WHO SHOULD ACCESS ELECTRONIC PATIENT RECORDS

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Abstract: Access control to Electronic Patient Records (EPR) may greatly depend on users' objectives and needs. The purpose of this study is to assess the opinions of medical doctors within a university hospital towards access control to an EPR. We selected a randomized sample of 58 doctors from a university hospital and 45 structured interviews were applied. 42 respondents (93%) agree with the existence of access control levels to patient information according to healthcare professionals' category and 31 (69%) think that more sensitive information (e.g. HIV) should be accessed only by doctors that treat those patients. As 24 doctors (53%) feel that there is no need for them to see all information about all the patients, 41 (91%) think that nurses should not be able to do it also. Further, 31 doctors (69%) believe that patients themselves should not access their full medical record. These results show that it is very hard to get to a consensual policy regarding access control to EPR by its regular users. There is therefore the need for a multidisciplinary agreement that can include healthcare professionals' experiences and needs in order to define the most appropriate and efficient way to perform access control to the EPR.

1 INTRODUCTION

Good communication between health providers is an essential component of high quality health care (Hassol et al., 2004) Paper-based medical record is still widely used in hospitals, where health professionals gather patient's clinical and administrative information. There is however some problems with this type of records and so computer-based medical records are being implemented and used in a more regular basis (Bakker et al., 2004).

The evolution of technology allows health providers to communicate electronically and to obtain information which includes patient's health story, examination findings, diagnosis and treatment over a period of time (Hassol et al., 2004) (Day, 2001).

This enabling technology that constitutes the informational basis for communication and cooperation in and between healthcare organizations is called Electronic Patient Records (EPR) (Ab et al., 2004).

However, this wide use of information systems and technologies shows the need for healthcare organizations to integrate and manage information from various sources, types and formats. This reflects the careful scrutiny that electronic access to medical information requires (Rogerson, 2000). Information security is then essential, moreover when people accessing the EPR can have varied objectives, different types of access and several processes to execute. Therefore, access control is essential to provide because it manages one of the first contacts between users of a system and its functionalities and features (Ferreira et al., 2005) (Ferreira et al., 2006).

According to a recent report, more than 1000 accidental deaths have been attributed to computer system failure (Gritzalis, 1997). Such occurrences must be present when considering the different interests and objectives that users want to achieve when using the EPR.

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implemented a centralized EPR system (VEPR – Virtual EPR) between May 2003 and May 2004 in Hospital S. João (HSJ), Porto, Portugal. This hospital has more than 1300 beds and 5000 workers from 56 departments, where about 1000 are medical doctors, so any access to information needs to be properly defined, controlled and monitored. A generic but strong access control policy that reflects people's processes and interactions with the system, without incapacitating its use, is the basis for the VEPR success and, more importantly, acceptance, trust and use (Ferreira et al., 2005) (Ferreira et al., 2006). More than 900 doctors access this system on a daily basis, and this number is increasing, as healthcare professionals can feel the benefit from its use.

Even patient's access to their health records is now common in many places (Tracyl et al., 2004) (Pyper et al., 2004). How is access control going to be modelled in all these cases?

In this article we aim to get a small glimpse of what are the opinions of doctors working in HSJ towards who should access Electronic Patient Records, how should it be done and for whom this information should be (or not) restricted.

2 METHODS

2.1 Type of Study

This is an observational, descriptive, transversal study, in which the analysis unit is the individual.

2.2 Participants' Selection

Initially, we performed a bibliographic search of publications concerning access control to Electronic Patient Records. The next step was the selection of participants. Our target population was medical doctors. The available representative population was the medical doctors of the HSJ from a list available from the department of human resources at HSJ. From that list the medical doctors, department directors and pre-career doctors were selected. As a sampling method, from the filtered list, we selected a simple randomized sample of 92 elements.

2.3 Data Collection

The instrument used for data collection was a questionnaire with the characteristics of a structured interview, which was absolutely anonymous. The first steps in the questionnaire design were the research of questionnaires previously tested and the elaboration of a variable list.

The questionnaire was then pre-tested, in order to evaluate its validity and reproducibility. The pre-test's participant selection was made by a non-random accidental sampling process. The interviewer asked 10 HSJ doctors, who were at the hospital at that moment, to fill it in. Then, the final version of the questionnaire was elaborated with the pre-coded variables.

The questionnaire comprises 8 questions, some of them subdivided (see Apendix). The first 2 questions are global questions where doctors indicate the frequency they use the EPR and if there should be several access levels to records depending on the health professional's category (a Yes or No response). Question 3 refers to doctors' access control and question 4 refers to the access to more sensitive information about patients (like HIV tests). Question 5 demanded doctors' opinions about nurses' access to EPR. Questions 6, 7 and 8 describe other situations such as emergency situations, other uses of EPR and patient's access to their EPR.

The independent variables potentially relevant for the statistical analysis are: age, gender, professional category and department. This information was used to compare answers to the different questions (dependent variables) between these distinct groups in the statistical analysis.

The following step was the recruitment. Different departments were visited in order to find the doctors that were part of the sample. Those who did not work in HSJ anymore (29 people) or were already retired (5 doctors) were excluded, and the sample was reduced to 58 people. Then, the questionnaire was applied. If the doctors were not available at their department after three attempts, refused to answer the questionnaire or left it incomplete, they were eliminated from the study.

2.4 Statistical Analysis

In what concerns statistical analysis, we used SPSS to insert the collected data in a preformatted table.

We started to analyse our sample using absolute and relative frequency tables as well as pie graphs.

Chi-Square tests were also performed in order to evaluate the significance of the differences found between ages, genders, professional categories and departments, regarding the most relevant questions. As there are cases that do not respect the qui-square test's assumption (that require all expected values to be equal or superior to 5), some values are calculated using Fisher's exact test.

All the independent variables used in this study are categorical variables, except the age. In order to facilitate the data analysis, we transformed this numerical variable in a categorical one.

Furthermore, some independent variables were attached in categories so that we could perform a chi-square test. The variable age was separated in two categories: under 35 and over 35. We chose 35 as the dividing age because most doctors become specialists at that age. Professional categories were also divided in two categories: pre-career doctors and medical doctors. Departments were categorized in medical departments or medical – surgical. The significance level used in this study was 0.05.

3 RESULTS

Of the 58 applied questionnaires, 45 were fully answered, so the response rate was 78%. 10 doctors were not available in the department for three consecutive times and 3 refused to answer.

Participants' characteristics are listed in Table 1. Most doctors were over 35 years old and there were more female doctors than male doctors.

Table 1: Respondents' demographics (N=45).

Age	<35	22%
	>35	78%
Gender	Male	58%
	Female	42%
Department	Chirurgic	38%
	Medical	62%
Professional Category	General Intern	7%
	Specialist Intern	9%
	Specialist	38%
	Graduated Specialist	36%
	Service Director	11%

All doctors confirmed that they have already used EPR. Most of them said that they use this kind of records daily and that they agree with the existence of different access levels of information depending on the healthcare professional's category. 93% (3) of the doctors said they agree and 7% (42) answered they do not agree or have no opinion regarding this issue.

In what concerns doctors' access to information, the answers are summarized in Figure 1. More than a half of the respondents thought that doctors should not have full access to patients' information. While some thought that doctors should only have access to the information of the patients they treat, others considered that they should have access to all the information of their department.

Further, 31 (69%) respondents thought that sensitive information such as HIV tests, venereal or cancer diseases should only be accessed by doctors who treat those patients.

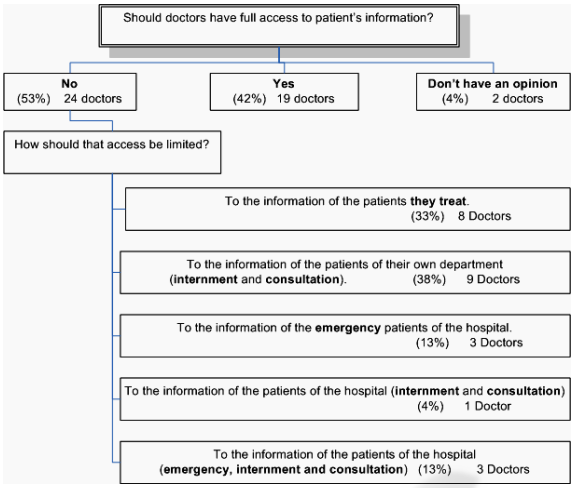

Figure 1: Answers for doctors' access to a full EPR.

In what concerns nurses (Figure 2), a vast majority of doctors (41 - 91%) thought that they should not have full access to patients' information. The majority believe that nurses should only have access to the information of the patients they treat.

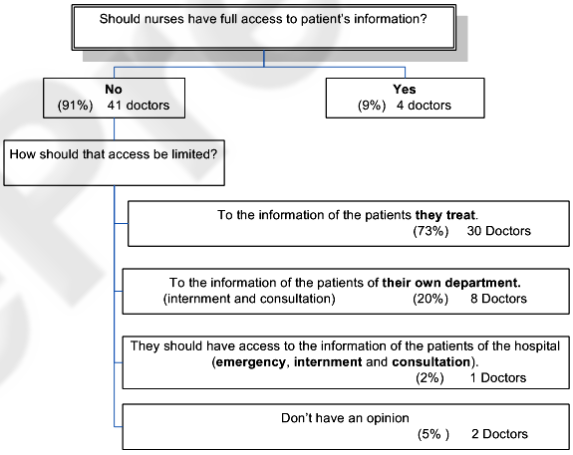

Figure 2: Answers for nurses' access to a full EPR.

Most doctors also agreed that, in emergency situations, non authorized doctors and nurses must have access to patients' information, but that access must be registered and controlled (Ferreira et al., 2006). The majority of respondents found pertinent to use the patients' records to other purposes such as clinical or epidemiologic investigation.

Regarding now patients, most doctors thought that patients should not have full access to their clinical information, 69% (31) thought that they should not be able to access it while 31% (14) said that they should.

4 CONCLUSIONS

From these results we can see that EPR are intensely used by doctors. We can also discuss that doctors are mostly concerned with situations regarding sensitive information (e.g. HIV tests), and patients' access to these type of records. This is why they see access control as an essential part of the EPR.

Also, doctors do not agree with the fact that patients should be able to access the whole of their healthcare record, thinking probably some of the notes they make should be for they own use only. This opinion is also demonstrated in another study where they seem to be worried about the information accessed by their patients.

Further, doctors were reluctant in what concerns nurses' access to patients' information. They think they should only access the information of the patients they treat. This can be problematic as nurses spend more time dealing and treating patients than the doctors themselves and may need all the information about the patient relating to other types of treatment they can had been undergoing. It should be noted that all doctors had an opinion regarding this matter.

Our study also shows a tendency between some variables. It is interesting to note that, within the 4 doctors who think that nurses should have total access to information, 3 were male doctors and 3 were specialists.

Finally, doctors' attitudes towards the use of information for other purposes such as research were mostly positive. They also vastly agreed with the existence of different levels of access to EPR.

In conclusion, these results show that it is very hard to get to a consensual policy regarding access control to EPR by its regular users.

There is therefore the need for a multidisciplinary agreement that can include healthcare professionals' experiences and needs in order to define the most appropriate and efficient way to perform access control to the EPR. Several issues concerning the type of information, location, type of user and other situations (e.g. emergency or other unanticipated) may influence the way access control should be made.

We believe that this is a very important issue to be pursued and further studied. There is the need to evaluate more healthcare professionals and patients' attitudes and needs in order to define a better way to perform access control to EPR (Ferreira, Cruz-Correia et al., 2006).

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