AUTONOMOUS MEDICINE DISPENSER

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ABSTRACT

The issue of adequately taking prescribed medications is essential for one's health and ability to convalesce. Studies have shown that people between the ages of 34 and 84 are most likely to not stay on schedule with their prescribed medications with different degree of carelessness. It is understandable that the negligence of this simple responsibility is due to the fast pace of the today's world and/or aging. Therefore, we intend to aid in this critical obstacle by introducing an automated medicine dispenser along with an external portable system, and a fingerprint scanner or code lock for added security. This medicine dispenser is fully autonomous and designed to assist individuals who require supervision. To achieve this alternative as a solution and not an inconvenience, simplicity was adopted above all. To operate the unit, the user places the drugs into a canister and follows the indications displayed on an LCD screen. The medicine dispenser will be able to dispense up to six different drugs and will be programmed to send out a reminder via email and/or speakers that are embedded in the central unit. The user can manually decide to dispense the pills thirty minutes before the programmed time. In situations where the user forgets to pick up the medicine, a message will be sent via email or verbally, indicating that the drug was not administered. Lastly, there will be a recording on an excel spreadsheet format with a detailed summary of the administrated medicines. This project will be achieved with the use of an Arduino, LCD, various sensors, along with other electronic devices. From this project, we hope to build an alternative solution for the patients in such need.

Keywords: Pill Dispenser, Automated, Vacuum Pump, Liquid Pump, 3D Printing

INTRODUCTION

Busy schedules, rather than old age, make people forget to take medications [1]. Several issues arise due to the inadequacy of remembering when to take the required remedy. Over 100,00 people are estimated to die each year in the United States partially due to failure to adhere to prescribed treatment [2]. There are many downloadable apps capable of reminding those with the lack of time to take the prescribed medicine with limitations. Besides, pills are most effective when taken on time. About half of patients take medication as prescribed, leading in unnecessary hospital admission that costs the U.S. healthcare system an estimated $290 billion a year [3]. As a result, doctors are considering high-tech approaches such as smartphones apps that send reminders to patients to take their medications on time. However, while the use of new technology, such as smartphone apps, is an attractive option, the evidence is needed to help guide health providers and health services as to whether they should recommend such technologies to patients [4]. Perhaps, apps help to improve the issue but not quite fulfill people's necessity.

In order to offer a solution to this pressing and increasing dilemma, new user-friendly solutions have appeared on the market. The most mature solution to be available for patients is known as a medicine organizer. The basic approach is for the patient to manually classify their medications into a daily intake for a week or month supply. Although this idea became very popular it doesn't solve the issue of time consumption and user input. Through the progression of time and developing technology new approaches were undertaken. In 2004 inventor Joseph Lai created the Automated Pill Reminder Bottles, this product