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Reviving a Heart Rhythm using Defibrillation for a Stalled Heart: A Review

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Abstract:- This study explores the use of electrical heartbeats to revive a slowed-down heart. The goal is to determine the viability of using phoney electrical heartbeats to restart a sluggish heart. This research focuses on the creation of a device that can generate simulated electrical heartbeats and transmit them to a slowed heart. It also reveals that electrical heartbeats are reversible, with the pulse returning to normal when the heart stops. The findings of this study suggest that electrical heartbeats might be a viable option for restoring a shuddering heartbeat in people. GSM and GPS will be used to detect when the heart has stopped and alert clinical professionals.

Keywords:- *Heart Beat, Electrical Pulses, Stalled, Heart, Sensor, Health Care, IOT, GSM, GPS.*

I. INTRODUCTION

The heart is the major element in the human body without it life couldn't exit unfortunately, many persons encounter the bad consequences of heart related illnesses. Non communicable diseases (NCDs) kill 41 million people each year, accounting for 71% of all deaths globally, according to the World Health Organization (WHO). Every year, 15 million people aged 30-69 Died from NCDs. The majority of NCD deaths are caused by cardiovascular diseases (CVDs) (17.9 Million every year) Heart problems that might cause their heart to stop beating, resulting in sudden heart failure. Arrhythmia (3.5%), a trial flutter(3.5%), heart failure(1.5%) and cardiomyopathies (0.53%).

The finding demonstrate the critical need of supporting efforts for hypertension prevention and treatment in order to reduce the global occurrence of CVDs[1].

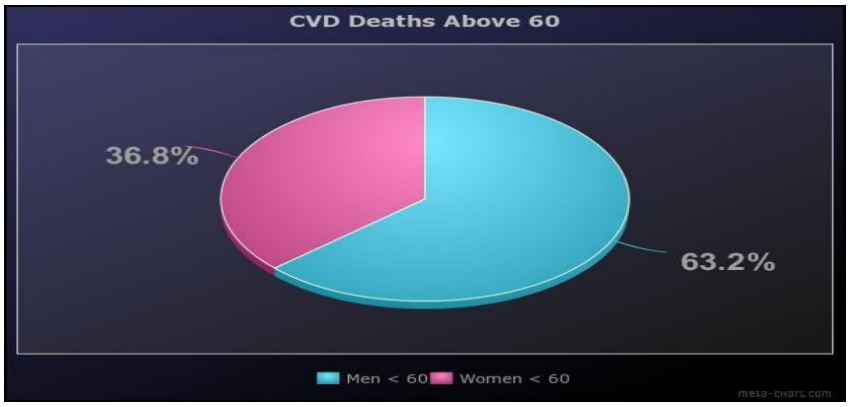

Fig. 1: Survey of death rateduetoCVD's

According to recent data (2020), about 2,000,000 people in India suffer from the consequences of cardiac failure on a regular basis, and one person dies every hour.As stated by the World Health Organization (WHO), the total risk of cardiac disease might rise to 23.3% by 2030. The therapy of such chronic condition involves continuous and long term monitoring to have adequate control over it. IoT aids in the transition from manual to remote heart rate monitoring devices. A specialist may not always be available to provide the patient a medicine or therapy, and a gatekeeper may not always be accessible to transport the patient to the hospital.

As a result, our recommended scenario is the correct solution to this problem. The remote pulse observing framework is used to screen genuine boundaries like heart beat and deliver the deliberate pulse directly to a professional via Email or SMS. This is a dangerous and scary ailment that needs immediate treatment.

This is a dangerous and scary disorder that demands immediate clinical attention. Fortunately, there is a procedure for recovering a sluggish heart. If there is an occurrence of heart failure in this paper, this cycle known as defibrillation is used to reestablish a vacillating heart beat and it very well may be a day by day existence saving development. We will look into the science of defibrillation and how it is used to Reestablish a fluttering heart pulse in patients who have had a sudden cardiac arrest. [2]

Out of the 1012 patients that took part in this study, 698 (69%) were female and 314 (31%) were male. Males and females were 57.4(13.1) and 56.4 years old, respectively (12.0).The total risk factor level was higher in young girls than in young boys.

Nevertheless, as women mature, these benefits fade. Consistent with the findings, the study revealed that older age is a greater risk factor for men than for women.

II. LITERATURE SURVEY

PAPER TITLE	PUBLISHED IN	IDEALOGY	APPLICATION
Wearable Device for Ambulatory Cardiac Monitoring - 2020	J Am Coll Cardiol.2020 April 07;75(13):1582-1592.	The research Focus on the long-term continuous monitoring and diagnosis of the cardiovascular system, remote and ambulatory monitoring device for medical professionals and patients is developed.	*To detect the life-threatening conditions early. *Longterm Continuous Monitoring of daily routine.
Smart Wearable Device in Cardiovascular Care -2021	Nature Review |Cardiology Vol-18	The study focuses on wearable sensors that are prone to inaccuracy as well as remote screening and diagnosis of heart disease.	*Acquire more complex functions and become an integral part of our cardiovascular practice armamentarium.
An Energy Efficient Wearable Smart IoT System to Predict Cardiac Arrest-2019	Hidawi Advance in human computer Interaction volume 2019	The goal of this research is to offer a multi sensory system employing a smart IoT based system that can gather data from Body Area Sensors (BSA) to predict an approaching cardiac arrest in advance.	*To indicate Cardiac Arrest. *Healthcare monitoring.
Feasibility Study For Beat-to-Beat HeartRate Detection by Smartphones Accelerometers-2020	The 5 th IEEE International Conference on E-Health and Bioengineering EHB-2020	The objective was to determine whether it was possible to use smartphone accelerometer to measure heart rate from vibrations caused by cardiac activity.	*HealthCare monitoring.
Remote Heart Rate Monitoring System Using IoT-2020	IRJET-2020	The paper focus on the concept of Without actually visiting the patient, a real-time heart disease monitoring system is introduced in this paper using IoT and a Raspberry Pi. As a result, the doctor can offer prompt service from a distance.	*Patient Monitoring System.

III. PROBLEM STATEMENT

In 2020 roughly 191 million deaths were credited to CVDglobally the age-adjusted death rate per 1 lakh population was 2398the age-changed commonness rate was 73541 per 1 lakh the most elevated death rate owing to CVD in 2020 were eastern Europe and focal asia with more significant levels additionally seen in ocean in north Africa and the center eastcentral Europe sub-saharan Africa and south east asiarates were least for the area in major league salary asia pacific and north AmericaLatinAmericaAustralia globallyit was assessed that in 2020 was 2441 million individuals were living with ischemic heart disease and it was more predominant in males than females 1410 and 1031 million individuals respectively[3].

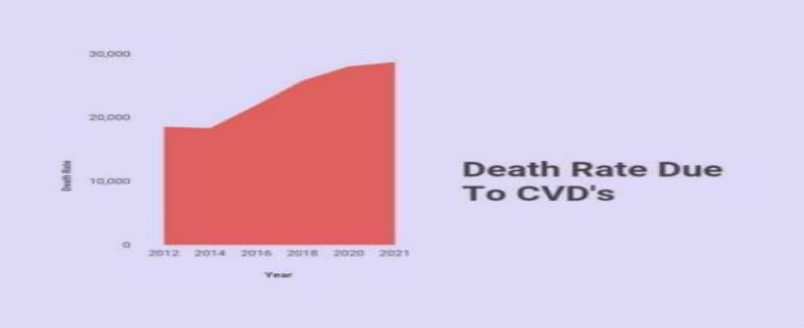

Fig. 2: Death Ratedue to Heart Attack

IV. METHODOLOGY

The presence of an expert is essential for proper patient consideration. But, he cannot be present in every location to administer drugs or provide care. Therefore remote observation of a patient is the best option. Unfortunately, there is a problem with web association accessibility in a rural area.

As a result, we decided to include a GSM module in the project because India's communications network is widely distributed throughout the rural and urban areas. This framework is used to screen actual boundaries, such as heart rate, and deliver the intended information directly to a

professional by SMS. The framework is made up of an IR base heart beat sensor, an Arduino Uno, and a GSM module. This device will desire to measure heart rate from a baby to an elderly person. The lowest possible cost of the gadget will assist with giving suitable home viable checking system. The first step is to insert the heart beat sensor into the patient's chest, followed by connecting the heart beat sensor to an LCD monitor. The Screen show the patient's heartrate. If the patient's pulse is too low, then, at that point.

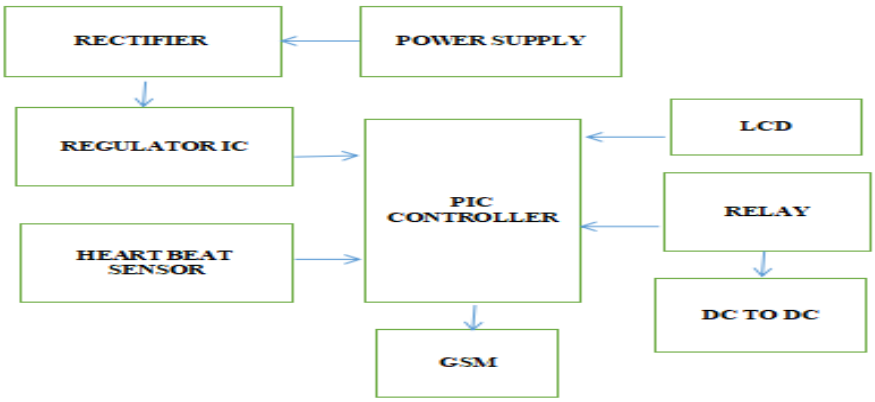

Fig. 3: Block Diagram

After that Associate a DC to DC converter to the hand-off. Change the settings of the DC to DC converter to match the patient's heart rate, Activate the DC to DC converter to send electrical heart beats to the patient's heart. Monitor the patient's pulse on the LCD screen to guarantee that the be at sarere establishing the patient's pulse and change the settings of the DC to DC converter depending on the situation to keep up with the patient's heart rate, Once the patient's pulse is steady, separate the DC to DC converter and hand-off.

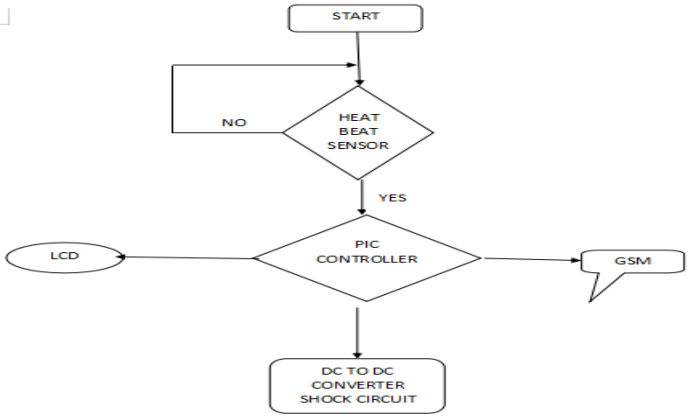

Fig. 4: Flow chart

V. HARDWARE DESCRIPTION

A. *HEART BEAT SENSOR*

The heart beat sensor analyzes an individual's rhythm and evaluates whether or not their heart is in trouble. It operates by providing tiny electronic pulses across the body and detecting how the signals change. If the heart rate is too low, an alarm will sound to notify medical staff of a potential problem.

B. *LCD DISPLAY:*

The LCD Display displays the person's heart rate as well as other crucial statistics such as hypertension, pulse oximeter & temperature. This permits health workers to observe the patient's status and intervene as needed.

C. *GSM MODULE:*

When the heart rhythm is too weak, the GSM sent a warning to medical personnel. This enables medical workers to respond promptly and give crucial assistance.

D. *RELAY*

The relay serves to manage the electrical currents delivered towards the heart. When the heart fails andmust be restarted, the relay activates and provides the appropriate electric signals to the heart muscle.

E. *ELECTRIC SHOCK CIRCUIT MODULE:*

The electric shock circuit module is used to provide an electrical shock to the heart muscle in order to rest art it. This is done by sending a wave of electricity through the body and stimulating the heart muscle to start beating. These five components work together to restore a fluttering heart beat. The heart beat sensor detects the heart rate and

sends an alert to the medical personnel if it is too low. The GSM module sends an alert to the doctors.

The relay activates the electric shock circuit module which sends an electrical shock to the heart muscle to restart it. With these five components, a fluttering heart beat can be restored.

VI. RESULT

Using false electrical heartbeats to repair a slowed down heart to reestablish a vacillating heartbeat is a very optimistic clinical step forward. This breakthrough has the potential to save countless lives while also restoring well-being and personal fulfillment to people who have suffered from heart failure. Moreover, even in cases when an individual has died, this technology may be used to revive them, giving them a second chance at life. With more research and technological advancements, this strategy might become far more persuasive and solid, perhaps saving many more lives.

VII. CONCLUSION

A noteworthy advancement in medical research is the use of manufactured electrical pulses to reestablish a fluttering heartbeat. It has given millions of patients experiencing cardiac arrest hope and enabled medical experts to take action before the heart fully stops beating. More individuals can now be resurrected and have healthy lives following cardiac arrest thanks to technology.

Although it might not be the ideal answer for everyone, it has given medical personnel a useful tool to treat cardiac arrest and save lives.

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