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INTEGRATION OF SECURE MECHANISM TO IOT BASED PREGNANCY MONITORING SYSTEM: A REVIEW

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Abstract: This review focuses on IOT based pregnancy system to propose a better and efficient solution. This research work discusses the challenges that are faced by pregnant woman. It also consists of a proposal of IOT based system to resolve existing issues in traditional pregnancy systems. In addition to this, this research work provides us a review of existing researches and modules used to examine pregnant woman. However there are several researches in this field. A lot of technique is used in hospital which helps to easily examine pregnant woman. But it is observed that these traditional Pregnancy Systems have their own limitations. It is glad to say, deployment of remote health monitoring systems in real-time applications is become possible only because of the progresses which takes place in the technology of Internet of Things (IoT) from last few years. These systems continuously collected and analyzed patient's health-associated parameters and deliver health services. The work would be preferred as a brief review of IOT based pregnancy system. In this work, there is a section in which the issues and problem of existing research are discussed which would be very helpful for researcher who wants to propose a better solution in this field.

Keyword: IOT, Pregnancy Monitoring System, IOT Based Pregnancy Monitoring System

I. INTRODUCTION

From the past records, it comes in to limelight that eight hundred and thirty women die in a day because of pregnancy complications. The basic reason behind this is the non centralization of medical systems. Due to this, sharing of pregnant women health concerns is very difficult. In most of the countries, pregnant women are not able to undergo routine checkups with in the first three months of her pregnancy. This is considered as one of the main reason due to which the death rate of infant and maternal was very high. It happens mainly in the villages. Because of this, the entire world is facing tremendous medical issues. At present, pregnant ladies are undergone through ultrasound. With the help of this ultrasound report, few essential signs can be noticed.

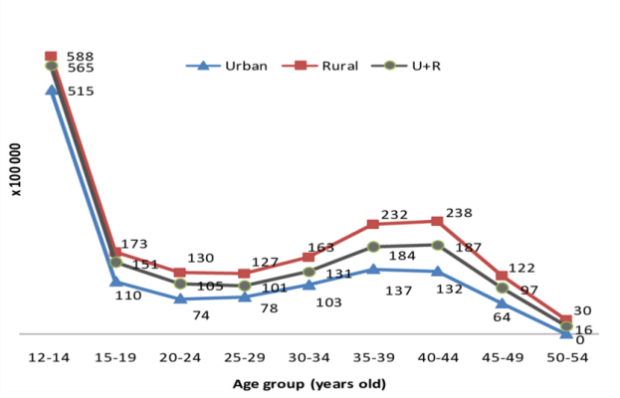

Fig 1 Death Rate of Pregnant Woman

It is possible to reduce the proportional of mortality of pregnant women and their infants. For this purpose several resources are used in a combined way. Pregnant women who belong to villages or live in the countryside are not able to undergo routine checkups with in the first three months of her pregnancy. Continuous monitoring of women weight, blood pressure, her body condition, and pulse rate is compulsory at the time of pregnancy. If all these factors are checked in an appropriate manner then the chances of birth of abnormal child will reduce.

II. IOT BASED PREGENCY MONITORING SYSTEM

From the last few years, in the field of medical science different new technologies are put in to place in first time. Out of these technologies, Internet of things is the most important. Its plays an important role when it is used for the caring of pregnant women. Internet of things makes possible, proper and good care of women at the time of pregnancy in any environment. It becomes possible due to the availability of smart gadgets which are very small in size and it is possible to attach them with pregnant women.

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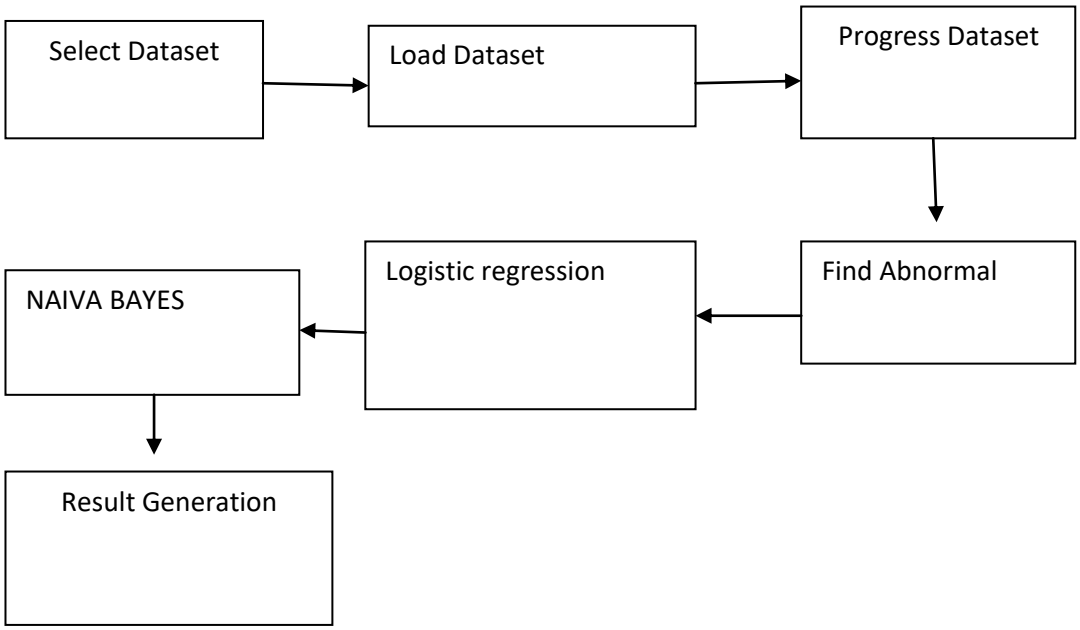

Fig 2 IOT based Pregnancy Monitoring System

Due to these devices, Routine work of a woman from day to night during her pregnancy could be monitored. It can be monitored by a doctor even when he is not physically available. Complications induced at the time of pregnancy and its harmful effects are completely eliminated if these advanced technologies are applied for the care of pregnant women. But at the same time it increases concerns like privacy, religious, legal and societal. As everyone knows that in critical situation the decisive factors in the case of a pregnant woman are time and distance. The pregnant women who live in remote areas cannot get immediate treatment at the time of emergency.

III. LITERATURE REVIEW

There are several research related to pregnancy monitoring system using different type of applications. A review of existing researches is stated here:

In 2018, K. Venkata Sateesh Yadav [1] examined the medical system which was used for tracking the medical treatment of a human being. All these essential parameters which were determined by this device, can be easily conveyed through internet of things. It was possible to view all this parameters in the mobile phone. The basic concern which was kept in mind by author at the time of this research work was the formation of a solid device which provide assistance in the favor of rural pregnant women.

In 2017, V. Santhi, [2] discussed portable medical system which were used for tracking the medical treatment of a Pregnant Ladies. In the system which was discussed here internet of things has been put into practice. In this research work, author shows that the technology which was related to internet of things plays an important part in pregnant women. Internet of things provided an assistance due to which the practical and systematic care of pregnant women can be done on regular basis.

In 2019,O. Oti, I. Azimi, [3] put in to place a stress monitoring system for the very first time. With the help of this system the stress level of a pregnant woman was determined in a real time scenario. This tracking device was formed on the basis of internet of things.

With the help of this medical system, it was possible to monitor the stress level either inside or outside the hospital. Due to the improvement of Internet of Things (IoT) technologies, it was possible to implement a remote health monitoring systems in real time applications. From this, patient medical records were gathered and examined to deliver health services.

In 2018, S. Gayathri, [4] examined the medical system which was used for tracking the medical treatment of a human being. These systems were very safe. They operate with the Wi-Fi module. To manage the ability of system and its strength of communication, they used verified entry of user. These entries were available in a web page. To increase contingency and effectiveness in this field, their proposed system was put in to service with Arduino platform.

In 2017, N. D. Valakunde et al.[5] put in to service a very intelligent pregnancy monitoring system. This system was named as ASHA pregnancy monitoring system. The basic reason behind the invention of this System is to minimize the mortality rate of women during pregnancy. For the achievement of this target in a very effective way the efforts of the doctors which were posted in the poor areas of the country was digitized.

In 2018, Y. O. Bobrova,[6] put in to written form an Activity Monitoring System. For this purpose, various methods of fetus activity registration were taken in to account. In remote monitoring systems health and position

of an unborn child is determined by the application of Reactive methods. Several advantages of these reactive methods are put in to written form by the research work which has been presented here A system which is formed on the basis of MEMS accelerometers was also used. It will allow remote monitoring of fetal activity.

In 2015, K. Zhang, et al [7] on the basis of Mobile Communication Technology, they put in to service a monitoring system Pregnancy-induced Hypertension. This diagnostic information was transferred in time in the hospital. It has been found from tentative results, that the factors which are related with the flow of blood are observed in a very active way by this system. It provides other practical and analytical information for the blood pressure which was induced at the time of pregnancy. Simultaneously, it can offer more valuable scientific support by which the high blood pressure which was induced at the time of pregnancy can be easily measured and prevented.

In1999, H. Leman, et al[8] brings in to limelight the effectiveness of the electro hysterogram signal in support of contractions which was happened at the time of pregnancy. Here author separate the pregnant women in two sections. In one section they put women which give birth on time and in other they put women which give birth before time. Later, they provide a concept which shows that both types of pregnancy are dissimilar. These results were encouraging. It was because they would permit, in a follow-up medical study, to diagnose a possible premature delivery, as well as the proximity of the delivery.

In 2019, A. Muthiah, et al[9] examined Maternal e health Monitoring System by means of LoRa Technology. For this purpose it used LoRa Gateway. This would reduce the mortality rate of pregnant women. Body temperature of a pregnant woman her blood pressure, glucose level, rate of her hear beat and position of unborn child is determined by the Maternal Monitoring System which is already available in the ambulance. All this measurement is reported to the hospital. On the basis of mother health conditions operation theatre and emergency ward are prepared in advance. At the same moment, traffic of predetermined path to the hospital is also made directive. On the basis of its working in real time the competence of the system is calculated and recorded..

In2018, B. D. B. Lopez, et al[10] did research on the technology of portable model. The basic intention behind the research of this model is to manage and observe the blood pressure at the time of pregnancy. The model consists of four phases. On the basis of past results it was concluded that the number of cured patients was increased up to eleven percent and a reduction of maternal deaths by seven percent estimated. It provide an assistance in the favor of healthcare providers due to which they can take corrective and preventive actions.

In 2016, K. Horoba et al[11] anticipated manufacturing and supporting qualities of the instruments which was used in the field of medical. They mainly concentrate on the problems which were connected to the fetal monitors. They consider whether the required principles for communication and data content are present or not. In addition to this, they also considered the evaluation limitations of this type of health related appratus. Intelligent elements for the purpose of communication were explained. These elements contain some built-in functions. With the help of this element genuine information of monitored object are formed again and to verify the recorded signals by additional information acquired from cooperating interface units

In 2016, K. R. Konnaiyan, et al[12] examined an analyzing device for the analysis of medical health . The problems which occurred during pregnancy are monitored by this device. Using their system in a proper manner, various types of solutions were formed in which the range of protein and glucose concentration was from zero to two thousand mg/dL . The corresponding reagent strip pads were classified in a proper manner on regular basis. For this colorimeter was used. Colorimeter was constructed on the basis of smart phone. This colorimeter was considered as a good alternative where low cost is required.

In2016, M. W. L. Moreira, et al[13] put in to written form an intelligent mobile system for pregnancy care . This system used body sensors. The condition of high blood pressure at the time of pregnancy was the most serious problem. Ten percent of maternal deaths were caused because of this reason. From the last few years a considerable down fall has been seen in the death rate of pregnant women. The treatment of a pregnant woman can be done in a better way when the information was exchanged between experts and patients. In this research work ,a mobile monitoring solution was put in to practice by author. It used body sensors for the identification of medical condition of pregnant women suffering hypertensive disorders.

In 2014JayavardhanaGubbi et al.[14] In this work , authors put his conception in the written form, on the design of elements. In the present time internet of things contains a variety of wireless technologies such as actuators etc. Therefore it was considered as next revolutionary technology. It would change Internet in the form a completely incorporated Future Internet.

In 2014Chirag M. Shah et al. [15] has highlighted that the smart security systems were absolutely dependent on internet of things. The requirement of internet of things and its application were increasing at a rapid rate. The theory of improving access control systems was discussed by author in this research work. It was ensure by the methods which were used for boosting of access control architecture.

In 2016 Kwok-Yan Lami et_al[16] bring in to notice the individuality and problems of Internet-of-Things (IoT). In order to supply realistic as well as convenient solutions in support of internet of things safety latest system and scheme was compulsory. Generally, this technology has been established for the establishment of

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digital economy. Cyber safety was always a big concern during the task of making significant applications on top of IOT.

In 2016, M. A. Iqbal, A. Bayoumi et al.[17] An assessment on Internet of Things (IOT) was written by the authors.. On the other hand, this fresh Internet of Things which was developed on the basis of Internet, include fresh difficulties from the safety and privacy point of view. It was not possible to use conventional security primitives to Internet of Things technologies. It was not possible due to the involvement of various standards as well as communication stacks.[10]

In 2018, AnuragTiwari et al.[18] The problems associated with the ongoing researches for internet of things were assessed by the author. The internet of things system was very common and it was widely spread. Due to this, security and privacy problems were generating frequently. Due to this, all the things which were associated with internet may face safety issues. Due to the issue which was related to security and privacy internet of things could not set him as a reliable technology.

In 2018, Wei Zhou et al. [19] At this point of time effect of internet of things new features on Security as well as the Privacy was described by the author. In the past, it has been offered that there are several challenges, traditional solutions. We are the persons on which the growth of Internet of Things (IOT) depends. Up to this point in time, the technology of internet of things has been used in home automation and industrial automation. In addition to the facilities and efficiency which was provided by internet of things to us, certain threats were also presented by internet of things

In 2018, S. Schefer-wenzl et al. [20] The technology of Internet of Things (IoT) which was applied to thousands of linked smart devices was assessed by the writer. In order to fulfill this aim they would make the automatic control, organization and orchestration of network resources possible. A fresh network function virtualization empowering internet of things structure was submitted by them with a purpose of providing a leading operating room environment. An internet services based on the representational state transfer (REST) web design was employed by them.

In 2018, E. P. Yadav[21] put internet of things in written form . This research also brings in to light the level of internet of things growth. All the countries including India as were facing the problem of safety.

In 2018, Akanksha Bali et al.[22] The author investigated the different usage of internet of things. This technology makes the management of label items like door locks, lights, microwave, light emitting diodes, liquid crystal display, coffee maker, washing machine, window locks etc possible. In this way it will enlighten the state. The definition of internet of things concept represents various technologies.

In 2010, K. A. H Ahmed ElShafee[23] The organization and understanding of a well organized home system which was designed on the basis of WIFI was removed by the writer. With the help of this part, the system core was supplied and it handles, controls, and keeps an eye on customer residence. System symbols are controlled and examined by customer and system supervisor. It can be done either through LAN or internet. The subsequent section consists of a model for the purpose of hardware communication. It provide an appropriate link in the direction of detecting and control device which are installed in smart home system. The system which was presented here is adjustable in comparison to systems which were already available in market.

IV.PROBLEM STATEMENT

However there are several researches related to pregnancy monitoring Systems. A lot of technique is used in hospital which helps to easily examine pregnant woman. But it has been observed that the traditional Pregnancy monitoring systems have their own limitations. It is observed that the existing technique or modules are not efficient. These are time consuming and not enough. In today's communal insurance framework for pregnant women who stays in home for the period of post operational days checking is made either via overseer/ medical caretaker. Here continuous examination of women during her pregnancy period is done on regular basis. An efficient and vast system is compulsory required in order to get the knowledge about Pregnancy. Therefore, it is essential to propose an innovative and efficient pregnancy monitoring system to resolve the existing issues in this field.

V. FUTURE SCOPE

This proposed review on IOT based pregnancy system would be beneficial to propose a better and efficient solution to resolve the existing issues in this field. This research work discusses the challenges that are faced by pregnant woman. It also consists of a proposal of IOT based system. In addition to this, this research work provides us a review of existing researches and modules used in hospital to examine pregnant woman. The work would be preferred as a brief review of IOT based pregnancy system. In this paper, there is a section in which the issues and problem of existing research are discussed which would be very helpful for researcher who wants to propose a better solution in this field.

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