

## **BLOCKCHAIN FOR HUMAN AWARENESS AND RESPONSE TO HEALTH**

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### **ABSTRACT**

Blockchain seen as a trending technology cannot be overemphasized. The present health situation calls for a swift response to health issues and how a disease can be detected, prevented and cured before a widespread. Sickle cell anemia is a disease that occurs due to abnormal hemoglobin, which is likely to attract other abnormal molecules that happen within the red blood cell. As a result of this, it causes a rigorous misrepresentation of the cell. This disallows the cell from going through small blood vessels; this could lead to occultation, tissue ischemia and infarction. Also, human security on their health status should be guaranteed and tamper-proof. This just states one of the many diseases that affect the body system, its adverse effect and the need to pay rapid attention to its causes, prevention and cure.

This paper examines how blockchain can boost human awareness and response to various health issues without panic. A use case system is proposed where a smart contract is created in an ethereum blockchain.

**KEYWORDS:** Blockchain, Blood Vessels & Hemoglobin

### **1. INTRODUCTION**

Presently, when a person is sick in Lybia and even in most parts of the African world, most of the time, they have to visit a health institution. In cases where the sick person is rushed to the clinic, the doctor examines the person, run the necessary test and give drug prescription. Sickle cell is taken as a case study. It is an inherited type of disease which is due to abnormal hemoglobin. During the process of deoxygenation, the red blood cell is transformed from biconcave to sickle-shaped. This in turn leads to hemolysis and anemia. It is pertinent to create a patient awareness of this disease as the sickle cell is earlier cited as a valid example and precautions to be taken by anyone especially in the cause of marriage. This is depending on the doctor's discretion and statutory responsibility to enlighten the patient on the necessary steps to be taken to avoid these cases in the future.

The health status of a patient as to whether or not it will improve depends on how the doctor administers the right prescription. Sickle cell disease is an inherited hemoglobinopathy affecting mainly the black races and it leads to chronic hemolysis. Marriage is one of the factors that give rise birth to sickle cell, Medical practitioners often advice that everyone should be aware of genotype before getting married. A person with AS genotype is advised not to marry the same genotype regardless of gender. It is advisable to marry one with AA genotype. According to Arch (1994) and Dwani (2016) point, Africa is a continent where sickle cell anemia disease is common and this is due to ignorance of genotype on the part of the citizens and also a failure on the part of the medical practitioners to sensitize the citizens.

The world is moving at a high pace technologically. We as Africans need to embrace with it, else we would be left behind. The USA started using E-prescription in 2014, it is also mentioned that 70% of its physicians use E-prescription as a platform to create awareness on sickle cell anemia and other related diseases. It is therefore pertinent for Africa at large, Lybia in particular to move at the pace of this trending technology to boost human health and respond to their various

ailments.

As we go digital, we should also be aware of health theft and tamper or loss of documents. The medical record of every patient should be kept discreet. The present system of record-keeping in the clinic does not give adequate provision for that. Blockchain technology, known as a tamper-proof repository of public records should be introduced for proper record keeping in the clinic. This will in some way help the people to pay more attention to their health, knowing fully well that their medical reports are secured and no third party will have access to it.

## 2. TECHNICAL BACKGROUND

Blockchain technology, “allows transactions to go through procedures that are stated in the smart contract” according to Tschorsch, F. and Scheuermann, B. (2016). Transactions are performed without the need of a third party, it is also secured and tamperproof.

According to Glaser F, et al, (2017) “proves that blockchain is presently used by some financial institutions to develop and boost their transaction”.

Walsh C, et al. (2016) “indicated that an important criterion for this technology is the algorithm that is used in other to guarantee how secured, how private the data is kept”. Tschorsch, F. and Scheuermann, B. (2016), “discovered that the evidence-of-work concept needs energy, but it also yields consistency and guides against being faked by any participant. Noyes, C. (2016a) “certain things need to be put into consideration before the deployment of the implemented blockchain here”.

This technical background has stated sector such as finance which has embraced the use of blockchain technology as a secured outfit to perform its transaction. The real estate sector is also a major beneficiary of blockchain technology. Ioannis k., et al (2018) proposed a use case system blockchain and smart contract to effectively manage the real estate sector. Also according to Adeolu et al, (2020) he also specified how blockchain can be used effectively to manage land titles in Nigeria.

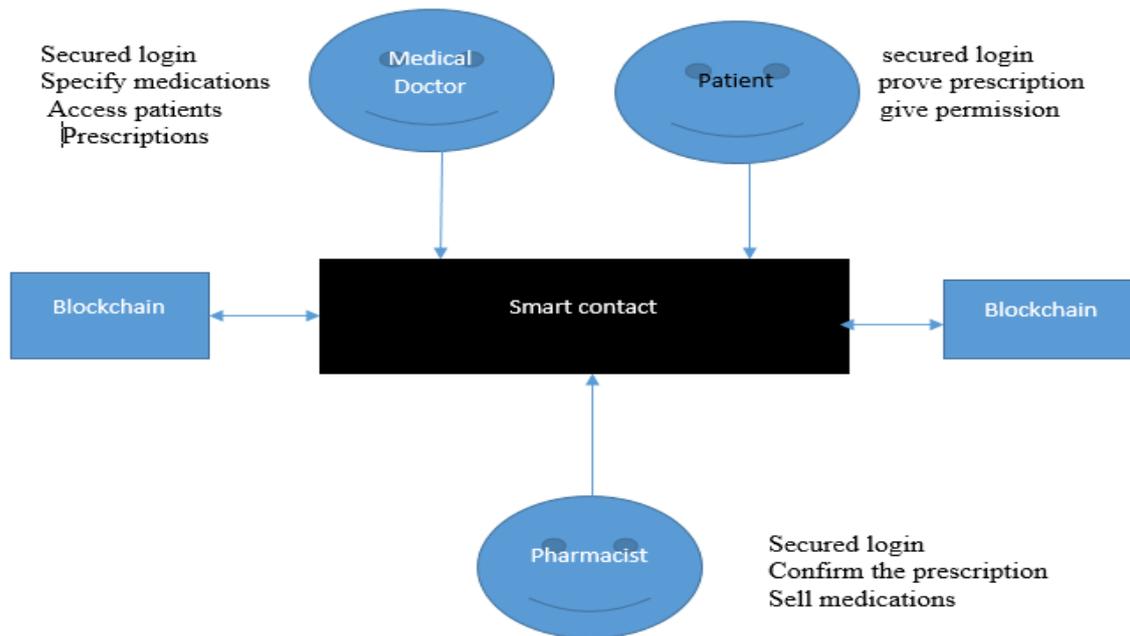
## 3 IMPORTANCE OF BLOCKCHAIN TO HEALTH RESPONSIVENESS

- Awareness: Most patient lives are lost due to their ignorance and self-medication. The blockchain will help boosting the awareness of every citizen by sensitizing them on how to prevent and cure various diseases. Taking anemia as an example, citizens need to be sensitizing to take the necessary test to know their genotype. This will help them to know their chances of producing a sickle cell child. It will reduce the child death rate.
- Open to medical treatment: Every patient likes medical records to be kept discreet (secured) and once a platform such as a blockchain is suggested to such a patient, he would fully open up without having to hide his or her, medical history without the fear of being stigmatized.
- Acceptance: Blockchain technology will help create acceptance in the society, with blockchain, no third party is permitted to search the medical record of a patient, and this disallows such third party from stigmatizing such of a person of a disease or virus. It will also boost individual self-esteem.

## 4. BLOCKCHAIN HEALTH RESPONSE USE CASE

A use case system is proposed, where the doctors, are given the right to treat, sensitize, educate or administer medication to

any patient. Figure 4.1 indicated the users interacting in the blockchain in which a smart contract is created to serve as rules governing the blockchain system. Also, figure 4.1 indicates the actions performed by each user.



**Figure 4.1: Blockchain Health Response use Case Component (Source: Karamitsos, I, 2018).**

The use case component indicates the doctor to be patient to pharmacist relation, with the smart contract as the information disseminator. This clearly shows the smart contract in the blockchain controls the inflow of every information passed at different quarters. This has helped to provide a secured interactive health care system that is anonymous, highly reliable, quick responsive, tamperproof and also serves as a patient repository (record keeping).

## 5. CONCLUSIONS

The paper has given incite on how blockchain can be used as health responsive tool in Lybia.

This, in a way would help to sensitize the citizen to go for their medical checkup as related to genotype to confirm if they are compatible to avoid the issue of giving birth to SS (sickle cell) patient and also sensitize the citizen on how to get the necessary treatment for various diseases without being stigmatized.

This investigation gave explanations on the positive impact of smart contracts to health response. This would also help to curtail the present virus, which is the Coronavirus that is spreading round rapidly. Where people with suspected cases can report through the blockchain medium and necessary action and precautions could be taken to avoid further spread. The government which serves as the regulatory body should evaluate on when this can be utilized to be in charge of health response in Lybia.

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