PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF RELIANT

PROBLEM STATEMENT:

- Sometimes elderly people forget to take their medicine at the correct time.
- They also forget which medicine He / She should take at that particular time.
- And it is difficult for doctors/caretakers to monitor the patients around the clock.

To avoid this problem, this medicine reminder system is developed.

LITERATURE REVIEW:

We employed a five-stage systematic review method to identify and synthesize previous knowledge. First, we identified the issue we wanted to study and defined the research questions. Then we carried out the electronic searches and the quality appraisal and analyzed and interpreted the selected papers. The final stage was to present the results.During the first stage, we carried out the preliminary searches and found that the systematic review was a suitable way to identify previous knowledge. This process enabled us to identify the research questions for this review.

REFERRED PAPER 1:

-->AUTHOR:

Baril et al.3, Canada, 14/21

-->AIM:

To study the impact of medication distribution technology (MDT) on medication errors reported in public nursing homes in Quebec Province.

-->METHOD:

Quantitative study in six nursing homes (800 patients). An automated pharmacy packaging device, combined with mobile dispensing carts. Medication error data were collected from nursing staff through a voluntary reporting process before and after MDT was implemented.

-->USED DEVISES:

An automated pharmacy packaging device, combined with mobile dispensing carts.

REFERRED PAPER 2:

-->AUTHORS:

Beobide-Tellería et al.6, Spain, 15/21

-->AIM:

the performance of one care unit in a nursing home Data were analyzed using

statistical analysis. the safety of the medication process. To compare the rate and severity of reported dispensing errors in nursing homes using manual medication dispensation, versus automated dispensation with a specifically selected automated dispensing system.

-->METHOD:

A pre and post retrospective observational study conducted in 7 nursing homes. Compared voluntarily reported dispensing errors during 2 periods: a manual dispensing system of weekly pill boxes and an automated drug dispensing and packaging system for oral solid medications used in combination with a manual system for other drug forms. Automated Dispensing System Data were analyzed using a statistical analysis.

REFERRED PAPER 3:

-->AUTHOR:

Hoffmann et al.17, USA, 19/21

-->AIM:

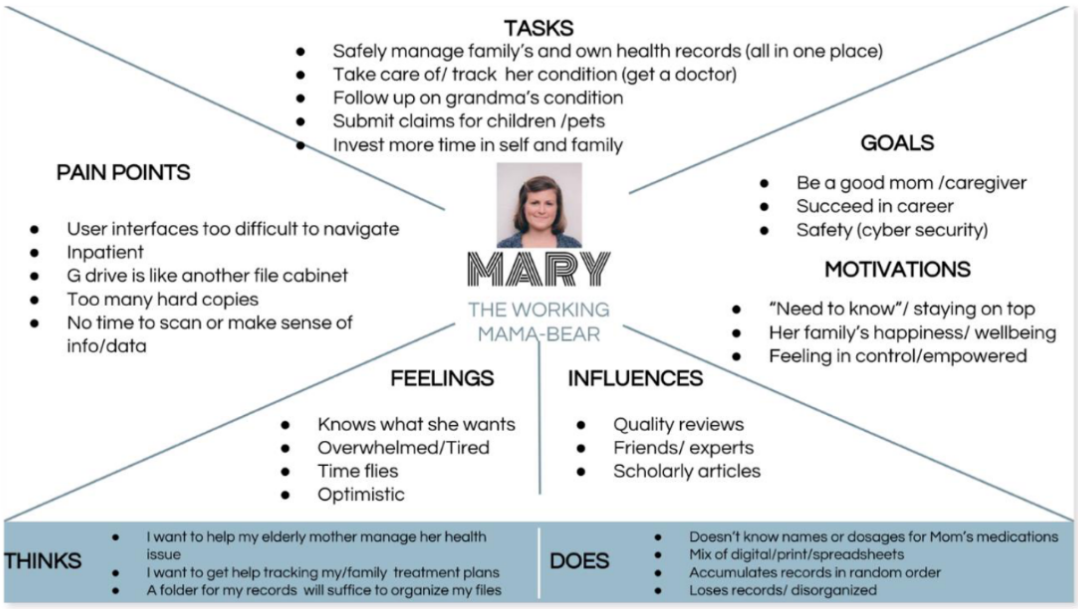
To determine if use of the Automated Home Medication Dispenser improved medication adherence.

-->METHOD:

A 6-month prospective, feasibility study assessing the use of the device by 21 patient-caregiver dyads. The Automated Home Medication Dispenser. Patients were referred by their physician because of poor medication adherence and included if they resided in Rochester, New York and were on at least two different tablets. Pill counts were performed at baseline to assess previous adherence. Prospective medication adherence was assessed using the dosing information recorded by the device. Data wereanalyzed using a statistical analysis.

EMPATHY MAP

Personal Assistance for Seniors Who Are Self-Reliant



IDEATION:

If a patient needs to take medicine at 6 a.m. In the morning the box will remind him by making sound and also by sending an alarm. If he forgets the actual time of taking medicine and goes to take medicine at any time the medicine box will not open as a servo motor will make the box locked. While it's the right time to take te medicine then the box will make sound and will give notification until the user takes medicine or open the drawer. Also, if the user is outside of the home, then the medicine box will use the Wi-Fi module to send notification to the user's fixed email address. The system contains also a temperature sensor to measure the temperature of the user as temperature can be a vital element of the monitoring patient's health condition. The temperature and taking medicine data will be stored in a server which can be accessed by both patient and doctor so that when it is time the doctor can review the medicine and can change if needed. Also, it will be helpful for doctors to keep updated about the patient's physical health condition.

Before describing the proposed solution, it is essential to present the end-users of the platform and their needs:

 Assisted person: Elderly people, from 65 year and above, with chronic health problems or with frailty due to physical, cognitive or emotional problems, who need formal or informal support when staying at home or in their daily living environment for safety and security.
 Informal caregiver: responsible for providing support on a daily basis to a relative that suffers from a chronic condition and cannot live alone and yet be safe. The service will allow him/her to monitor the relative remotely and respond immediately and effectively in case of an emergency.
 Formal caregiver: responsible for providing systematic daily assistant at home or at a daycare center. The service will allow the formal caregiver to coordinate different care recipients at the same time more efficiently as well as respond to different emergency cases faster.

NOVELTY OF PROJECT:

"Medicine Box" which helped the patients in medication remainder and storing the patient's medicine intake details. In accordance to current technology this project endeavour to make a "Smart Medicine Box" for medication with multiple compartments to assist the patient to take medicine at right time through alarm reminder. This compartmented box maintains temperature by means of adaptive cooling method. We propose this system with additionally added features to medicine box such as high security, emergency alert through SMS and automatic opening and closing of lid of the box. The vital parameters are recorded, uploaded to cloud and reviewed by the clinicians using IoT system. This helps the clinicians to gain knowledge about their patient's health condition for further treatment analysis.

SOCIAL IMPACT:

Setting alarm clocks is a tedious task which patients are too lazy to set again and again. If asked about what time people have to take their medicines, many forget to answer the correct times or remember whether they have already taken the medicine in the day already. Elderly people specially face this problem because of their degrading memory and in severe cases, forget that they have already taken their prescription and retake the same medicine 2 or 3 times in the same duration. This may not be harmful for lighter medicines, but for some strong and concentrated medicines, it can have further harmful effects to the body. This is exactly where our medicine reminder system can help. Our system takes up the prescription details from the user such as the duration of the prescription, the names of the medicines, the times they are to be taken and the amount of each medicine which is to be taken.

After all this data has been entered, our system will remind the user at the prescribed time of which medicine is to be taken in form of a mobile notification and a physical reminder.

SCALABILITY OF SOLUTIONS:

1. Reprogram the pillbox with the new pill schedule.

2. Activate the refilling sequence, for which each of the compartments of the pillbox will become accessible while the program will indicate which pill type corresponds in each compartment so that the caregiver/nurse replenishes it.

3. Many patiens especially old people, do not take their medicines in the correct quantity. They either take overdose of medicines thinking it will help them heal faster, or they fear the doctor has prescribed a larger quantity than required and take under dosage of medicines. The former leads to several unsuccessful health implications while the latter delays the treatment of the patient and in some cases, allows the illness to spread further requiring further treatment.

BUSINESS MODEL:

The proposed architecture enables to embody other types of devices such as wearable, electronic devices, home appliances, among others, offering infinite possibilities of applications and functions. This system can be improved, providing a more flexible way to schedule medicines consumption alarms such as twice a week, three times a week, every other day, among others.

FEASIBILITY OF PROJECT:

Along with medicine reminding at each session with correct dosage, The medical details which we collect from iot devices like temperature sensor, heartbeat sensors.etc.. which can be predicted at each session and providing the corect medicine to patients that can be updated to doctors. The feature of uploading the patient details and medical records avoids the difficulties of carrying the prescription and medical records and hence patient can live independently.

CODE:

```
import random
while(True):
 temp=random.randint(10,99)
 humid=random.randint(10,99)
 print("current temperature:",temp)
```

```
print("current humidity:",humid,"%")
temp_ref=37
humid_ref=35
if temp>temp_ref and humid<humid_ref:
  print("Sound Alarm")
else:
  print("Sound off")
break
```