DESIGN AND DEVELOPMENT OF MOBILE ROBOT MEDICINE DELIVERY SYSTEM FOR THE GENERAL WARD OF THE GOVERNMENT HOSPITALS

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Abstract:

Healthcare personnels is one of the paramount parts of the society, In the healthcare systems doctor will prescribe the medication which is required by the patient. The administration part will be taken by the nursing staffs. As per the statistics, the world will be witnessing around 100000 nursing staff's shortage will be encountered. During and after the advent of the pandemic (like Corona) the prevalent nursing staff have experienced harsh work culture due to the shortage of the nursing staffs.

The potential solution is to attract the more population to enrol to the profession or to provide some of the technical aid to the present nursing clan which shall reduce their work pressure. In this direction the present work will be providing a technical support through the Medicine delivery robot, which will dispatch the medicine to the patients by non-compromising with the rights of the nurse i.e., Right drug to a right person at a right time with aright dose. The present study confines to the delivery of the pills i.e., Tablets.

Medicine delivery robot will be comprising of the **RFID readers** to verify the patients, **Speakers** to provide the **audio commands** to the patients as an instructions, RFID cards for the verification, **IR sensors** for the line navigation, **Arduino MEGA** controller for the controlling aspect, Servo motor to open and closing of the lid of the dedicated container to the patient, DC stepper motor powered for the front two wheels for the mobilization, battery for the working of the whole robot and LED light for the **pick to light system** for the **error proofing**.

Medicine delivery robot needs to be filled with the drugs once by the nursing staff for the entire day by showing the authorized Nurse RFID cards. After filling the containers lid will be closed and medicine delivery robot will start to dispatch the medicine. The medicine delivery robot will stop at the dedicated space made with the track and give the audio command for the first bed people to collect the medicine by showing the RFID tag. The medicine delivery Robot is being made intelligent

so that the Authorized RFID card will results in the dispensing action. After the bed 1 patient collects the medicine they should show the RFID to the reader, which will be the acknowledgement to the Robot for the medicine reception and the Robot will give the command to the Bed 1 patient in the same way stated above for the Patient 1. After medicine reception of both the patient 1 and 2, the robot will move to the second stage where it will deliver the medicine to the patient 3 and 4. This analogy can be extended to the multiple stages.

If the unauthorized RFID tag is shown the robot will give the audio command as invalid tag, in this way the mistake proofing has been mitigated.