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A Review on Mother's Health Care Unit

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ABSTRACT: Every pregnant woman is enthusiastic about state of her baby along with her health condition. Whether the baby is active or not. In this project we are going to present you how a pregnant women can know the health condition of baby along with her health condition. By using pressure sensor, we can calculate with how much pressure the baby is kicking in the mother's womb. This pressure sensor is fixed to belt, which should be wore by a pregnant woman to check whether her baby in her womb is active or not. The pregnant woman should wear the belt from morning to evening. The pressure sensor will store the time of each kick, the pressure of a kick and also total number of kicks. It will also generate the graph and those graphs will be sent to the patients mobile. The pregnant woman can use this belt twice a month. There is another device which monitors the blood pressure and heart rate of the pregnancy woman. The required temperature sensors, pulse sensors, heartbeat sensors are attached to the wrist of the woman by using wrist band. She can check her health condition through mobile phone along with her baby condition. As pregnant women will consult the gynaecologist every month, If she show these graphs, the doctor can suggest more based on diet and medicines of the pregnant women. It will also be easy for doctor to treat the pregnant women by seeing these graphs.

KEYWORDS: Mother's health care unit, Pregnancy women health care, Health Monitoring System

I. INTRODUCTION

Generally, Pregnancy woman are facing problems like risk of pregnancy and nutrition deficiency for infants. It would be better if there is a device that can give information about the mother's health along with baby's health condition in the womb of the mother. For implementing our idea we have chosen IOT. It is present trending technology "Internet of things". IOT is simply the network of interconnected things/devices which are embedded with sensors, software, network connectivity and necessary electronics that enable them to collect and exchange data making them responsive. An IOT based system consists of sensors which talk to cloud through some kind of connectivity. Once the data is uploaded into the cloud, software process it and then might decide to perform action, such as sending an alert or automatically adjusting the sensors without need of the user. It also provide a place to save data that we can analyze and use to create desired outcomes. The main component of IOT is sensors. An important aspect of industrial pressure detection processes involves comparisons between multiple pressure factors. Differential pressure sensors are used for these applications, which can be challenging due to presence of at least two different pressures on a single mechanical structure. Differential pressure sensors are relatively complex in design because they are often needed to measure minute pressure differentials across larger static pressure sensing units, regardless of their categorization as differential, absolute or gauge pressure instruments. Baby's health condition is know by the mother in advance through the baby kicks. Fetal movements especially baby kicks are key factors in clinical management of high risk pregnancies such as fetal growth restriction. The information that we got from baby kick can be used to know the health condition of baby. Our device records the kicks and pressure of the kicks. Information like pressure of the kick and the time when the baby kicks is recorded. Pressure is calculated by using Arduino with python.

II. LITERATURE REVIEW

[1] Abeywardhana, describes in this as fetal well-being. Therefore, it is important to ascertain fetal movements to avoid fetal death. Accelerometer data acquired from pregnant mothers were analyzed in order to recognize the fetal movement patterns. Identification of fetal movements from the accelerometer data is arduous due to

the presence of mother's respiratory movements and mothers laugh signals in the data. The fetal movements were separated hierarchically by considering the Eigen values and Eigen vectors of the auto correlation matrix.

[2] Valerie Smith, describes in this as fetal movements have been used to diagnose pregnancy and indicate ongoing fetal life. They are considered an indirect measure of the integrity and function of the fetal life. They are considered an indirect measure of the integrity and function of the fetal nervous system and serve as an indicator for optimal fetal well-being. Decreased fetal movements (DFM) or an absence of fetal movements for an extended period of time are considered an indicator of a fetus at risk. Formal fetal movement counting, that is the use of 'kick-charts'. He uses a pre-designed chart on which women quantify the number of movements felt over a set period of time or at set times during the day.

[3] Lvchen Zhao, describes in this as fetal movement is an important indicator showing fetal health. Ultrasound and pregnant women's subjective perception are the most popular methods for detecting fetal movements. Ultrasound is available in hospitals only, causing inconvenience to pregnant women. He proposes a wearable technology-based system in order to detect fetal movements conveniently and accurately. The system includes an intelligent garment integrating a number of multi-scale sensors connected each other, a standardized cloud computing platform on which medical expert system. Based on the measured signals, he proposes a method combining wavelet analysis and band-pass filter in order to extract relevant features on fetal movements.

[4] Lowery, describes in this as their purpose was to develop an automated ultrasound-based fetal movement detection system to better define fetal movements. One hundred one patients had fetal movements recorded over a 20-minute period. Results of movement detection by a single-transducer system and a two transducer fusion system were compared with those of Hewitt-packard, maternal perception, and expert ultrasonography review. The author represents a significant improvement over existing systems in detection of fetal movement on a second-per-second basis.

[5] PatharaNorasethasopon describes in this as fetal movement (FM) is a marker for evaluating wellbeing of the unborn baby. He started that the development of real-time fetus movement detector is 4 presented. An air pressurized bag is designed to be wrapped around the abdomen of pregnant woman.

[6] TradeleDebisaDeressa, describes in this as fetal movement counting can provide valuable information on the fetal health is the indicator of fetal wellbeing and regular contact in the uterus of pregnant women during pregnancy. The author tries to convey that, by using past data we can predict high risk cases. For the prediction he has used data mining technology.

[7] M.J.Rooijackers describes in this as fetal movement counting can provide valuable information on the fetal health, as a strong decrease in the number of movements can be seen as a precursor to fetal death. He said that the assessment of fetal health by fetal movement counting relies on the maternal perception of fetal activity. He presented a low-complexity method for fetal movement detection is presented based on amplitude and shape changes in the abdominally recorded fetal ECG. The author has achieved algorithm complexity, possibly enabling continuous fetal movement detection and of reduced growth.

[8] M.B. Malarvii, describes in this as a newly developed Fetal Movement Recorder (FMR) using an accelerometer-based movement measurement device. Proposed prototype device was developed in order to collect the initial data of fetal movement. For this purpose, he placed a module with two point sensors on the maternal abdominal wall and the data were stored in a memory card. Next, he tested the performance of the accelerometer and the potential of the device. The preliminary results suggest that his device can be an ideal choice for fetal movement measurement due to its better accuracy compared to maternal perception technique.

[9] Amirul RidhwanSazali, Rania AI-Ashwal describes in this as advancement of technology allows devices with small; sensors to detect the fetal movements to monitor its health. They present the development of fetal simulator to simulate the condition of the fetus in the womb. The motor with the limb like rod has been assembled, programmed and controlled using Arduino to generate the movements. The Movement shows a successful force simulation of the real fetus movement and ready to be used for testing by sensors.

[10] S.Kumareesh, M.Sambareesh, R.Srihari, stated that the pattern matching is performed with the data between user and database, if a match is detected then suitable message is generated. If any pattern other than normal pattern is received, an alert is generated along with the sending of obtained packets to the doctor for further diagnosis.

They use blood pressure to the doctor for further diagnosis. They use a Bluetooth module in order to transfer the parameters like pulse rate, fetal heart rate and blood pressure to the user's handheld 5 devices.

[11] Ranjeeta Mittal, presented a new prototype of the fetal kick detection device. The real-time monitoring of fetal kick will be analyzed using a belt worn by the patient consisting of pressure sensitive material and various sensors for detecting the fetal distress based on machine learning mechanism. Later, the results are analyzed.

[12] Macro altini, proposed two methods to improve accuracy of fetal kicks detection using a single wearable device, in particular aiming at reducing false positives and increasing positive predictive value (PPV) when lacking a reference accelerometer features. Secondly, he combined accelerometer data with electromyography (EMG). Both the proposed techniques aim at providing more contextual information related to maternal movement while still using a single wearable device.

[13] NelGeusens, systematically analyze the trade-offs between sensor number and positioning, the presence of reference accelerometers outside of abdominal area and provide guidelines on dealing with class imbalance. Using a dataset of 15 measurements collected employing 6 three-axial accelerometers we show that including a reference accelerometer on the back of the participant consistently improves fetal movement detection performance regardless of the number of sensors utilized. They also show that two accelerometer plus a reference accelerometer are sufficient for optional results.

[14] Dell Honey; Leesa Hooker describes in this as fetal movement counts have long been used as a measure of fetal growth. The authors introduced to introduce the range of assessment methods are assembled into a maternal involvement, clinician involvement, and technology-assisted, automated technology.

[15] Joel J.P.C Rodrigues, Guilherme A.B. Marcondes, proposes the application of a machine learning(ML) technique, named support vector machine(SVM), or the recognition of patterns in a pregnancy database. This provides a mechanism for a mobile DSSs Capable of enhancing the care provided to women who are at a risk of developing pregnancy-related problems. Thus, this work can contribute to improve the maternal and fetal health conditions, predicting preterm birth risk early.

III. REVIEW FINDINGS

(i) Based on the above reviews we get an idea how the health of fetus has a wide range of applications and possibility of implementations We also got to know the movements of fetus in the womb of pregnancy woman decides whether the fetus is healthy or not.

(ii) Most of the reviews above have examined fetal movements for small period of time and they tried to predict the health of the fetus.

(iii) And some of the reviews considered the "kick-charts" this chart is like calendar, the pregnancy woman manually writes the number of kicks she sensed in a day.

(iv) Based on that kick-chart they used to predict the health of the fetus.

(v) We also know the importance of movements of fetus for predicting the health of fetus. It is very useful information for mother to know about the health of her baby.

(vi) It is very useful for pregnancy woman and also helps for her to take care her baby. Implementation this mother's health care will decrease the risk of pregnancy and nutrition deficiency for infants

IV. CONCLUSION

Every pregnant woman can feel the movements of the baby in her womb. By the movements of the baby and by the kicks of the baby we can state that baby is alive in womb and is also developing well. One of the existing solution is to state the health condition and growth of fetus is kick chart. A kick chart is a form or graph used by pregnant woman in latest stages to record the activity of her fetus. If too few kicks are felt within a specified time this could indicate a problem. Kick chart is a manual record, where the pregnant women note down number of kicks per

specified time. The existing solution only tells information about the health condition of the fetus, but health of both pregnancy woman and fetus is important.

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