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Qr Code Generator for Medical Emergency

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Abstract- In today's fast-paced world, medical emergencies require immediate action and rapid access to patient medical history. In many emergency situations, patients may be unconscious or unable to communicate important medical details such as blood group, allergies, medications, or emergency contacts. This delay in obtaining patient information can result in incorrect treatment, delayed care, and even loss of life. To solve this problem, this project proposes a QR Code Generator for Medical Emergency; a smart web-based application designed to store and provides instant access to critical patient medical data through QR technology. The system allows users to enter personal and medical information such as full name, blood group, allergies, medical notes, emergency contact details, patient photo, and medical report links. Once entered, the system generates a unique QR code that securely stores this information. During an emergency, healthcare professionals or first responders can scan the QR code using any smartphone or QR scanner and instantly retrieve the patient's medical information. The system also provides a downloadable PDF medical report for hospital documentation and future reference. This solution improves healthcare accessibility, minimizes response time, enhances patient safety, reduces paperwork, and provides a low-cost digital healthcare solution using HTML, CSS, and JavaScript, QRCode.js, jsPDF, and web technologies.

Keywords: QR Code, Medical Emergency, Patient Safety, Emergency Healthcare, Web Application, Medical Records, QR Scanner, Digital Health, Smart Healthcare.

I. INTRODUCTION

In today's world, medical emergencies can happen at any time, and quick access to patient medical information is very important for saving lives. During emergencies, patients may be unconscious or unable to communicate important details such as blood group, allergies, medications, and emergency contacts. This delay can lead to incorrect treatment and serious health risks.

The QR Code Generator for Medical Emergency is designed to solve this problem by providing instant access to essential medical information through a QR code. The system allows users to store their personal and medical details, generate a unique QR code, and use it during emergencies. By scanning the QR code, doctors or emergency responders can immediately view patient details, improving treatment speed, reducing errors, and enhancing patient safety.

Important information such as:

- Blood group
- Allergies
- Ongoing medications
- Previous medical conditions
- Emergency contact numbers

Is often unavailable during the first few minutes of treatment.

This creates serious challenges:

- delayed treatment
- wrong medication
- increased risk to patient life

To solve this issue, digital healthcare systems are becoming increasingly important.

The proposed QR Code Generator for Medical Emergency provides a simple and effective solution. Every patient receives a unique QR code containing essential medical information. The QR can be printed on:

- ID cards
- bracelets
- mobile phones
- wallets

When scanned, it instantly displays patient details.

This improves:

- treatment speed
- healthcare efficiency
- patient survival chances

II. LITERATURE SURVEY

Many healthcare systems have been developed to improve access to patient medical records during emergencies. Traditional systems such as smart cards and hospital databases store patient information but often require manual access and can delay treatment. Cloud-based healthcare systems provide better storage but depend on internet access and authentication. QR code-based healthcare systems offer a faster and low-cost solution by allowing instant access to patient details through scanning. However, many existing systems lack features such as patient photo display, medical report links, and PDF report generation. The proposed QR Code Generator for Medical Emergency improves these limitations by providing a complete digital emergency healthcare solution.

1. Smart Medical Cards

Smart medical cards store patient information in digital form and help doctors access medical details. However, they need special card readers and can be lost or damaged easily.

2. Cloud Healthcare system

Cloud healthcare systems store patient records online and allow access from anywhere. But they require internet connection and login authentication, which may delay treatment during emergencies.

3. RFID-Based Healthcare

RFID technology helps in tracking patients and medical equipment in hospitals. It is useful but costly because it requires special RFID devices and hardware.

4. QR-Based Emergency System

QR code systems allow instant access to patient medical records by simply scanning the code with a smartphone. They are easy to use, low-cost, and highly effective during emergencies.

Existing limitations

- lack of image support
- no medical report attachment
- no downloadable report generation

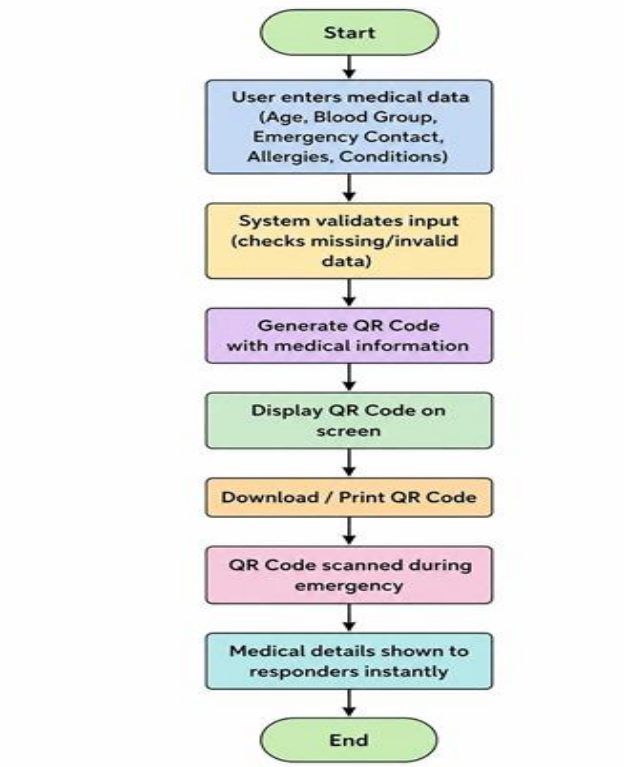
Our proposed system solves these by adding:

- patient photo
- report links
- downloadable PDF
- modern dashboard

III. METHODOLOGY

The proposed QR Code Generator for Medical Emergency follows a simple and effective methodology for storing and accessing patient medical information during emergencies. First, the user enters important personal and medical details such as full name, blood group, allergies, emergency contact number, and medical notes into the system. After entering the details, the user uploads a patient photo and adds a medical report link for additional information. The system then converts all the entered data into digital format (JSON) and generates a unique QR code containing the patient's medical information. During an emergency, the generated QR code can be scanned using a smartphone or QR scanner to instantly retrieve the patient's details. After scanning, the system displays the complete medical information, patient photo, and report link, with an option to download the details as a PDF report. This

methodology helps provide faster treatment, reduces medical errors, and improves patient safety.



Based on above flowchart, the methodology of the QR Code Generator for Medical Emergency starts when the user enters important medical information such as age, blood group, emergency contact, allergies, and medical conditions into the system. The system then validates the entered data to check for any missing or invalid information. After successful validation, the system generates a unique QR code containing all the patient's medical details and displays it on the screen. The user can then downloads or print the QR code for future use. During a medical emergency, the QR code is scanned using a smartphone or QR scanner, allowing emergency responders or doctors to instantly access the patient's medical details. This process ensures faster treatment, reduces delays, and improves patient safety during emergencies.

User Registration and Data Entry

The patient enters:

- Full Name
- Blood Group
- Allergies
- Emergency Contact
- Medical Notes

This information is validated before QR generation.

Photo Upload

The user uploads a patient photo. The photo is stored in the project folder: images/photo.jpeg. This enables direct display after scanning.

Medical Report Upload

Medical reports are uploaded externally (Google Drive) and linked inside the QR.
This avoids storage limitations and reduces QR size.

QR Generation

The application converts data into JSON format:

```
{
"name":"Sakshi",
"blood":"O+",
"allergies":"None",
"emergency":"9876543210", "notes":"Diabetic",
"photo":"images/photo.jpeg", "report":"Google Drive Link"
}
```

The QR code is then generated using QRCode.js.

QR Scanning

Using scanner page:

- upload QR image
- decode JSON
- display medical information Displayed:
- Name
- Blood Group
- Allergies
- Emergency Contact
- Notes
- Patient Photo
- Report Link

PDF Report Generation Using jsPDF, the system creates:

- patient medical report
- photo
- clickable report link

This helps hospital documentation.

IV. RESULT

The proposed QR Code Generator for Medical Emergency system successfully performs all the required functions for fast and secure access to patient medical information during emergency situations. The system allows users to enter patient details such as name, blood group, allergies, emergency contact, and medical notes accurately. It also supports photo upload, which helps in quick patient identification, and report linking, which provides access to additional medical documents. After entering all details, the system generates a unique QR code containing the complete patient medical information. The generated QR code can be easily downloaded or printed for future use. During emergencies, when the QR code is scanned using a smartphone or QR scanner, the system instantly displays the patient's complete medical details along with the uploaded patient photo and linked medical report. Additionally, the system provides a PDF generation feature, allowing users to download and store the complete medical report for documentation and future reference. The final result shows that the system is fast, reliable, user-friendly, and highly useful for improving emergency healthcare response and patient safety

Login page

The login page provides secure access to the system by allowing users to enter their username/email and password. It authenticates the user credentials and ensures that only authorized users can access the medical QR generator dashboard. This improves system security and protects patient data.

Fig 1. Login page

Home Page

The home page acts as the main entry point of the application after successful login. It provides navigation options such as Dashboard, QR Generator, QR Scanner, and Logout. It also displays important system information and allows users to easily access all project features from one place.

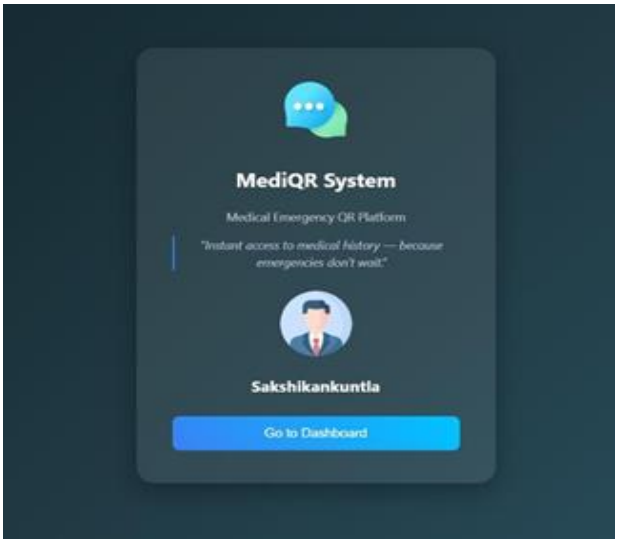


Fig 2. Home Page QR code Generation

1. **Patient Data Entry**

In this step, the user enters important patient information such as full name, blood group, allergies, emergency contact number, and medical notes into the system. This data forms the basic medical profile of the patient.

2. **Photo Upload**

The system allows the user to upload a patient photograph, which helps in quick and accurate identification of the patient during emergencies.

3. **Report Linking**

Users can attach a medical report link (such as a Google Drive link) containing additional medical documents or reports for detailed health information.

4. **QR Generation**

After collecting all patient details, the system converts the information into digital format and

generates a unique QR code containing the complete medical data.

Fig . 3 QR Genration

5. QR Scanning

In emergency situations, the generated QR code can be scanned using a smartphone or QR scanner to instantly access the patient's information.

Fig . 4 QR Scanner

6. Instant Data Display

Once scanned, all stored medical details are immediately displayed on the screen, helping doctors or emergency responders take quick action.

7. Patient Photo Display

Along with medical details, the uploaded patient photo is also displayed after scanning to verify the patient's identity.

8. PDF Generation

The system provides an option to download all patient information as a PDF report, which can be saved, printed, or shared for future medical reference.

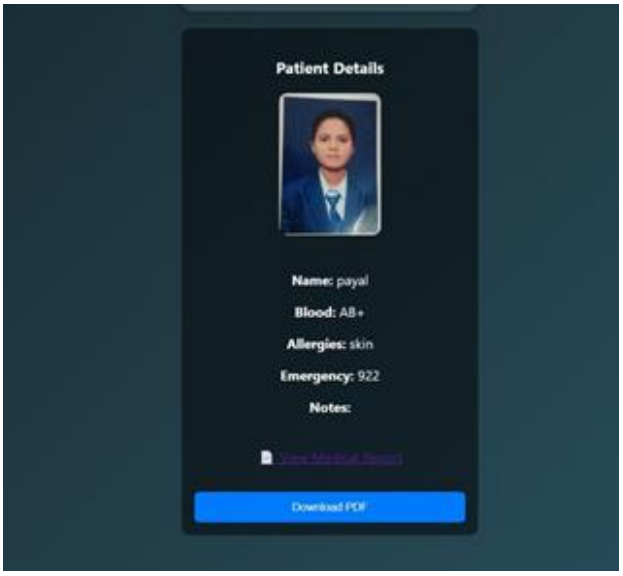


Fig . 5 Scanned Patients Details

V. CONCLUSION

The QR Code Generator for Medical Emergency is an innovative and efficient healthcare solution developed to improve emergency medical response and patient safety through the use of modern digital technology. The main objective of this system is to provide instant access to a patient's important medical information during emergency situations, where every second is critical.

By generating a unique QR code containing essential patient details such as name, blood group, allergies, emergency contact, medical notes, patient photo, and linked medical reports, the system enables doctors, nurses, and emergency responders to quickly retrieve accurate medical data simply by scanning the QR code using a smartphone or scanner. This reduces treatment delays and helps medical professionals make faster and better decisions.

The proposed system significantly improves healthcare efficiency by saving time, reducing manual paperwork, minimizing medical errors, and ensuring better patient identification through photo verification. The integration of features such as patient data entry, photo upload, report linking, QR generation, QR scanning, instant data display, and PDF report generation makes the system highly

practical and user-friendly. Unlike traditional paper-based medical records, this digital approach is secure, fast, portable, and easily accessible during emergencies. Furthermore, the system is affordable, scalable, and easy to implement in real-world environments such as hospitals, ambulances, schools, offices, public healthcare centers, and disaster management systems.

In the future, this project can be enhanced by integrating cloud storage, GPS-based emergency services, mobile application support, real-time hospital database connectivity, and stronger security mechanisms such as encryption and authentication. Overall, the QR Code Generator for Medical Emergency provides a smart, reliable, and effective solution for modern healthcare management and has great potential for large-scale real-world implementation.

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