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Medication chatbot using conversational AI

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ABSTRACT

Conversational Artificial Intelligence systems are computers that can be interacted with by just conversing with them. With the assistance of conversational AI, we can settle one of the significant challenges in this day and age i.e., Medicine non-compliance. It is tough for patients to keep track of their medications according to the prescribed dosage, time, frequency, and direction. This paper proposes a virtual assistant that uses conversational AI to remind people to take their pills/medications on time and in the correct dosage. As virtual assistants provide a steady stream of channels through which to enhance the healthcare infrastructure. The main goal is to help people improve their adherence to recommended health and wellness treatment. This will be extremely beneficial to persons who suffer from chronic illnesses.

Keywords: *Conversational AI, medication compliance, chatbot, digital healthcare.*

1. INTRODUCTION

Despite the fact that nearly two-thirds of Americans have a prescription, about half of them do not take their medications as prescribed. Medication non-adherence now causes 125,000 needless deaths and \$300 billion in unnecessary healthcare costs each year. Most individuals are unaware that the risk of dying from non-adherence to one's own medication is around ten times higher than the risk of dying from homicide, or about 30 times higher for those over the age of 50.

According to The American Medical Association, "A patient is considered adherent if they take 80% of their prescribed medicine(s). If patients take less than 80% of their prescribed medication(s), they are considered nonadherent." According to a Johns Hopkins research, medical errors are the third biggest cause of death after heart disease and cancer. These are a few reasons why patients are non-adherence to their medications.

- Patients may not complete their prescriptions due to the high cost.
- Nonadherence can occur when a patient is afraid about getting dependent on a medication.
- Nonadherence can also occur when a patient does not understand why the drug is necessary.

- Patients may be concerned about possible adverse effects. They could have had earlier side effects from the same or a comparable medication.
- Sometimes patients may forget which drug to take at what time, and there is a potential that dosage and timeframe will be off.
- Due to today's hurried society, patients may forget to take their medications.

One way to avoid these problems is to have a healthcare bot. People may readily use chatbots because they are so popular these days. It will be simple and require no prior knowledge of the tool. Bots, with the use of chatbots and conversational AI, are expected to supply information and provide immediate responses to user inquiries. They also have the advantage of providing service at any time.

Conversational AI platforms are built to not just meet users' and healthcare providers' fundamental informational demands, but also to enable more actionable, tailored interactions that help them make better healthcare decisions. Medication chatbot can tell patients when to take their meds, how much to take, and what the adverse effects are if they don't. Patients will interact with the application as a result of this, which will aid them in keeping track of their short-term and long-term medications.

This tool makes it easier for patients because it interacts with them like a human would and costs little to nothing to use. This innovative approach of human-computer interaction makes even more user-friendly computer applications and access to a wider range of users. This is easy for people who prefer online help. This application can be used not only by patients but also by health care providers. They can directly enter medication information into the patient's profile and track the patient's medication process and health state.

2. FUNCTIONS OF MEDICATION CHATBOT

The following is a list of the medication assistant's main features:

- Firstly, the tool allows either a health care provider or a patient to enter drug information. Medication information can be saved as a name or an image.

- And this bot will remind patients about the medicine at the time set by the user, along with dosage information.
- Tool also provides Symptom checker, where patients can ask the bot questions about the diseases, such as symptoms and causes, in order to find out what causing patients' symptom and also to receive health care education.
- In addition to medication, the bot inquiries whether they have any symptoms or side effects, and the information is shared with health care specialists. This will assist health care providers in recommending the best course of action for a patient's condition.

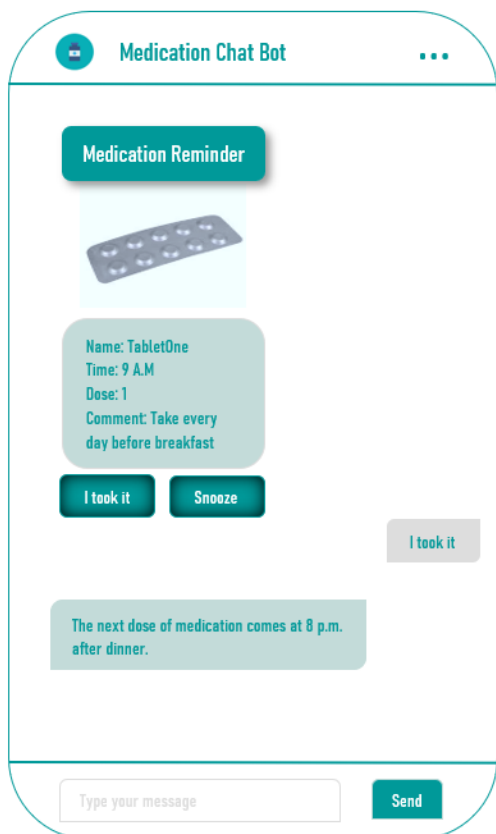


Figure-1: Sample screen of a Medication reminder chatbot.

3. ARCHITECTURE OF MEDICATION CHAT BOT

The architecture of medication chat bot is explained in this section. Azure Health Bot is used in this application. Azure Health Bot enables healthcare developers to create and deploy AI-powered virtual health assistants that are compliant. It blends built-in medical databases with natural language processing to comprehend clinical terms. The Health Bot Service is a cloud platform having a built-in medical database and triage protocols. Azure Health bot provides Symptom Checker that checks symptoms and answers questions about medical conditions and symptoms.

Healthcare providers can use the service to create a "health bot instance" that can be integrated with their systems and used by patients, nurses, doctors, and other staff. LUIS (Language Understanding Intelligent Service) is a language model that reads user goals (intents) and extracts useful information from sentences (entities) to provide a high-quality, nuanced language model. LUIS works hand in hand with Azure Bot Service, making it simple to build a sophisticated bot.

Azure Health Bot uses Bot Framework for messaging and routing platform to send messages to and from the end user. This bot is integrated with external app through channels. An android app, for medication remainder is linked with the bot. Figure 2 provides an overview of Architecture of Medication chatbot.

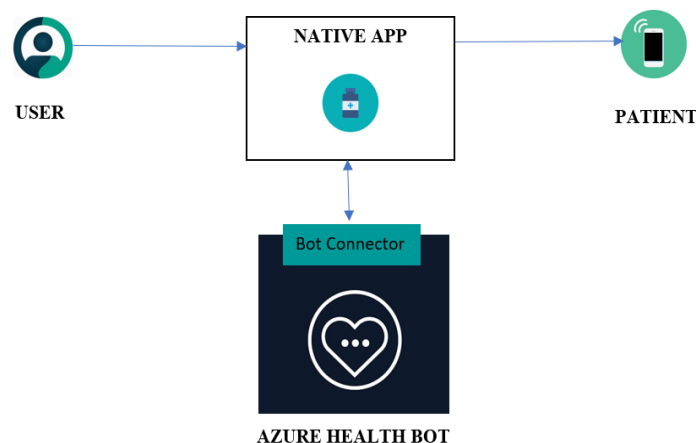


Figure-2: Architecture of Medication Chat Bot

4. CONCLUSION

This paper presents a chatbot application that provides timely reminders to patients to ensure that they take their medication as prescribed. This will obligate the patient to take medicine as directed, resulting in the control of chronic conditions, the treatment of transient conditions, and general long-term health and well-being. This application is appropriate since it provides individuals with information on health, diseases, medications, and other topics from built-in medical knowledge databases, rather than surfing the internet, which might lead to inaccurate information and incorrect recommendations.

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