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## Anytime Medicine Dispensing Machine

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### Abstract

Till date there is no automated medicine dispensing machine available in the market and this is the first time that this innovation is being put forward. It has been seen in literature that courts have penalized doctors for illegible handwriting in the reports drafted by the Doctors. Doctor's prescription isn't just a guide for patient's but also an instruction manual for family members, documentation of drug requirements for chemist and tract records of patients past and present conditions for other doctors. Doctors' writing can be misread that causes loss of information and prevents better care for patients. The solution lies in computerizing the drafting of prescription. The automated medicine dispensing machine will be brought into the market to address the above problem.

## 1. Introduction

### 1.A Field of invention

The Automatic machine operates based on electronics engineering, mechanical engineering, and electrical engineering, which is collectively termed Mechatronics.<sup>1,2</sup> The vending machine is one of these automated machines which supply needed things to the customer. The vending machine can be categorized into product-oriented and service-oriented machines.<sup>3</sup> The vending machine has many advantages as it saves time, man power is not needed, reducing labour cost, increasing profitability.<sup>4</sup>

### 1.B Non IoT based vending machine technologies

In recent past years, there were lots of vending machines developed by several research groups such as PLC based change dispensing machine, PLC based automation of multiple fluid vending machines, AVR ATmega8515 based liquid dispensing vending machine, Arduino based reversed vending machine, Finite State Machine based vending machine with auto-

billing features, RFID based ration vending machine, and touch screen-based medical vending machines [5, 6, 7, 8, 9, 1]. These are commonly known as non-IoT based vending machines.. The IoT-based machines are assisted to suppliers to identify the availability of the stocks.<sup>10</sup>

### 1.C Existing IOT Based machines

Coffee vending machines, vending machines with cashless payments for snacks, smart computerized vending machines, and smart automatic juice vending machines are well-known vending machines, which are developed using IoT-based technology [11, 12, 13, 14]. Some of the developed machines were used the PIC microcontroller as the brain of the system and read data from an RFID reader [15]. Today, more vending machines are equipped with cashless payment options [16]. The system is a collection of components that implements modelling requirements, functions and interfaces [17]. A system has some characteristics and certain properties. It has components, system boundaries, outside the system environment, link, input, output, processing, and targets or goals [18]. A QR/barcode scanner is used for payment from a virtual wallet using QR/Barcode [19]. At this time, there is a need for a new type of cloud that can be used both by the Smart Factory and the general company.<sup>20</sup>

### 2.0 Objective of the project

- The idea of this proposed system is to make a device which can dispense commonly prescribed medicines in Dentistry .
- Doctors will have a control over what needs to be given to the patient.

### 3. A Hardware Details (FIGURE 1)

**Arduino Mega:** it features an ATmega2560 microcontroller, offering 54 digital I/O pins and 16 analogue inputs. Arduino Mega serves as the central controller of the machine, overseeing its operation and interacting with various peripherals.

**ESP32:** The ESP32 module connects the machine to a remote server via Wi-Fi, ensuring seamless communication for OTP verification and medication retrieval.

**Arduino Nano:** It's based on the ATmega328P and offers a smaller form factor, making it suitable for space-constrained projects while maintaining Arduino compatibility.

**IR Sensor Circuit:** An IR (Infrared) sensor circuit detects infrared radiation and is used for medicine detection in collection tray . It typically includes an IR emitter and a receiver

**Relay Circuit with Opto-Isolator:** A relay circuit controlled by an opto-isolator provides electrical isolation between the control circuit (usually a microcontroller) and the high-power load, enhancing safety.

**4x4 Keypad:** A 4x4 keypad is a matrix of 16 push buttons arranged in a grid. The keypad interface allows users to input their OTP or interact with the machine's interface.

**EM18 RFID Reader:** The EM18 RFID (Radio-Frequency Identification) Reader is a module that reads RFID tags or cards.

**SMPS Power Supply:** Switched-Mode Power Supply (SMPS) is an efficient power supply technology that converts electrical power from one form to another. It's known for its compact size, high efficiency, and versatility in voltage regulation.

**LM2596 Buck Converter:** It steps down voltage efficiently, making it useful for regulating power supply voltage levels in various electronic applications.

**DC Geared Motors:** DC Geared Motors are motors combined with a gearbox for precision control of speed and torque.

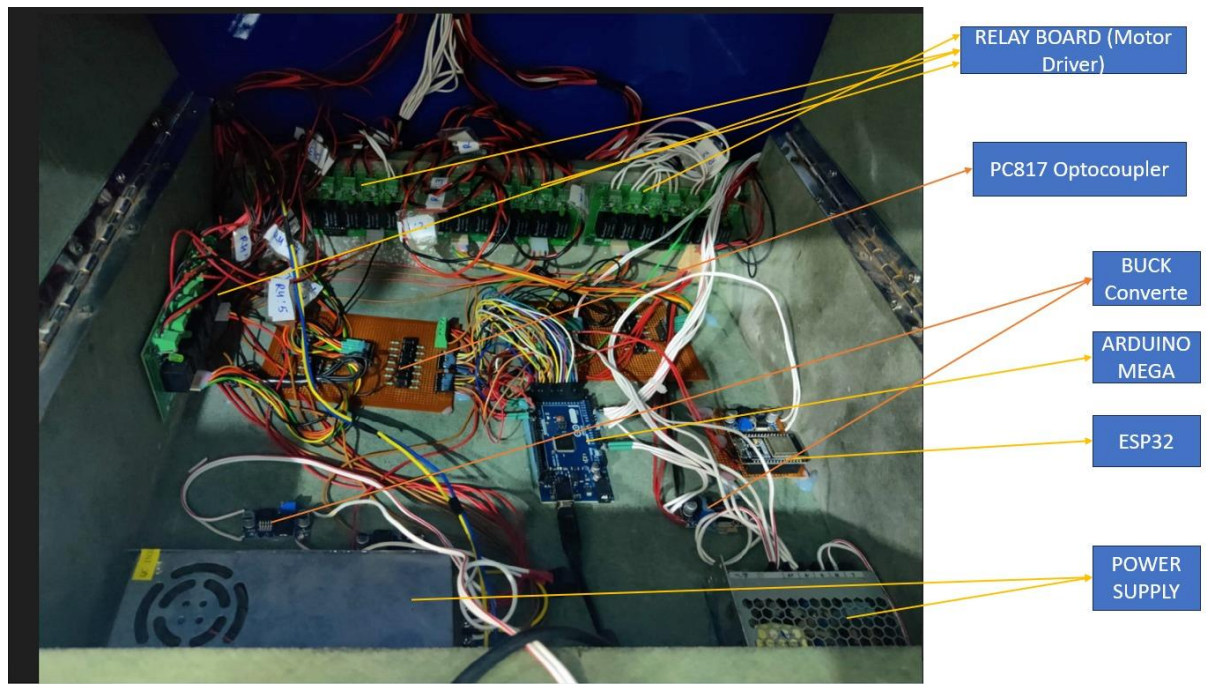


Figure 1 INTERNAL COMPARTMENT OF MACHINE

### 3. B Software Details

The Arduino software, commonly referred to as the Arduino IDE (Integrated Development Environment), is a critical tool for programming and developing applications for Arduino microcontroller boards. At its core, the Arduino IDE features a text editor for writing code in the Arduino programming language, which is a variant of C/C++. Users can access a wide range of pre-written libraries and example codes to simplify the development process.

Key features of the Arduino software include:

**Cross-Platform Compatibility:** Arduino IDE is available for Windows, macOS, and Linux, making it accessible to a broad user base.

**Code Library:** A vast library of pre-written functions simplifies common tasks like interfacing with sensors, displays, and communication modules.

**Serial Monitor:** This tool allows developers to send and receive data between the Arduino board and a computer, aiding in debugging and real-time monitoring.

**Easy Upload:** The IDE seamlessly uploads compiled code to the Arduino board via USB or other supported interfaces.

**Community and Documentation:** Arduino has a thriving online community with extensive documentation, tutorials, and forums.

**Open Source:** Arduino IDE is open-source software, allowing users to modify and contribute to its development.

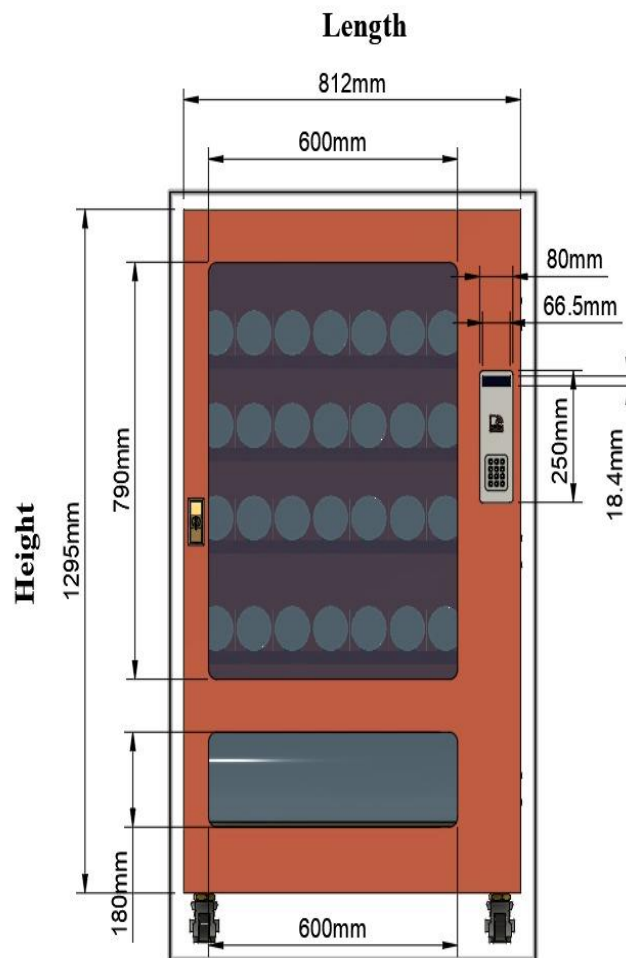
### 3.C. Description of other components of machine

The storage space is there where all the different type of medicines are stored; a collection tray for the patient to receive the medicines. Castors is a wonderful mobility enabler, with properties such as strength, corrosion resistance, water resistance, and weather resistance. The applications of caster wheels necessitate precise sizing based on the terrain on which they will be used and the weight they are expected to carry. LCD Display is for dispensing information which can be displayed on an LCD screen.

### 3.D DIMENSIONS OF THE MACHINE (Figure 2)

- The height of the machine is 1295 mm

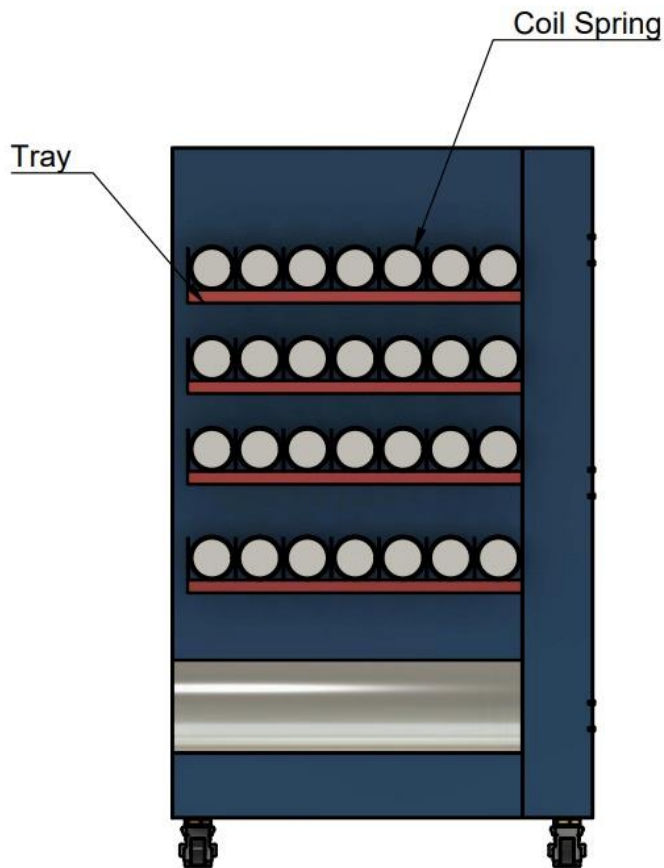
- The visible portion of glass (height) is 790 mm
- Length of the machine is 812 mm
- The visible portion of glass (length) is 600 mm
- The dimensions of display mount are 250x 80 mm
- The height of the collection tray is 160 mm
- The length of the collection tray is 600 mm
- The length of the lcd is 66.5mm & height is 18.4 mm.
- The maximum dimensions of the product that can be placed in the springs is L90xW40xH80mm



**FIGURE 2. DIMENSIONS FOR THE VENDING MACHINE**

### **3.E . Designing Of Inner Side Of The Machine**

The storage space is there where all the different type of medicines are stored. There will be four rows and in each row there will be 7 different compartments. Each spiral holds a number (approximately 10-20) of the same product and upon user selection a motor at the back of the vending machine rotates the selected spiral to push the products forward until the front product falls off the end and into a tray for collection by the customer.(Figure 3)



**FIGURE 3 DEPICTING INNER VIEW OF THE MACHINE**

#### **4. Brief of the operation of the machine**

##### **WEB INTERFACE**

- Domain Name : <https://anytimedicines.in/> and working with <https://anytimedicines.in/svm/>
- Server Validity : 1 year( can be extended)

Languages used for developing the website

Frontend - HTML, CSS and JavaScript Backend - PHP

Database- MySQL

The website landing page will have a user login page. These are as follows:

##### **A. Pages on Website**

1. Doctor's page
2. Chemist page
3. Maintenance personnel
4. Patient's page
5. Home - Login page

## B.Types of order/Dispensing of medicines

Details of users are as follows(FIGURE 4)

FIGURE 4 ; USER ROLE AS DOCTOR, CHEMIST OR MAINTENANCE

**1.Admin-Doctor:** This account will be operated by a Doctor.  
The doctor can add/modify/delete/view records  
Details of the doctors are as follows

**UserName / Email Id \***

**Password \***

**Mobile\***

**Role\***

The doctor can add patient with the following details

1. **Name\***
2. **Email \***
3. **Age \***
4. **Gender \***
5. **Address\***
6. **Mobile No\***
7. **Card Recharge\***

The doctor can edit the patient details ( Figure 5)

**Edit Patient**

Patient No	Name	Email ID	Age	Gender	Mobile No	Card Balance	Timestamp	Edit	Delete
P0001	chandrabhan	chandrabhan@gmail.com	31	Male	7300534664	214.00	2023-09-08 14:50:31		
P0002	arvind	arvindtan9@gmail.com	35	Male	9728350015	3685.00	2023-09-09 10:27:38		
P0003	DANVIR	sgtdentabxpertz@sgtuniversity.org	40	Male	8398990618	1340.00	2023-09-09 10:40:07		
P0004	SUKRIT	sukrit@gmail.com	13	Male	9650218226	9474.00	2023-09-09 11:02:56		
P0005	MADHU	madhu_2@gmail.com	35	Male	9953986150	7642.00	2023-09-10 15:55:08		
P0006	santosh	santosh_9@gmail.com	35	Male	9971354566	9282.00	2023-09-10 16:17:56		
P0007	Avneet	phukelasumit@yahoo.com	37	Female	9971061617	8003.00	2023-09-11 19:08:34		
P0008	vishal ji	vishal_4@gmail.com	35	Male	8318486975	9844.00	2023-09-13 20:35:07		
P0009	AMIT	doc.amitsiwach7@gmail.com	34	Male	9927461774	9844.00	2023-09-15 10:21:17		
P0010	AYESHA	aindiragd@gmail.com	26	Female	8697521906	4516.00	2023-09-16 10:45:26		
P0011	NISHA	singhnisha15325@gmail.com	23	Female	8920072618	9758.00	2023-09-19 09:59:04		
P0012	KUNAL	kunalnischal_fds@sgtuniversity.org	32	Male	8826778533	4814.00	2023-09-19 11:27:21		
P0013	UDITA	druhitachoudhry@gmail.com	24	Female	8800291343	4814.00	2023-09-20 11:31:17		
P0014	RAHUL	sehrawatrahul41@gmail.com	32	Male	8800115300	4776.00	2023-09-23 16:15:01		
P0015	MANISHA	manisha@gmail.com	28	Female	9821805406	4758.00	2023-09-24 12:04:47		
P0016	NISHTHA	nishthagosain196@gmail.com	26	Female	8810455469	4810.00	2023-09-25 11:29:08		

**FIGURE 5 PATIENT DETAILS**

The doctor can add prescription with the following details

1. Patient Name\*
2. Chief Complain & History\*
3. Medical History\*
4. Examination\*
5. Investigations\*
6. Diagnosis\*
7. Type of order \*
  1. Card based 2. Online order 3. Direct order
8. Consultation & Treatment Fee\*
9. Treatment\*

The following things can be viewed at view prescription login page (Figure 6)

All Prescriptions :

27-09-2023

Search Name..																
SNo	Patient No	Name	A/G	Mobile No	Doctor Name	OPD Type	OPD Date	Chief Complain	Treatment	D M T Cost	Doctor OTP	Chemist OTP	Pay Link	Dispence	Action	
1	P0001	chandrabhan	31 Male	7300534884	Dr Sumit Singh Phukela	Card Based	2023-09-08 14:51:20	pain	ret	100 0 100	19145	00162	NA	Complete		
2	P0001	chandrabhan	31 Male	7300534884	Dr Sumit Singh Phukela	Online Order	2023-09-08 14:54:40	pain	ret	100 62 162	11739	00202	NA	Complete		
3	P0001	chandrabhan	31 Male	7300534884	Dr Sumit Singh Phukela	Card Based	2023-09-08 15:07:50	pain	ret	100 86 186	26742	00324	NA	Complete		
4	P0001	chandrabhan	31 Male	7300534884	Dr Sumit Singh Phukela	Online Order	2023-09-08 15:11:20	pain	ret	100 10 110	01435	00441	NA	Complete		
5	P0002	arvind	35 Male	9728350015	Dr Sumit Singh Phukela	Card Based	2023-09-09 10:30:26	PAIN IN GUMS	SCALING AMOX ,AMLOR,TWICE DAILY	100 72 172	38848	00553	NA	Complete		

8	P0003	DANVIR	40 Male	8398990818	Dr Sumit Singh Phukela	Card Based	2023-09-09 11:36:43	PAIN IN LOWER TEETH SINCE 2 DAYS	RCT OFLOX OZ TWICE DAILY FOR 5 DAYS	100 129 229	76044	00885	NA	Complete	
9	P0005	MADHU	35 Male	9953988150	Dr Sumit Singh Phukela	Card Based	2023-09-10 15:57:39	PAIN IN TEETH	RCT AMOX ,HEXIGEL,METRONIDAZOLE,TWICE DAILY	100 202 302	50924	00825	NA	Complete	
10	P0005	MADHU	35 Male	9953988150	Dr Sumit Singh Phukela	Card Based	2023-09-10 16:05:50	swollen gums	ext amflor ,astrigum,amflor paste	100 86 186	09010	01041	NA	Complete	
11	P0006	santosh	35 Male	9971354566	Dr Sumit Singh Phukela	Card Based	2023-09-10 16:21:50	PAIN IN TEETH	ret chlohex,diclo and para,diclo para,serra,enafix,ketoral	100 45 145	34386	01175	NA	Complete	
12	P0006	santosh	35 Male	9971354566	Dr Sumit Singh Phukela	Card Based	2023-09-10 16:38:06	PAIN IN TEETH	metronidazole ,mucopain,oflox omnident,oral b floss	100 477 577	14816	01206	NA	Complete	
13	P0006	santosh	35 Male	9971354566	Dr Sumit Singh Phukela	Card Based	2023-09-10 17:04:19	PAIN IN TEETH	ORASORE,ORNIDAZOLE,PARA,RA RANTAC	100 319 419	92841	01337	NA	Complete	
14	P0007	Avneet	37 Female	9971061617	Dr Sumit Singh Phukela	Online Order	2023-09-11 19:09:40	PAIN IN GUMS	ASTRIGUM CAZIQ	200 86 286	03669	01420	NA	Complete	
15	P0005	MADHU	35 Male	9953988150	Dr Sumit Singh Phukela	Card Based	2023-09-12 19:51:45	PAIN IN GUMS	sensodyne,shym,thermoseal repair,thermoseal floss,thermoseal proxa brush	100 632 732	52194	01593	NA	Complete	
16	P0008	vishal ji	35 Male	8318488975	Dr Sumit Singh Phukela	Card Based	2023-09-13 20:36:40	PAIN IN GUMS	scaling	100 72 172	71012	01691	NA	Complete	

FIGURE 6 .PATIENT PRESCRIPTION VIEWED BY DOCTOR



The Medicines can be selected with quantity ,dose and duration. Selection of medicines ( Figure 7)

The screenshot shows a 'Select Medicine' interface with a list of 15 medicines. Each medicine entry includes a checkbox, the medicine name, price, and expiry date. To the right of each entry are three input fields: 'Quantity' (a dropdown menu), 'Dose' (a text input), and 'Duration' (a text input).

Medicine Name	Price	Expiry Date
Amoxicillin 500mg	72.00	January-2024
Astrigum	86.00	November-2024
Caziq Mouth Ulcer paste	0.00	April-2024
Chlorhexidine mouth wash	0.00	April-2024
Clohex ADS mouthwash	0.00	March-2024
Diclo Fenac & Paracetamol (50mg/325mg)	9.00	December-2024
Enafix Paste	0.00	March-2025
Flexon MR	26.00	October-2024
Hexigel	62.00	January-2025
Ketorolac 10mg	10.00	October-2024
Metronidazole gel	68.00	September-2024
Mucopain gel	70.00	November-2024
Neurofair forte	80.00	June-2024
Oflox OZ 200/500mg	129.00	September-2024

FIGURE 7 SELECTION OF MEDICINES

2.Details of login page of Chemist (Figure 8)

Patient name;

Chief Complain & History :

Medical History :

Treatment;

Enter OTP ;

Chemist; User can accept the medicine.

The screenshot shows a web browser window with the URL 'anytimemedicines.in/svm/chemist.php'. The dashboard has a blue header with 'Dashboard' and 'POONAM'. A sidebar menu contains 'Accept Prescription'. The main content area features a table titled 'Acceptance of prescription'.

Patient No	Name	Age	Gender	Mobile No	Doctor Name	OPD Date	Accept	Reject
P0003	DANVIR	40	Male	8398990618	Dr Sumit Singh Phukela	2023-09-18 13:51:29	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FIGURE 8 LOGIN PAGE OF CHEMIST

Dr. Sumit Singh Phukela/ Afr.J.Bio.Sc. 6(10) (2024) 152-169

### 3.Login in page for Patient (Figure 9)

- **Patient:** User can see the details regarding his diagnosis, medical history and medicine prescriptions.

#### Details of Patient

**Name :**

**Age**

**Gender**

**Address**

**Mobile No :**

**Card Balance :**

Order Type	Chief Complain & History	Medical History	Examination	Investigations	Diagnosis	Treatment	Doctor	D   M   T Cost	Date	View Details
Card Based	PATIENT COMPLAINS OF GRINDING TEETH WHILE SLEEPING	NA	ATTRITED TEETH	OPG	BRUXISM	PATIENT TO WEAR NIGHT GUARD FOR 6 MONTHS CHLORHEXIDINE ,CLOHEX MOUTH WAS,DICLO,PARA,DICLO PARA AND SERRATIOPEPTIDASE,TWICE DAILY FOR 15 DAYS ,ENAFIX PASTE TO BE USED FOR 6 MONTHS	Dr Sumit Singh Phukela	100 35 135	24-Sep-2023 12:38	
Online Order	PAIN IN GUMS	NA	SWOLLEN GUMS	BIOPSY	IMPACTED MOLAR	EXTRACTION ,ASTRIGUM,MUCOPAIN,ORNIDAZOLE GEL OMNIDENT GEL ,ORASORE GEL THRICE DAILY FOR 15 DAYS	Dr Sumit Singh Phukela	100 1342 1442	20-Sep-2023 19:03	
Card Based	PAIN IN RIGHT LOWER TEETH SINCE 2 DAYS	NA	pain in 46	x ray	CARIES	EXTRACTION,THERMOSEAL REPAIR ,AMFLOR PASTE,SHYNM CAZIQ ULCER PASTE METRONIDAZOLE THRICE DAILY FOR 10 DAYS	Dr Sumit Singh Phukela	100 390 490	20-Sep-2023 18:50	
Card Based	PAIN IN LEFT UPPER BACK TEETH SINCE 2 DAYS	NA	DISCLOSED 17	x ray	CARIES	ROOT CANAL TREATMENT ,DICLO,PARAAND SERRATOPEPTODASE,OFLOXOZ,SENSODYNE ,RA THERMOSEAL,ENAFIX ,THRICE DAILY FOR 7 DAYS	Dr Sumit Singh Phukela	100 680 780	20-Sep-2023 18:40	
Card Based	PAIN IN GUMS since 2 days	NA	SWOLLEN GUMS	x ray	IMPACTED MOLAR	Extraction amox,paracetamol, diclo and para,rantac ,ketorolac .All twice daily for 7 days	Dr Sumit Singh Phukela	100 372 472	20-Sep-2023 18:35	Show desktop

**FIGURE 9 LOGIN PAGE OF PATIENT**

### 4. Login in page for Maintenance person (Figure 10)

**Name of medicine**

**Cost \***

**Machine Format \***

**Quantity \***

**Expiry Date \***

**Add Medicine**

<b>Name*</b>	<input type="text" value="Name"/>
<b>Cost*</b>	<input type="text" value="Cost"/>
<b>Machine Format*</b>	<input type="text" value="Machine Format"/>
<b>Quantity*</b>	<input type="text" value="Quantity"/>
<b>Expiry Date*</b>	<input type="text" value="dd-mm-yyyy"/> <input type="button" value="📅"/>
<input type="button" value="Submit"/>	

---

Search Medicine Name..

Name	Cost	Machine Format	Expiry Date	Quantity	Edit
Amox 500mg	56.00	A	October-2024	0	<input type="button" value="✎"/>
Paracetamol 500mg	15.00	B	December-2024	4	<input type="button" value="✎"/>

**FIGURE 10 LOGIN PAGE FOR MAINTENANCE PERSON**

**Maintenance personal:** This person will update the medicine expiry and stock related records.

- Can update the medicine stock
- Can update the expiry type.

The system records are saved in the MySQL database (online server).

## 5. HOME PAGE

### A.ABOUT US

#### 1. What We Do

We Offer High Quality Services

Our Multispeciality clinic, houses a team of well experienced Dental professionals who provide quality Dental care with ethical standards.

#### 2 .Our mission

Our aim is to raise the standard of Dentistry and strive to achieve best of smiles for our patients.

#### 3. Our goals

Rehabilitation of Patients

#### 4. Our Services

**General Dentistry:** Dental check up,(Figure 11) Digital x- rays, Cone Beam Computed Tomography of the face for advanced treatment planning, Cleaning of teeth (scaling), Tooth coloured Fillings etc.



FIGURE 11 GENERAL DENTISTRY

### B. Doctors Working in clinic (Figure12)

Meet Our Experience Dentist





 <p>Dr. Sumit Singh Phukela M.D.S Prosthodontist sumit.phukela@sgtuniverstiy.org</p>	 <p>Dr. Omkar Shetty M.D.S Prosthodontist dean.fdsc@sgtuniversity.org</p>	 <p>Dr. Puneeta Vohra M.D.S O.M.R Mithi7k@gmail.com</p>	 <p>Dr. Varun Arya M.D.S Oral Surgeon varun.arya@sgtuniversity.org</p>
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FIGURE 12 DOCTORS

### C. BOOKING OF APPOINTMENT (Figure 13)

Make an Appointment ×

Full Name

Email

Date  Time

Message

[Make an Appointment](#)

FIGURE 13 APPOINTMENT BOOKING

Link to check data

<https://anytimemedicines.in/fetch.php>

#### **4 B.Type of order/Dispensing of medicine**

There will be three different concepts through which the medicine can be dispensed from the vending machine

##### **A.First concept /Prepaid card/cash**

Doctor will give digital prescription to patient The medicine type and quantity along with patient details can be seen in website .

##### **Message to the patient (eg)(prescription)**

Dear Avneet, Thank you the query, please see below your particular

Name - Avneet

ID - P0007

Address - DELHI

Gender - Female

Mobile - 9971061617

Complain & History - Patient complains of grinding teeth while sleeping, na treatment - patient to wear night guard for 6 months chlorhexidine, clohex mouth was, diclo, para, diclo para and serratiopeptidase, twice daily for 15 days, enafix paste to be used for 6 months

Doctor Name - Dr Sumit Singh Phukela

Kindly contact above in case of issue.

Once the doctor submits the prescription. One message (Prescription ) will be sent to patient and other message (OTP) to the chemist for acceptance.

##### **2.Message to the chemist**

Hello Kapil, Welcome to Anytime Medicines.

P0004 - 26267 is your verification code.

SJTECH

After the chemist accepts prescription patients gets message (OTP) which he/she will put in the machine and the medicine is dispensed.

In this advancement, any amount can be added in card which the patient will pay to the Doctor. Patient will put OTP in machine and it will dispense the specific amount of medicine .

There will be a significant decrease in patient's time and effort and massive advantage of convenience. Doctors' writing is not misread. Also, it will help in tracking the stock/inventory of medicines. Medicines can be dispensed anywhere, anytime like an ATM Machine. The proposed machine can be utilized to conduct specific function for academic as well as research purpose.

##### **B. Second concept / Online payment link**

Doctor will give digital prescription to patient. The medicine type and quantity along with patient details can be seen in website .

Once the doctor submits the prescription .One message(Prescription ) will be sent to patient and other message (otp) to the chemist for acceptance.

. The message/email for Online payment link will go to patient . (Figure 14)

Please pay your bill by click on below link:

<https://anytimemedicines.in/svm/payment-link.php?id=21>

SJTECH

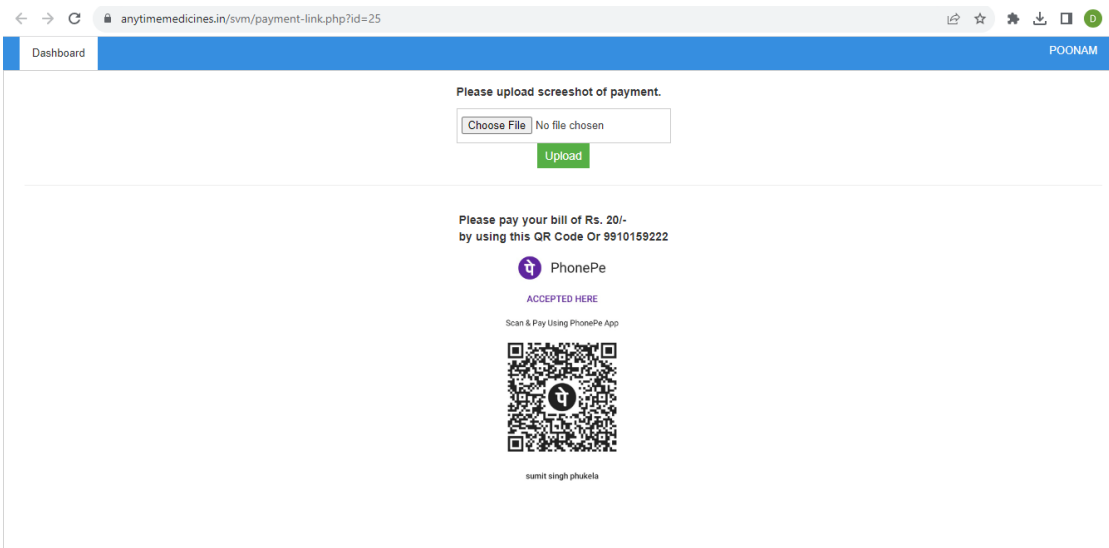


FIGURE 14 PAYMENT LINK

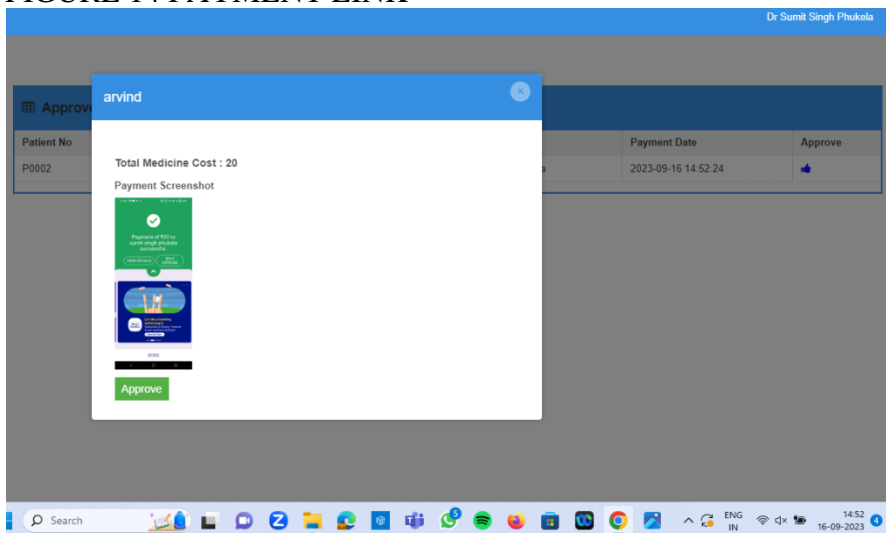


FIGURE 15 PATIENT PAYMENT SCREENSHOT

Once the patient attaches screen shot (Figure 15).Doctor approves the payment (Figure 16)

Payment has been approved Successful.

Approve Payment							
Patient No	Name	Age	Gender	Mobile No	Doctor Name	Payment Date	Approve

FIGURE 16; APPROVAL OF PAYMENT BY DOCTOR

Patient will receive OTP which he/she will put OTP in machine and it will dispense the specific amount of medicine.

### 3.Direct order for online consultation

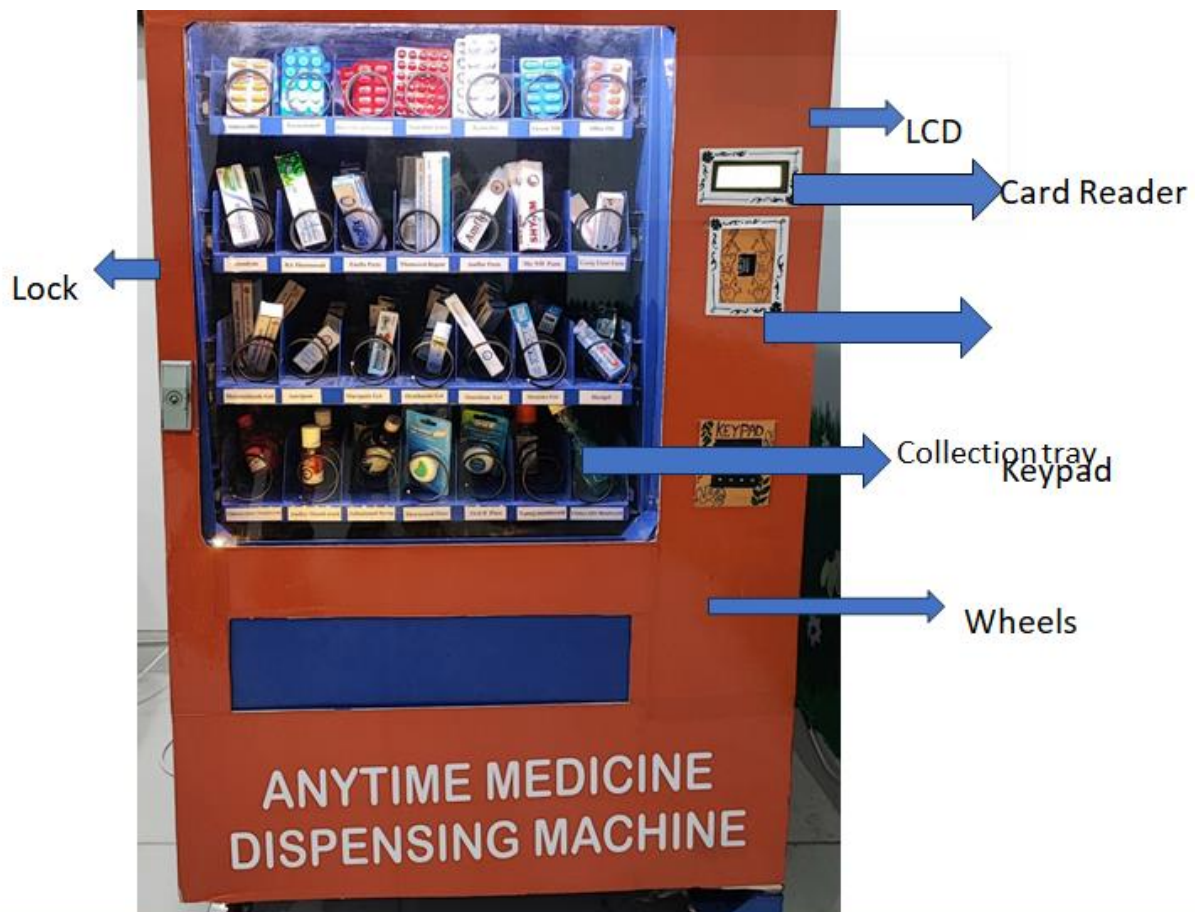
Doctor will give digital prescription to patient. The medicine type and quantity along with patient details can be seen in website .

Once the doctor submits the prescription .One message(Prescription ) will be sent to patient and other message (otp) to the chemist for acceptance The message /email for Online payment link will go to patient . Doctor approves the payment . Patient will receive OTP which he/she will put OTP in machine and it will dispense the specific amount of medicine. This concept is applicable when in emergency patient cannot visit doctors or even in remote areas where there are no doctors and even opening chemist shops are problematic

### 4C.Functionality (FIGURE 17 )

1.Machine has option of dispensing medicines through OTP or OTP and card .

A.In OTP (One-Time Password) Mode, users input a 5-digit OTP obtained from a central server. The machine employs the HTTP protocol to verify the OTP's authenticity with the server. Upon successful verification, it retrieves medication details from the server and dispenses the prescribed medicines. Patient press any key of the key pad (Figure 41)to come in OTP mode. Then enters the otp and star key for medicine dispensing in the collection tray



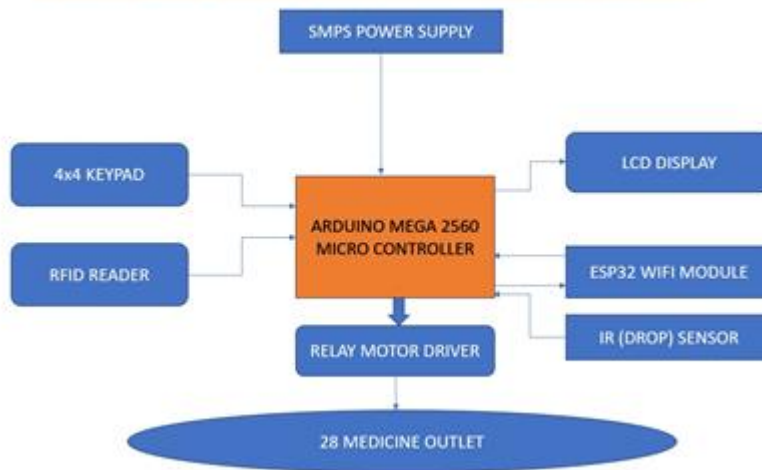
**FIGURE 17 FRONT VIEW OF MACHINE**

**B. Card Mode**

Patient taps the card on card reader ,(Figure 43)put the OTP and press star button for release of medicines The Card Mode offers an alternative approach. Users can employ a physical card and then enter the OTP to get their medicines. This acts as a 2 layer security

**7.Block Diagram(Figure 18)**

Anytime Medicine Vending Machine Block Diagram



**FIGURE 18 BLOCK DIAGRAM**

**8.PROOF OF CONCEPT (Figure 19)**

SNo	Patient No	Name	A/G	Mobile No	Doctor Name	OPD Type	OPD Date	Chief Complain	Treatment	D M T Cost	Doctor OTP	Chemist OTP	Pay Link	Dispence	Action
1	P0001	chandrabhan	31 Male	7300534864	Dr Sumit Singh Phukela	Card Based	2023-09-08 14:51:20	pain	ret	100 0 100	19145	00162	NA	Complete	
2	P0001	chandrabhan	31 Male	7300534964	Dr Sumit Singh Phukela	Online Order	2023-09-08 14:54:40	pain	ret	100 62 162	11739	00202	NA	Complete	
3	P0001	chandrabhan	31 Male	7300534864	Dr Sumit Singh Phukela	Card Based	2023-09-08 15:07:50	pain	ret	100 86 186	26742	00324	NA	Complete	
4	P0001	chandrabhan	31 Male	7300534964	Dr Sumit Singh Phukela	Online Order	2023-09-08 15:11:20	pain	ret	100 10 110	01435	00441	NA	Complete	
5	P0002	arvind	35 Male	0728350015	Dr Sumit Singh Phukela	Card Based	2023-09-09 10:30:28	PAIN IN GUMS	SCALING AMOX ,AMLOR,TWICE DAILY	100 72 172	38848	00553	NA	Complete	
6	P0003	DANVIR	40 Male	8398990518	Dr Sumit Singh Phukela	Card Based	2023-09-09 10:42:55	SWOLLEN CHEEK AND GUMS	EXTRACTION ,METRONIDAZOLE AND MUCOPAIN TWICE DAILY	100 138 238	03096	00513	NA	Complete	
7	P0004	SUKRIT	13 Male	0850218226	Dr Sumit Singh Phukela	Card Based	2023-09-09 11:08:29	PAIN IN TEETH	CARIES KETORALAC	100 10 110	21631	00725	NA	Complete	

**FIGURE 19 OPD RECORD OF PATIENTS**

**9.Summary and conclusion**

Till date there is no automated medicine dispensing machine available in the market and this is the first time that this innovation is being put forward. It has been seen in literature that



court have penalized doctors for illegible handwriting in the reports drafted by the Doctors . Doctor's prescription isn't just a guide for patient's but also an instruction manual for family members , documentation of drug requirements for chemist and tract records of patients past and present conditions for other doctors . Doctors' writing can be misread that causes loss of information and prevents better care for patients .The solution lies in computerizing the drafting of prescription .The automated medicine dispensing machine will be brought into the market to address the above problem

## 10.FUTURE SCOPE

The machine is user-friendly and is very simple to operate. Our device can be extremely helpful in rural and distant places where pharmacy shops cannot be opened . Most significantly, this gateway can help patients in obtaining the necessary medication(s) in an emergency with the prescription of a doctor. The medicines can be dispensed from our machine in locations where setting up pharmacies is challenging, such as in mountain areas or the highways

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