excel 2010 for quantitative analysis of data captured. From the data, frequency tables and graphs were created to give visual analysis of survey variables.

**Chapter 4-Results**

**Response rate of Population**

A total of seven face-to-face questionnaires were distributed and completed for a response rate of 2%. The first request for survey participation via SurveyMonkey Web-link yielded 29 responses with a response rate of 8.4%. The second survey participant request via Survey Monkey yielded 14 responses with a response rate of 4%. Total overall online survey responses were 43 responses, totaling 12.4% response rate. Combined total face-to-face and online survey were 50 responses yielding a response rate of 14.4%.

Table 1

| <b>PHR: Effective or Ineffective</b> |                         |                       |
|--------------------------------------|-------------------------|-----------------------|
| <b>What is your gender?</b>          |                         |                       |
| <b>Answer Options</b>                | <b>Response Percent</b> | <b>Response Count</b> |
| Female                               | 86.0%                   | 39                    |
| Male                                 | 14.0%                   | 11                    |
| Other                                | 0.0%                    |                       |
| <i>answered question</i>             |                         | 50                    |
| <i>skipped question</i>              |                         | 0                     |

Table 2

| PHR: Effective or Ineffective        |                  |                |
|--------------------------------------|------------------|----------------|
| What is your race?                   |                  |                |
| Answer Options                       | Response Percent | Response Count |
| American or Indian or Alaskan Native | 86.0%            | 39             |
| Asian or Pacific Islander            | 14.0%            | 11             |
| Black or African American            | 0.0%             | 0              |
| Hispanic or Latino                   | 0.0%             | 0              |
| White or Caucasian                   | 0.0%             | 0              |
| Other                                | 0.0%             | 0              |
| <i>answered question</i>             |                  | 50             |
| <i>skipped question</i>              |                  | 0              |

Table 3

| PHR: Effective or Ineffective |                  |                |
|-------------------------------|------------------|----------------|
| What is your age?             |                  |                |
| Answer Options                | Response Percent | Response Count |
| 18 to 24                      | 14.0%            | 7              |
| 25 to 34                      | 8.0%             | 4              |
| 35 to 44                      | 14.0%            | 7              |
| 45 to 54                      | 22.0%            | 11             |
| 55 to 64                      | 24.0%            | 12             |
| 65 to 74                      | 18.0%            | 9              |
| 75 or older                   | 0.0%             | 0              |
| <i>answered question</i>      |                  | 50             |
| <i>skipped question</i>       |                  | 0              |

Table 4

| PHR: Effective or Ineffective                                                                   |                  |                |
|-------------------------------------------------------------------------------------------------|------------------|----------------|
| What is the highest level of school you have completed or the highest degree you have received? |                  |                |
| Answer Options                                                                                  | Response Percent | Response Count |
| Less than high school degree                                                                    | 0.0%             | 0              |
| High school degree or equivalent (e.g., GED)                                                    | 4.0%             | 2              |
| Some college but no degree                                                                      | 10.0%            | 5              |
| Associate degree                                                                                | 8.0%             | 4              |
| Bachelor degree                                                                                 | 44.0%            | 22             |
| Graduate degree                                                                                 | 34.0%            | 17             |
| <i>answered question</i>                                                                        |                  | 50             |
| <i>skipped question</i>                                                                         |                  | 0              |

Table 5

| PHR: Effective or Ineffective                      |                  |                |
|----------------------------------------------------|------------------|----------------|
| What is your approximate average household income? |                  |                |
| Answer Options                                     | Response Percent | Response Count |
| \$0-\$24,999                                       | 15.0%            | 7              |
| \$25,000-\$49,999                                  | 21.0%            | 10             |
| \$50,000-\$74,999                                  | 23.0%            | 15             |
| \$75,000-\$99,999                                  | 27.0%            | 11             |
| \$100,000-\$124,999                                | 6.0%             | 3              |
| \$125,000-\$149,999                                | 4.0%             | 2              |
| \$150,000-\$174,999                                | 0.0%             | 0              |
| \$175,000-\$199,999                                | 4.0%             | 2              |
| \$200,000 and up                                   | 0.0%             | 0              |
| <i>answered question</i>                           |                  | 50             |
| <i>skipped question</i>                            |                  | 0              |

Table 6

| PHR: Effective or Ineffective                         |                  |                |
|-------------------------------------------------------|------------------|----------------|
| Are you familiar with Personal Health Records (PHRs)? |                  |                |
| Answer Options                                        | Response Percent | Response Count |
| Never heard of                                        | 20.0%            | 10             |
| Somewhat familiar                                     | 34.0%            | 17             |
| Familiar                                              | 16.0%            | 8              |
| Knowledgeable                                         | 24.0%            | 12             |
| I have one and use it frequently                      | 6.0%             | 3              |
| <i>answered question</i>                              |                  | <b>50</b>      |
| <i>skipped question</i>                               |                  | <b>0</b>       |

Table 7

| PHR: Effective or Ineffective                                                                                   |                  |                |
|-----------------------------------------------------------------------------------------------------------------|------------------|----------------|
| How many healthcare providers do you have (ie. Dermatologist, PCP, Orthopedics, Podiatrist, Cardiologist, etc)? |                  |                |
| Answer Options                                                                                                  | Response Percent | Response Count |
| 1-2                                                                                                             | 54.0%            | 27             |
| 3-4                                                                                                             | 30.0%            | 15             |
| 5-6                                                                                                             | 6.0%             | 3              |
| 7-8                                                                                                             | 8.0%             | 4              |
| 9 or more                                                                                                       | 2.0%             | 1              |
| <i>answered question</i>                                                                                        |                  | <b>50</b>      |
| <i>skipped question</i>                                                                                         |                  | <b>0</b>       |

Table 8

| PHR: Effective or Ineffective                                                                                              |                  |                |
|----------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| Collectively, How much time do you spend on requesting medical records to provide assistance in your healthcare treatment? |                  |                |
| Answer Options                                                                                                             | Response Percent | Response Count |
| 1-2 hours                                                                                                                  | 26.0%            | 13             |
| 3-5 hours                                                                                                                  | 6.0%             | 3              |
| 1-2 days                                                                                                                   | 4.0%             | 2              |
| 3-4 days                                                                                                                   | 0.0%             | 0              |
| None                                                                                                                       | 64.0%            | 32             |
| <i>answered question</i>                                                                                                   |                  | <b>50</b>      |
| <i>skipped question</i>                                                                                                    |                  | <b>0</b>       |

Table 9

| PHR: Effective or Ineffective                               |                  |                |
|-------------------------------------------------------------|------------------|----------------|
| How often do you travel out of the city, state, or country? |                  |                |
| Answer Options                                              | Response Percent | Response Count |
| Everyday                                                    | 0.0%             | 0              |
| Once a week                                                 | 6.0%             | 3              |
| Every month                                                 | 22.0%            | 11             |
| 1-3 times a year                                            | 68.0%            | 34             |
| Never                                                       | 4.0%             | 2              |
| <i>answered question</i>                                    |                  | <b>50</b>      |
| <i>skipped question</i>                                     |                  | <b>0</b>       |
|                                                             |                  |                |

Table 10

| <b>PHR: Effective or Ineffective</b>                                                                            |                         |                       |
|-----------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------|
| <b>If you were asked, today, for your allergy record, how likely is I that you would have that information?</b> |                         |                       |
| <b>Answer Options</b>                                                                                           | <b>Response Percent</b> | <b>Response Count</b> |
| Not likely                                                                                                      | 36.0%                   | 18                    |
| Somewhat likely                                                                                                 | 8.0%                    | 4                     |
| Likely                                                                                                          | 22.0%                   | 11                    |
| Most likely                                                                                                     | 14.0%                   | 7                     |
| Immediately                                                                                                     | 12.0%                   | 6                     |
| Other (please specify)                                                                                          | 8.0%                    | 4                     |
| <i>answered question</i>                                                                                        |                         | <b>50</b>             |
| <i>skipped question</i>                                                                                         |                         | <b>0</b>              |

## **Chapter 5 - Analysis and Discussion**

The responses to the survey indicates that 24% of the population had some working knowledge of the PHR, 16% were familiar with it, 34% were somewhat familiar, and 20% had never heard of it. When asked how many health care providers they have 54% reported have at least 1-2 healthcare providers and one participant with 9 or more healthcare providers. Sixty-eight percent of the participants report traveling out of the city, state, or country 1 to 3 times a year. When it came to the question #8 of the survey, 36% of the respondents stated that they would not be able to produce this information in a timely manner in the event of an emergency; 12% immediately, 22% likely, 14% likely, and 8% somewhat likely. Lastly, 26% of the respondents spend 1-2 hours collecting medical information. Six percent 3--5 hours, 4% 1-2 days, and 64% none at all.

### **Limitations**

Initially, the limitations of this study were the availability to historical research of the PHR. The search for PHR yielded predominately articles on the Protected Health Record. (PHR). Numerous PHR search results populated articles on the patient portal due to the lack of understanding of PHR versus patient portal, as well as, limited evaluations of PHR uses. The distribution of online web link limited survey responses due to opt-out of SurveyMonkey website and deactivated email addresses.

## **Chapter 6-Conclusions and Recommendations**

### **Summary of Findings**

The PHR is not a new tool for storing and maintaining healthcare information. It has been in existence since the early 1900s. The methods for health record keeping has evolved from the traditional alternative of binders and shoeboxes to electronic format. Evidence-based research has identified that those who traditionally maintained health documentation are those individuals with chronic illnesses. As a result, it decreased their health care costs tremendously by avoiding duplication of testing, and getting involved in the medical decision making process.

Unfortunately, the natural disaster of Hurricane Katrina heightened the awareness of the necessity of EHRs and PHRs alike. The destruction of millions of medical record caused reduction in medical care, as well as, some deaths.

With a PHR, the patient has control and total authorization of the management of healthcare documentation. The PHR can be a life saver in medical emergencies; if needed request for medical can be managed by the patient versus waiting on service provider.

This study has shown the benefits of accessibility when the consumer is in control of their own medical documentation.

## **Conclusion**

As technology continues to evolve, consumers will be pushed to keep up with advancements. Due to regulatory standards and laws that require accessibility to healthcare information, the providers, consumers, and employers will be forced to assist in making healthcare evolving trends a reality.

PHRs is not a new thing; it has just evolved to electronic access. For those who are familiar with PHRs, historical and current research has provided evidence that having a PHR will benefit the consumer, the provider, employers, and cut the cost of healthcare for individuals and the healthcare industry.

As a solution to some concerns, employers and healthcare payers are offering this technology to patients/employees to promote greater patient engagement in health and well-being (Chrischilles, Hourcade, Doucette, William, Eichmann, Grylak, Lorentzen, Wright, Letuchy, Mueller, Farris, Levy, 2014).

## **Implications of the Study**

As, a new technology, the PHR can, in fact, promote positive healthcare outcomes for patients, physicians, and the healthcare industry as a whole. PHRs solicit active participation of the consumer to get involved in their healthcare decision-making and treatments, ultimately, leading to informed decisions and positive healthcare outcomes.

## **Recommendations**

The quality of healthcare services provided has been a key component in providing patient satisfaction and has been named as the focal point in decreasing healthcare cost in the

United States. The initiative to use the PHR meets the requirements of federal and state mandates. The goal is to provide patient-centered care. To stimulate the use of PHRs, physicians and healthcare professionals need to educate patients/consumers on the uses of PHRs.

By establishing uses of this technology, healthcare providers can educate consumers of its benefits, as well as, increase patient communication, provider-patient relationships, patient compliance, and empower the patient to become an active player in their own healthcare treatment. In turn healthcare providers and consumers will gain patient satisfaction and better healthcare outcomes. With more marketing and initiation from healthcare professionals, consumers will unite in the effort to promote patient-centered care, ultimately, leading to positive healthcare outcomes.

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**Figure 1**



---

**Does Maintaining a Personal Health Record (PHR) Promote Healthier Patient Outcomes?**

Bonita Payne  
(615) 485-3163

This research study is being coordinated by Bonita Payne of the University of Tennessee Health Science Center.

The survey is called Does Maintaining a Personal Health Record (PHR) Promote Healthier Patient Outcomes? The survey has 10 questions and is administered online and will take approximately 10 to 20 minutes to complete. Your answers are **anonymous**.

There are **no** risks to participation in the study and participation is strictly voluntary. There are **no** risks or consequences for your professional standing. Your completion of the survey indicates your willingness to participate in this research.

To complete the survey, go to: SurveyMonkey Link sent via email.  
Please complete the survey by: November 1, 2015

**Thank you for your participation!**

**Figure 2****Survey Questions**

- 1) What is your highest level of education?
  - a. Less than high school degree
  - b. High school degree or equivalent (e.g., GED)
  - c. Some college but no degree
  - d. Associate degree
  - e. Bachelor degree
  - f. Graduate degree
  
- 2) What is your gender?
  - a. Male
  - b. Female
  - c. Other
  
- 3) Which of these categories best fits your age range?
  - a. 18-24
  - b. 25-34
  - c. 35-44
  - d. 45-54
  - e. 55-64
  - f. 65-74
  - g. 75 or older
  
- 4) What is your income range?
  - a. \$0-\$24,999
  - b. \$25,000-\$49,999
  - c. \$50,000-\$74,999
  - d. \$75,000-\$99,999
  - e. \$100,000-\$124,999
  - f. \$125,000-\$149,999
  - g. \$150,000-\$174,999
  - h. \$175,000-\$199,999
  - i. \$200,000 and up
  
- 5) What is your race?
  - a. American Indian or Alaskan Native
  - b. Asian or Pacific Islander
  - c. Black or African American
  - d. Hispanic or Latino

- e. White / Caucasian
  - f. Other
- 6) Are you familiar with Personal Health Records (PHRs)?
- a) Never heard of them
  - b) Somewhat familiar
  - c) Familiar
  - d) Knowledgeable
  - e) I have one and use it frequently
- 7) How many health care providers do you have (ie. Dermatologist, PCP, orthopedics, podiatrist, cardiologist, etc)?
- a) 1-2
  - b) 3-4
  - c) 5-6
  - d) 6-7
  - e) 7-8
  - f) 9 or more
- 8) If you were asked, today, to provide me with your allergy record, how likely is it that you would have that information?
- a) Not likely
  - b) Somewhat likely
  - c) Likely
  - d) Most likely
  - e) Immediately
- 9) How often do you travel to another city or state?
- a) Everyday
  - b) Once a week
  - c) Every month
  - d) 1-3 times per year
  - e) Never
- 10) Collectively, How much time do you spend on requesting medical records to provide assistance in your healthcare treatment?
- a) 1-2 hours
  - b) 3-5 hours
  - c) 1-2 days
  - d) 3-4 days
  - e) None

**Figurine 3**

**Flow Chart of the Results from PHR Literature Search**

