Patients' Response to the Presence of Electronic Hospital (EH) and Personal Electronic Medical File (PEMF) in Taif Community, KSA

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Abstract: *A specially designed questionnaire for the acceptance of the presence of Electronic Hospital (EH) in Taif community(involving University and governmental hospitals) showed that, regarding personal characteristics the nationality (92% are Saudi and 8% are non-Saudi), age (63%≤ 30yrs. and 27% ≥ 30yrs.), sex (35% are males and 65% are females) and regarding their education (doctor & Prof. 34% and bachelor 66%). Percentage of acceptance for the presence of electronic hospital(EH), Personal Electronic Medical File (PEMF), Personal Electronic Medical Site (PEMS) and PEMI showed 89%, 86%, 78% and 76% respectively. Incidence of future usage of PEMF showed; 82%, 79%, 85% and 67% were forlearningpatientshow to use PEMF, acceptance of patients' usage of PEMF, medical follow up in PEMF and side effect of the use of PEMF respectively.*

Key words: *EH (electronic hospital), PEMF(personal electronic medical files), PEMS(personal electronic medical site), PEMI(personal electronic medical information).*

I. Introduction:

The health care system in the Saudi Arabian Kingdom faces challenges on multiple fronts, including rising costs and insufficient quality.(1,2,3) Health information technology, especially electronic health records, has the ability to improve the efficiency and effectiveness of health care providers(4,5.) Methods to speed the adoption of health information technology have received great support among policymakers. Despite broad consensus on the potential benefits of electronic health records and other forms of health information technology, health care providers have been slow to adopt them(6,7). Using a well-specified definition of electronic health records in a recent study in U.S., we found that only 17% of U.S. physicians use either a minimally functional or a comprehensive electronic-records system (8).Prior data on hospitals' adoption of electronic health records or key functions of electronic records (e.g., computerized provider-order entry for medications) suggest levels of adoption that range between 5% and 59% (9,10).This broad range reflects different definitions of what constitutes an electronic health record, use of convenience samples,(11,12) and low survey response rates(13). To provide more precise estimates of adoption of electronic health records among hospitals, We identified key clinical functions to define the necessity to the electronic use of everything related to patients data whether, filing system, appointments booking, personal information including past medical history and history of present illness and how to learn the patients the electronic way of booking appointments or entering their personal data in the electronic filing system, or to call a system for an electronic-records system in the hospital setting. We also defined an advanced configuration of functionalities that might be termed a comprehensive electronic-records system. Our survey then determined the proportion of patients reporting the use of electronic health records for either of these sets of functionalities. We suggested that large hospitals would have a higher prevalence of adoption of electronic health records than smaller hospitals. Similarly, we hypothesized that major teaching hospitals would have a higher prevalence of adoption than nonteaching hospitals and private hospitals a higher prevalence than public hospitals. Finally, to guide policymakers, we sought to identify frequently reported barriers to adoption and potential mechanisms for facilitating it(14,15).

II. Methods

We developed our survey by taking the opinions of the patients attending outpatient clinics of Taifuniversity and governmental hospitals. Working with experts who had led hospital-based surveys, we developed an initial draft of the questionnaire. To get feedback, we shared the survey with hospital leaders, and survey experts. Further survey modifications were approved by our expert panel. The final survey questionnaire was approved for use by the university review board of HealthCare.

Survey Sample

The survey sample included 150 patients,and it was presented as an information technology supplement and was sent to the hospital's chief executive officer. Hospital chief executive officers generally

assigned the most knowledgeable person in the institution (in this case, typically the chief information officer or equivalent) to complete the survey, by letting the patients attending the outpatient clinics to respond to the questions in the questionnaire. Non responding patients received multiple telephone calls and reminder letters asking them to complete the survey. The survey was initially mailed in March 2013, and our in-field period ended in January 2014.

Survey Content

We asked respondents to report on the presence or absence of 8 electronic issues of an electronic-records system and on whether their hospital had fully implemented these functionalities in all major clinical units, had implemented them in one or more (but not all) major clinical units, or had not yet fully implemented them in any unit in the hospital. We asked respondents to identify whether they accept or not the electronic filing and information system as well as data preserving electronic method and their tendency to learn how to deal with such technology.

III. Results:

Table and figure1: Percentage of respondents' personal characteristics answering the questionnaire of the presence of EHin Taif community

| Item	Nationality		Age		Sex		Education	
	Saudi	Non Saudi	≤ 30yrs.	≥ 30yrs.	Male	Female	Doctor & Prof.	Bachelor
%	92%	8%	63%	37%	35%	65%	34%	66%
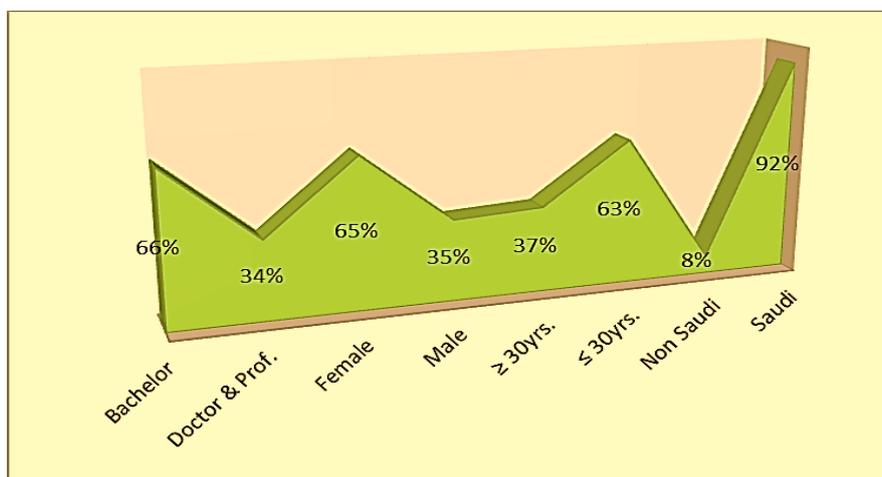
Table and figure 2: Percentage of acceptanceofthe presence of EH, PEMF, PEMS and PEMI

Item	Presence of EH	Acceptance of PEMF	Acceptance of PEMS	Acceptance of PEMI
%	89%	86%	78%	76%
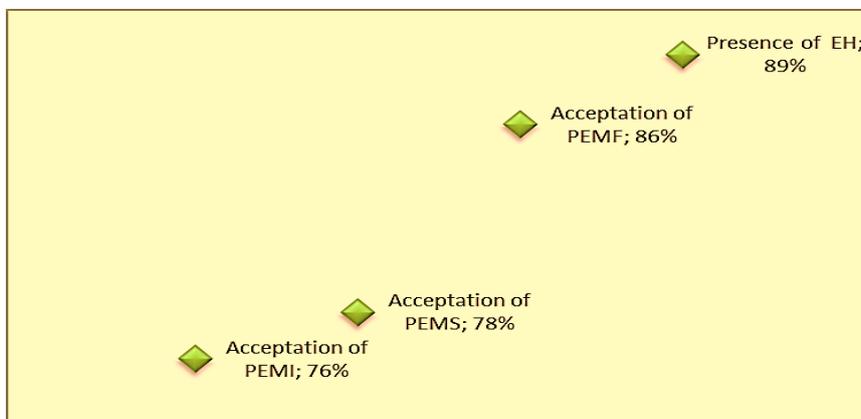
Table and figure 3: Percentage of future usage of PEMF

Item	Learn Pts. How to use PEMF	Accept pts. usage PEMF	Medical follow up in PEMF	Side effects of use PEMF
%	82%	79%	85%	67%
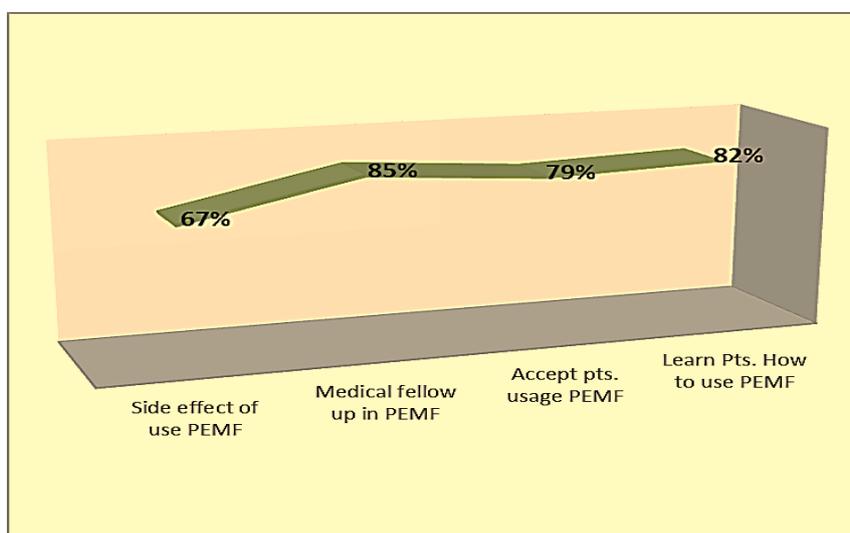
IV. Discussion:

Results Showed Regarding The Personal Characteristics Of The Respondents, That 92% Of Them Are Saudis, While Only 8% Are Non-Saudis. Their Ages Were 63% For Those Below Or Equal To 30 Years, While 37% Were Above 30years Of Age. Regarding Their Sexes Males Represented 35% And Females Represented 65%. Speaking About Their Education Levels 34% Were Having Doctorate Degrees And Professors, While Those Having Bachelor Degree Were 66%, As Shown In Table And Figure(1).The Percentages Of Acceptance Of Electronic Hospital, Personal Electronic Medical Filing, Personal Electronic Medical System, And Personal Electronic Medical Information Were As Follows; 89%,86%,78%,And 76% Respectively.Regarding The Percentages Of Future Usage Of Personal Electronic Medical Filing Were As Follows; Ability Of Patients To Learn How To Use Pemf 82%, Patients' Acceptance To Use Pemf 79%, Medical Follow Up Of Patients Using Pemf 85%, And Lastly The Side Effects From Using Pemf 67%A Sizable Proportion Of Hospitals Reported That Laboratory And Radiologic Reports, Radiologic Images, Medication Lists, And Some Decision-Support Functions Are Available In Electronic Format. Others Reported That They Planned To Upgrade Their Information Systems To An Electronic-Records System By Adding Functionalities, Such As Computerized Provider-Order Entry, Physicians' Notes, And Nursing Assessments. However, These Functionalities Are Typically More Difficult To Implement Than The Others That We Examined, And It Remains Unclear Whether Hospitals Will Be Able To Do So Successfully.

We Found High Levels Of Decision Support In The Absence Of A Comparable Prevalence Of Computerized Provider-Order Entry. It Is Possible That Respondents Reporting That Their Hospitals Have Implemented Electronic Decision Support Were Including In That Category Decision-Support Capabilities That Are Available Only For Electronic Pharmacy Systems, Thereby Overstating The Preparedness Of Hospitals To Provide Physicians With Electronic Decision Support For Patient Care.

We Found Somewhat Higher Levels Of Adoption Among Larger, Urban, Teaching Hospitals, Probably Reflecting Greater Availability Of The Financial Resources Necessary To Acquire An Electronic-Records System. We Expected To Find Lower Levels Of Adoption Among Public Hospitals, Which Might Be Financially Stressed And Therefore Less Able To Purchase These Systems. Although Our Results Do Not Support This Hypothesis, We Did Not Directly Examine Detailed Indicators Of The Financial Health Of The Hospitals, Such As Their Operating Margins. A Mathematical Survey Showed That 21% Of U.S. Hospitals Had Computerized Provider-Order Entry And 59% Had Electronic Clinical Documentation (10).However, This Survey's Definition Of Clinical Documentation Allowed For The Inclusion Of Systems That Were Only Capable Of Recording Demographic Characteristics Of Patients, A Definition That Is Likely To Have Inflated Adoption Levels, Given That Medicare Requires Electronic Reporting Of Demographic Data. A Recent Analysis, Based On A Proprietary Database With An Unclear Sampling Frame And An Unknown Response Rate, Showed That 13% Of The Hospitals Had Implemented Computerized Provider-Order Entry (11).Furthermore, A Non-Uniform Information System Within The Hospital (Paper-Based In Some Units And Electronic In Others) May Increase Clinical Hazards As Patients Move From One Unit To Another. Whether

The Benefits Of Adoption Of An Electronic-Records System In Some Clinical Units Outweigh The Theoretical Hazards Posed By Uneven Adoption Within The Hospital .

Other Studies Have Shown That Physicians' Resistance, Partly Driven By Concerns About Negative Effects Of The Use Of Electronic Health Records On Clinical Productivity(16) Can Be Detrimental To Adoption Efforts (17). Whether Our Respondents, Most Of Whom Have Not Adopted Electronic Health Records, Underestimated The Challenges Of Overcoming This Barrier Or Whether Physicians Are Becoming More Receptive To Acceptance Is Unclear. Another Potential Barrier To Adoption Is Concern About Interoperability: Few Electronic-Records Systems Allow For Easy Exchange Of Clinical Data Between Hospitals Or From Hospitals To Physicians' Offices. Low Levels Of Health Information Exchange In The Marketplace20,21 Reduce The Potential Value Of These Systems And May Have A Dampening Effect On Adoption.From A Policy Perspective, Our Data Suggest That Rewarding Hospitals — Especially Financially Vulnerable Ones — For Using Health Information Technology May Play A Central Role In A Comprehensive Approach To Stimulating The Spread Of Hospital Electronic-Records Systems. Creating Incentives For Increasing Information-Technology Staff And Harmonizing Information-Technology Standards And Creating Disincentives For Not Using Such Technology May Also Be Helpful Approaches.

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