Security, Confidentiality and Privacy
in Health of Healthcare Data

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ABSTRACT

Background: One of the most important facts that should be considered is confidentiality in order to maintain privacy turning out to be matters of security. Keeping-up confidentiality is a crucial factor in any field, as well as health realms. Professionals who have the ingress to approach the patients' communications must keep confidentiality in health. The priority for any human being is privacy to information especially related to health. Security enables us to live peacefully, without anxiety and in full insurance.

Methods: The interpretive methodology was used in this research as it gives an impression of face to face interactions in healthcare bringing in social reality of what is happening in the health society.

Results: In consultations on gathering these results for our research, we also realized that the most common threats of loss of data and theft come under certain types of disclosures mainly third parties, routine and inadvertent. Upon this realization, there must be notification to protect security, confidentiality and privacy when security breaches occur mainly to patients. As a result, patients must provide consent about their medical information in electronically form or in writing and the consent must be signed by the patient or family member or trusted entity. The patients must come clear on the nature of the information to be disclosed and where it should be disclosed and also when the consent should expire. At the same time, a health facility must take care of the institution's database and can only disclose to the management of the health institution whose obligation would also be to protect the data, as they might need the information for research purposes, where the researchers have approval from their institution's or to legal representatives.

Conclusion: The advent of the hype of electronic information technology leads to major inconvenience in the main areas of human life. This manuscript explores issues in maintaining confidentiality and privacy in healthcare and other analysis of its value to individual and society as a whole. "Right to privacy is really important. You pull that brick out and another and pretty soon the house falls." Tim Cook (2016)1

Keywords: Healthcare, Privacy in health, Security, Medical Confidentiality, HIPAA, Socio-technical.

INTRODUCTION

The confidentiality of the personal information particularly in the health field remains to be a sensible subject. Patients are aware mostly about their health information as today it is stored in data servers. Health data are still considered particularly sensitive although more and more patients are unaware and adhere to free information that may cause serious consequences to them later.

Privacy information means a set of rules which limit permission to information discussed between the patient and their medical practitioners. Furthermore, privacy in health information is the right of an individual to keep his/her health information from being disclosed. The information needs not to be shared with others. As a secret, it requires permission from the patients and encompasses a control.

As for the medical confidentiality, it is achieved via technical and operational controls within a covered entity. This consists of the allowance to control the access to the

individual information and to protect patient information from non-permitted destruction, loss, and disclosure. It actually consists of the disclosure and the use of the patient's health information known as "Protected Health Information"[2].

Firstly, we try to find the problem, motivation and rationale linked to the medical confidentiality and we sum-up by centering on indications socio-technical nature of mobile computing analysis.

CONCEPT AND VALUE OF PRIVACY IN GENERAL
Privacy has already existed in the era of ancient Greek. The word "private" means "restricted to the use of a particular person, peculiar to oneself, one who holds no public office[3]." Indeed, privacy is the state of being alone, or the right to keep one's personal matters and relationships secret[4]. It is privacy when it is not for the public.

Protecting individual's privacy against disclosure is essential and the patient has the right to keep his or her medical confidential.

Privacy is a kind of factor that allows an individual to make his or her own decisions freely[5].The following perspectives can justify that the surrounding zone of privacy should increase all over the case. That of law, for example, confidentiality is well illustrated especially for the case of adolescents even if there are exceptions for individuals under a certain age (18); it gives generally the parent access to the child's treatment. For the reason of that, it needs a particular attention and a clear explanation of shared information, that is, there should be an appropriate manner to their age of understanding. It depends then to clinical reasons and will have ethical implication in order to value great respect for the need for privacy. As for clinical practice, it emphasizes mostly that Clinical remains a zone of privacy as well as the treatment reflects to the consideration of an individual's autonomy. Most of the time, adolescents prove their need of privacy so as they did not want their parents involved, they wish to continue therapy secretly.

Moreover, ethics state that "Privacy and Confidentiality" are imperative to structure relationship between patients and doctors, nurses, dentist and so ever ...and give also the psychologist permission to keep information private to ensure the protection in healthcare and the continuity of treatment. Besides, it allows us to go further on our own decision and space for self-motivation. Human activity occurs with a real or imagined social context. Other people often observe us, make requests of what we do as we work, play, study, and even relax.

THE IMPORTANCE OF PRIVACY AT THE SOCIETAL LEVEL
There are two main reasons why privacy is important. Firstly, privacy helps patients to maintain their autonomy and individuality. The second reason to make privacy important is its functional benefits. Anonymity protects the privacy of people's identities. It actually leads to privacy and safety and peace of mind.

In some words, privacy is substantial because of these reasons:
➢ It helps people to maintain our various social relationships for instance; an individual is free to share his or her health information with his or her doctor. Thus, privacy is important because it allows us to know what about us and to control who has access to us. It has a value in our lives and it can't be separated in a society.
➢ Patients may be reluctant to find medical attention if they are afraid that their information could be disclosed to others. This effect could have implications for the future prevention, cure, and study of medical conditions.
➢ They may feel valued and respected when their doctor keeps their health information private thus health care is attested as professionals.
➢ It reflects a deep trust in health care services.

REASONS FOR PRIVACY IN HEALTH INFORMATION
Apart from various benefits given by privacy, it has also a value in a health field and conveys an impact in mental health. When privacy exists, the research and public health activities can be accomplished. For example, it will simplify access in a research of therapies or new cures.

Confidentiality and privacy are particularly important to adolescents who seek medical confidentiality[6]. In a particular case; the trauma in children and adolescents requires health confidentiality. This trauma is caused by a traumatic event that undermines their sense of security leading them to feel vulnerable especially, if this event is accompanied by an act of violence such as violent attack, mass shooting, or physical assault. In addition, there are other events that can be stressful for teens and kids like accident, plane crash, and natural disaster and so on.

According to studies on Trauma Symptom Checklist for Children[7], the field of child and adolescent trauma is relatively young despite the increase of the knowledge base over the past 2 decades. There is a strong reason for protecting the health privacy of people whether they are adult, adolescent or kids. As for the adolescent case, these standards are supported by the extensive research in order to find out the impact of privacy concerns on adolescents' access to care[8].

For their self-respect, patients must reduce their self-doubt about health professionals. Accordingly, keeping health information privacy is the best act of sympathy with them. As the sine qua non of health care, they must hold the ultimate responsibility so they need to feel close and confident with doctors in healthcare.

The rule of HIPAA
Everyone cares about their health confidentiality and wants to hold them as a secret. It is important to realize that in such cases, trustworthiness should be appropriate at doctor and patient's relationship. Nonetheless, some professionals are entrusted with the most personal patient's information like health information and account identity. These data breaches will increase heavy consequences not only for the patient but also for the healthcare industry. Thus, protecting health information is both difficult and important. Fortunately, healthcare organizations use information technology to improve efficiency as well as quality.

COMPUTER SECURITY
It encompasses detecting and preventing one to use a computer without the owner's authorization. More reasons can explain that such as averting others to discover your files, your important information, your own data or documents. In your own computer you can preserve its confidentiality of information and forbid others to access it, how about in a health care facility.

Number of Records Breached Per Month in 2016
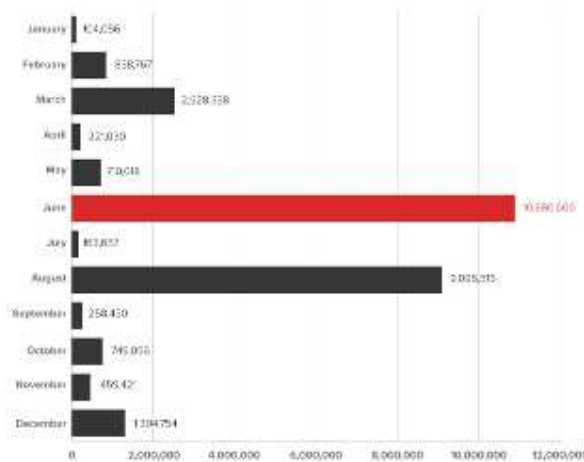
If we store compacted and bite-sized information inside the computers, we can save a lot.

DATA RECORDS COMPROMISED IN FIRST HALF OF 2016

554,454,942

Although the number of organizations that investigated a disclosure from January through June in 2016 in the UK, it is still unknown the total number of impacted data records. Hence, the number of compromised records was up to 554,454,942 million data records.

It is difficult to predict how the interactions with the healthcare system impact our health outcomes because of the use of traditional statistical analysis as well as reductionist scientific approaches.

Design implementation and use of healthcare systems
The STSA (Socio-Technical System Analysis) research addresses the numerous qualities of care problems observed across the world[9].

STSA is one of the several domains on healthcare systems. It is clear that the use of the computer allows health workers to stay in contact with their patients via technology communication. Talking about the advantage of computers in medical health, it allows the patients to communicate with hospitals as well as asking questions to their doctors in case of troubles. When patients expand communication with the hospitals, healthcare quality and patient safety will reign. Although this socio-technical environment is only for the developed countries, it is hoped to spread all around the world because every patient needs Medical Confidentiality and healthcare improvement.

METHODS
The methodology used in this research article is interpretive in nature mainly because in security, confidentiality and privacy; views and perceptions were chiefly required as opposed to a measurement blueprint. The respondents outlined in this research were identified as the most appropriate and fitting to the research settings. The respondents had vast knowledge and experience in healthcare this includes medical personnel and patient's who constituted the population of study. Purposive sampling was employed and analyses of the results are outlined in the form of textual representation.

RESULTS
In this study, we have realized the following information after gathering it from relevant stakeholders in health care environments, Data breach or intrusion occurs mostly when intruders use data mining technology to get hold of sensitive data and they will later expose it for public consumption. The following will ensure security, privacy and confidentiality is preserved in healthcare settings, the study has noted the use of hiding a needle in a haystack[10]. Encryption of the storage path, access control with attribute-based encryption in health care settings, an access control policy must be crafted which must be based on privileges' and rights of each medical personnel being given a right by a patient or the family of the patient or a trusted party, homomorphism type of encryption, authentication should be implemented in all systems used in health related matters thus protecting the identities of system users, encryption should be exercised where it can apply thus preventing unauthorized access to sensitive data or information, data masking can also be used in healthcare environments by replacing sensitive data elements with an unidentifiable value by de-identifying data sets, cryptography must be implemented, information must be properly organized in health environments then general measures such providing physical security to data must be in place, medical staff must be educated and trained on security, confidentiality and privacy management practices including disaster recovery planning and business continuity, experts must be hired in health care institutions to implement the above including proper security models and architecture of the existing systems in the organization's including its telecommunications and network security. When all of the above is implemented and addressed in various settings healthcare offers numerous advantages to patients' information as they curb theft and loss. Health care providers have the prime to safeguard them by employing monitoring and compliance.

Penalties can also be issued to violators of security, confidentiality and privacy and the violators must be punished in either form possible, for example attorney's fees, equitable remedies or civil damages where appropriate and

individual's aggrieved must be liable to sue if they feel short changed. To ensure proper implementing of the above, there is need for a data integrity board to promulgate implementing policies, proper governance and providing oversight concerning the acquisition and dissemination of patient's sensitive information.

DISCUSSION

Existing techniques and approaches were explored in the study in order to combat security, confidentiality and privacy of health care data and their challenges. To achieve; there is need for all healthcare institutions to adopt health informatics standards and regulations, these standards will aid in detailing fundamental concepts of health information management. There are existing standards coined by International Standards Organization (ISO) which healthcare institutions are not adhering to, and complying to, with these standards a great improvement will be realized by health institutions. Examples of U.S legislation in place; in the transmission of data include "The Health Information Technology for Economic and Clinical Health Act"[11] and "Health Insurance Portability and Accountability Act" (HIPAA) [12]. From the results gathered, we realized that mitigating all these measures requires an effort on a number of things which include system user focused interventions, organizational, regulatory and technological. An inbuilt culture must be fostered in achieving the goals.

CONCLUSION

Medical confidentiality and security are becoming important all over the world. Protecting patient's health privacy should be a major concern and protecting people's privacy and confidentiality of the information are the most important facts that should be considered for better health improvement. Safety of information requires serious works with both the patients and the personals health workers. Including the use of computer, an important aspect of the computer security is required for the security and privacy of healthcare information.

Healthcare organizations have grown in the last 20 years[13]. There are many healthcare data breaches which remain a big problem.

"In any debate of trust and distrust, however, it is beneficial to be aware of the risks associated with miscommunication about what can reasonably be expected of either party: misplaced trust can affect for both trustier and trustee"[14]. Enhancing trust relationships should be practical by making a system of effective communication to clarify what can rationally be expected by both parties involved. To improve the healthcare quality, the health sector should undertake strong measures for data and information protection as outlined in the research.

The anxiety about the unintentional and intentional disclosure of their health information will reduce. Additionally, distrustful treatment is often detected by the difficulty of launching the own limits of doctor's responsibility and that remains one of their challenge. The sign of dependence, doubt and trust directed by patients and doctors is so expected. Knowing that patients and doctor obligate both moral expectations to elude deceit, therefore, doctors must not fail in their function and healthcare always need to be successful because it concerns directly about individual's health. The health organizations like HIPAA or others should combine with a self-motivation and efforts from everyone to progress this field.

The creation of professional teams, committees and healthcare boards to adopt the best practices in data security and integrity should also be the primary solution to have satisfying results.

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