DEVELOPING AN INHALER TRACKING SYSTEM BASED ON ACOUSTIC ANALYSIS

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Abstract: : In treating asthma and ongoing obstructive aspiratory issue (COPD), procurement of real and powerful outcomes from patients on routine adherence is troublesome.Face-to-face and voice process report methods do not satisfy present intelligent medication best practices.A portable electronic device that connected to the inhaler uses an medicine usage and conductivity sensors is to detect medicine level and they calculate and an embedded digital Atmel-328 microcontroller to capture while the device is in use. The proposed system includes a hardware and software module to capture the activity of patient and corresponding volatile gases or liquid throughout the asthmatics. The inhaler medicine can be sensed by using conductivity sensor if the medicine level goes below user can't noticed means patient become danger condition. So Additionally, we developing android based solution and android application will connected to inhaler and it will be giving notification and if goes empty means information can be sent to users. The detected information from the equipment are shipped off the android module. Specialist on looking at the detected qualities can make an ideal move on the asthmatic's treatment and drugs.The developed system is cost efficient, reliable, and easy to use device to find out the asthma symptoms in asthmatics.

Keywords: Atmel 328 Microprocessor, Conductivity sensor and Android Application.

I. INTRODUCTION

In worldwide more than 300 million people affected by the Asthma and chronic obstructive pulmonary disorder (COPD) treatment. Asthma is a chronic disorder involving the airways in the lungs cause the breathing problem, deficiency of breathing, Chest tightness or pain. Asthma was diagnosed by the spirometer which is used to measure the pressure of exhale air from the lungs. The asthma patients generally influenced by the air contamination that makes the inward dividers of lungs becomes swollen, so the patient breathe in less air to patients lungs that feels the lack in breathing and prompts the breathing issue, additionally drives the patient to pass on if patient not taken any treatment.The neccesary treatment for the asthma was breathe in the portion with air , there are two kinds of breathes in for the typical wheezing they utilize Pressurized metered portion inhalers (MDIs) and Dry powder portion inhalers for ordinary wheezing, on the off chance that he/she was in serious assaults Nebulizers were utilized. Were the problems behind the patients who affects by asthma was they can't predict the asthma attack, judge the freshness of environment and so patients don't know how much dose to inhale, sometimes in severe even they don't have strength to hold the inhalers , aged people may leads to unconscious in few minutes.Inhalers are the electronic devices used to deliver medicine to the airways in the treatment of asthma and chronic obstructive pulmonary disorder. They are very compact, portable devices that contains medication and deliver it in exact doses so that it can be inhaled into the airways. There are two kinds of inhalers are regularly utilized which is metered portion inhalers (MDIs) and dry powder inhalers (DPIs are considered as more worthwhile than the MDIs they away from the utilization of charges, and are obviously activated during the inward breath move. The decrease of charges permits patient coordination between the medication delivery and inward breath to be control. At the point when the gadget is utilized accurately, inhalers (the two MDIs and DPIs) have been appeared to improve patients' clinical control. Numerous patients neglect to utilize the inhaler as coordinated. Therefore, obidience to

inhaler prescription can be poor, bringing about poor clinical reactions to asthma and constant obstructive aspiratory issue (COPD) treatment.

II. EXISTING METHOD

It furnished with sensors and on-board memory that fits over the canister of most metered-portion inhalers. At the point when a client pushes down to convey a portion, the on-board memory stores that information. At that point when the client is close to the cell phone the cap naturally interfaces and synchronizes to the items. Lights around the cap enlightens when it is the ideal opportunity for a portion. The framework offers a few highlights a journal that tracks expected triggers, top stream, and manifestations, miss-portions.

III. PROPOSED SYSTEM

To measure the rates of accurate inhaler use, this system is designed to monitor daily inhaler use and analyze the collected data. It provides assessments that show whether patients are in compliance with the recommended usage steps. Proposed system wet sensors to detect the liquid level of the inhaler and ultrasonic sensor used for medicine usage level measure and embedded digital processor to capture while the inhaler is in use and sent to android application .The developed system includes a hardware module to monitor the medicine level, activity .If liquid level is over taken without knowledge of users, controller detects its empty and if emergency means communicate to doctors or users and relations through SMS notifications with help of GCM communication.
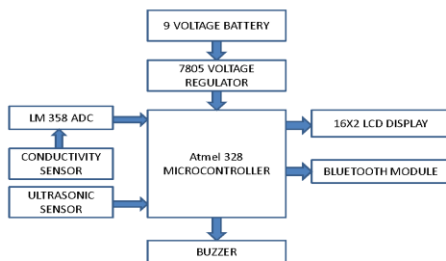
IV. BLOCK DIAGRAM

Fig :4. 1 Block Diagram for Proposed System

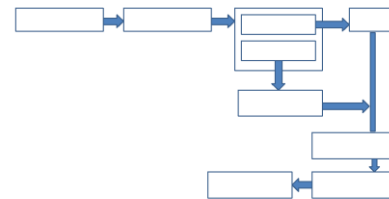## V. ANDROID APPLICATION BLOCK DIAGRAM

Fig: 4.2 Android Application Structure

In this Block Diagram An ADC converts a continuous-time and continuous-amplitude analog signal to a discrete-time and discrete-amplitude digital signal. The conversion involves quantization of the input, so it necessarily introduces a small amount of error or noise. Moreover, rather than ceaselessly playing out the transformation, an ADC does the change occasionally, examining the info, restricting the admissible transmission capacity of the information signal.The execution of an ADC is basically portrayed by its transfer speed and sign to-commotion proportion (SNR). The SNR of an ADC is frequently summed up as far as its powerful number of pieces (ENOB), the quantity of pieces of each measure it restores that are on normal not commotion. An ideal ADC has an ENOB equivalent to its goal.

VI. EXPERIMENTAL RESULTS

Figures shows the results is the medicine level normal by the conductivity sensor and ultra sonic sensor the exact reducing range of the medicine it will help the user to analyse easily in fig 1,2,3,4. This project helps the user to get the information about the daily usage level and verify with the doctor's prescribed level. If the medicine level goes below user the device intimates to by giving notification to buy another. Even if the user doesn't see the notification, the buzzer will be connected to the hardware device it will help the user to know before the medicine goes low.

Fig: 6.1 Android Application and Lcd Display

Fig: 6.2 Ultra Sonic Sensor

Fig: 6.3 Receiving SMS Or User

Fig: 6.4 Experimental Setup

VII. CONCLUSION

The inhaler is fundamentally the most important medical device for the treatment of asthma. Designed on the basis of simplicity, the standardized inhaler devices allow their use by all patients regardless of their age and education. As the modern technological environment evolves and offers novel sensing and analysis capabilities, the traditional scheme of inhaler design is starting to change and reveals innovation opportunities that promise to increase the efficiency of asthma treatment by health institutions and the effectiveness of asthma control by patients.

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